State of Kansas
Air Quality
State Implementation Plan

Kansas City Eight-Hour
Ozone Maintenance Plan
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Department of Health and Environment
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The Missouri Department of Natural Resources' Air Pollution Control Program

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INTRODUCTION

1.1 Purpose

The Kansas City Maintenance Area (KCMA) was previously determined by the U.S. Environmental Protection Agency (EPA) to be a non-attainment area for ozone pursuant to section 107 of the Clean Air Act (CAA), and a plan for attainment of the national ambient air quality standard (NAAQS) for one-hour ozone was prepared and implemented in 1979. Upon demonstration to EPA in 1991 that the area had achieved attainment of the one-hour NAAQS for ozone, the EPA changed the KCMA's designation to attainment in 1992. At the time the state submitted its attainment demonstration to EPA, it also submitted a state implementation plan (SIP) revision that defined how the state would maintain the area's air quality within the national standard (Maintenance Plan).

In 2002, a revision of the Kansas City Maintenance Area Ozone Maintenance Plan component of the SIP was prepared to meet the Federal requirements of the Clean Air Act Amendments (CAAA) in 42 U.S.C. §7505a(b), which mandate that the state prepare an update to its Maintenance Plan for air quality management regions formerly designated as non-attainment for one or more of the six criteria pollutants under the CAA. This update is to provide for "maintaining the national primary ambient air quality standard for 10 years after the expiration of the 10-year period" covered by the original Maintenance Plan.

In early 2005, another plan revision was implemented to update the previously approved 2002 Kansas City Maintenance Area Ozone Maintenance Plan to add the new eight-hour standard and related contingency measure triggers to the previously approved one-hour standard. As was the stated intent in the *Federal Register* on April 30, 2004 (69 FR 23954), the one-hour standard was revoked in full on June 15, 2005. By including the eight-hour standard and contingency measure triggers as a revision to this plan, this plan would continue to remain in effect. Although the one-hour standard is revoked, as stated by EPA in 69 FR 23985 "The maintenance plan requirements will remain enforceable as part of the approved SIP until such time as EPA approves a SIP revision removing such obligations."

In June of 2005, EPA formally redesignated the Kansas City area from "unclassifiable" to "attainment" for the 8-hour ozone NAAQS. The Phase-1 Implementation Rule for the 8-hour ozone standard promulgated in April 2004 requires that former 1-hour maintenance areas, such as Kansas City, prepare and submit no later than June 15, 2007, a plan under section 110 of the CAA to maintain the 8-hour ozone standard for a ten-year period from the date of designation. This plan revision will address these requirements under Section 110(a)(1) of the Clean Air Act.

A brief summary of ozone as a pollutant is provided in Appendix H to aid the general public in understanding the nature of the problem. This document is from the EPA website, which may be referenced for additional background information.

1.2 Background

1.2.1 Requirements and Authority

The federal Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to promulgate National Ambient Air Quality Standards (NAAQS) for each air pollutant for which air quality criteria have been published. To date, NAAQS have been promulgated for six criteria pollutants: ozone, particulate matter, sulfur oxides, nitrogen oxides, carbon monoxide, and lead. The CAA further requires that if any area fails to attain the standard for any criteria pollutant, the respective state must develop and implement a State Implementation Plan (SIP), which is a document that describes how the state will manage its air resources to attain, and to then maintain the air quality within the national standards.

The Secretary of the Department of Health and Environment has the authority to prepare and to adopt this plan revision under the Kansas Air Quality Act, K.S.A. 65-3001 through 65-3028.

1.2.2 The Kansas City Maintenance Area (KCMA)

The KCMA consists of five counties within the larger bi-state Kansas City Metropolitan Statistical Area. These counties include Johnson and Wyandotte counties in Kansas and Jackson, Clay and Platte counties in Missouri. The Missouri Department of Natural Resources (MDNR) is concurrently developing a similar plan for the Missouri counties in the KCMA. Although the Phase I contingency measures that are a part of this plan will only affect the current KCMA, Phase II contingency measures do included potential sources located outside of Wyandotte and Johnson Counties. A map of the area can be found in Appendix A.

1.2.3 Regional Air Quality History

The Kansas City Maintenance Area (KCMA) was determined to be in violation of the one-hour ozone NAAQS in the 1970's. Subsequently, the state of Kansas developed and implemented an Ozone SIP for the Kansas side of the KCMA, which includes the counties of Johnson and Wyandotte. EPA approved the 1979 Kansas SIP revision, which projected that the KCMA would meet the one-hour ozone NAAQS by December 31, 1982. In calendar years 1983 and 1984, however, the ambient air monitoring data for the region revealed that violations to the one-hour ozone NAAQS had occurred. These violations required the state to make revisions to the 1979 SIP. Accordingly, the SIP was revised to include additional control measures for the region. With further reductions of volatile organic compound (VOC's) emissions in the area, the new SIP projected the area would be in attainment of the one-hour ozone NAAQS by December 31, 1987. In November 1989, the SIP was fully approved by the EPA. However, efforts to redesignate the area to attainment were halted when the area experienced several exceedances of the one-hour ozone standard in 1988.

Kansas and Missouri continued monitoring for ozone in the area. At the end of 1991, sufficient monitoring data was available which demonstrated that the area had attained the one-hour ozone standard. The State of Kansas revised the Kansas Ozone Maintenance Plan portion of the SIP for the KCMA to reflect that KCMA had achieved the one-hour ozone standard. A Maintenance Plan, which EPA approved on June 23, 1992, contained documentation that supported the redesignation of the area to attainment and provided for contingency measures that were to be implemented if violations of the one-hour ozone standard occurred in the future.

1.3 Implementation of the Contingency Plan

In the summer of 1995, the Midwest experienced a period of severe hot weather, with temperatures exceeding 100° F for several days. During this hot spell, the KCMA recorded its fourth exceedance for the period 1993-1995, resulting in a violation of the one-hour ozone standard at the Liberty, Missouri monitoring site for the three-year period. The recorded violation required the State to implement the contingency measures contained in the Maintenance Plan. The contingency measures included 1) emissions offsets, 2) stage II vapor recovery or enhanced vehicle inspection and maintenance programs, 3) transportation control measures (TCMs) achieving a 0.5 % reduction of area wide VOC emissions, and 4) an updated comprehensive emissions inventory for the KCMA.

Following the recorded exceedances, EPA was asked to provide guidance on the implementation of the contingency measures contained within the Maintenance Plan. The EPA responded by informing the states that they had flexibility to substitute other control measures beyond those specifically listed, provided the measures resulted in equivalent emission reductions to those control measures contained in the plan. This presented a target for VOC emissions reductions of a minimum of 8.4 tons per day for the 5-county maintenance area. The Mid-America Regional Council (MARC) has been identified by both Kansas and Missouri as the designated metropolitan planning agency involving air quality matters in the KCMA. The states asked MARC to convene the Air Quality Forum (AQF) to review the control options available to the KCMA, and to provide recommendations on the most appropriate emission control measures. In response, the AQF convened the ozone subcommittee to review the various control strategies available and conduct technical analysis on the effectiveness of each option considered.

The AQF evaluated the analysis prepared by the ozone subcommittee, and from this process developed recommendations for a series of control measures. The AQF presented these recommendations at several public forums where the attendees were provided an opportunity to discuss the recommendations.

The state implemented one of the primary components of the emissions reduction strategy, the low-Reid vapor pressure (RVP) gasoline regulation in 1997.

1.4 Planning Process and Accomplishments, 1997 to Present

EPA determined that the VOC reductions realized by the 7.2 psi RVP gasoline and other control measures implemented by the states were insufficient to meet the VOC reductions required to be equivalent to the contingency measures of the maintenance plan (64 FR 3896, January 26, 1999). Full approval of the SIP submittal addressing the 1995 one-hour ozone violation was made contingent upon Kansas implementing one of the following in lieu of the control measures in the 1992 SIP which were not implemented: 1) opting-in to the federal reformulated gasoline (RFG) program; 2) adopting regulations implementing either Stage II Vapor Recovery or an Enhanced Inspection and Maintenance Program; or 3) adopting any combination of regulations that will complete the remainder of the minimum VOC reductions (to achieve the target of 8.4 tons per day for the 5-county maintenance area in concert with the low-RVP regulation and TCMs) required by the contingency measures identified in the 1992 SIP (64 FR 28757 at 28759, May 27, 1999).

Due to the failure of the transportation plan for the Kansas City maintenance area to conform to the SIP, the governor of Kansas opted-in to the federal RFG program by letter dated July 28, 1999. This action also satisfied the contingency measure requirements as set out in the May 27, 1999 Federal Register. On January 4, 2000, the U.S. Court of Appeals for the District of Columbia ruled that EPA exceeded its authority by modifying 40 CFR § 80.70(k) to allow former nonattainment areas such as the Kansas City Ozone Maintenance area to opt-in to the federal RFG program.

By letter dated April 11, 2000, Dennis Grams, Regional Administrator for EPA Region VII, notified the governor of Kansas that the federal courts had disallowed RFG in the Kansas City area and gave the state 90 days within which to select an alternative control strategy and submit a written commitment to adopt the strategy. On July 7, 2000, the governor of Kansas committed to implement a 7.0 psi RVP fuel program in Johnson and Wyandotte counties with a target date of the summer of 2001. (The state also committed to implementation of a phased program to reduce the vapor pressure of cold cleaning solvents to less than or equal to 1.0 mmHg.)

In July 1997, after reviewing the one-hour ozone NAAQS, the EPA finalized a new eight-hour ozone standard. This standard defines an area to be in attainment of the eight-hour standard when the 3-year average of the annual 4th highest daily maximum eight-hour ozone concentration is less than or equal to 0.08 parts per million (ppm). Due to rounding conventions in the new standard, an ozone concentration equal to or above 0.085 ppm is considered an exceedance of the eight-hour ozone standard. This standard was designed to replace the existing one-hour standard. This replacement was done under subpart 1 of the CAA, Title I, Part D, which gives EPA discretion to periodically review its NAAQS standards.

The EPA was challenged in court on the eight-hour standard, and the one-hour standard was reinstated. The Supreme Court upheld the constitutionality of the eight-hour standard-setting process in the CAA, but ruled that the EPA could not implement the new standard under subpart 1 without considering subpart 2 requirements. The Supreme Court left it to EPA to develop a reasonable resolution of the roles of subparts 1 and 2 in implementing a revised ozone standard.

On March 18, 2002, EPA published a Notice of Public Meeting in the *Federal Register* regarding the implementation of eight-hour ozone standard to address subpart 2 of the requirement per the Supreme Court decision. On March 26, 2002 the U.S. Court of Appeals for the District of Columbia unanimously rejected all remaining challenges to EPA's new ozone and fine particle standards. On December 9, 2002, the governor of Kansas received a letter from the EPA requesting the submission of updated, revised, or new designation recommendations and documentation by April 15, 2003. Later, EPA extended the deadline to July 15, 2003.

On June 2, 2003, EPA published the Proposed Rule to implement the Eight-Hour Ozone National Ambient Air Quality Standard in the *Federal Register*. In April of 2004, the EPA designated the Kansas City area "unclassifiable" for the eight-hour standard, and indicated that a decision on Kansas City's attainment status would be made following the 2004 ozone season.

Due to a mild summer, no exceedances of the eight-hour ozone standard were recorded at any of the Kansas City ozone monitors in 2004. Based on monitoring data from 2002 through 2004, Kansas City was in attainment of the eight-hour ozone standard. A letter from the Director of the Bureau of Air and Radiation was sent to EPA on November 18, 2004 certifying the monitoring data and the letter from the governor recommending that Johnson and Wyandotte

Counties be designated attainment for the eight-hour ozone standard was sent on January 10, 2005. In the May 3, 2005 *Federal Register* EPA issued the final rule for the "Air Quality Redesignation for the eight-hour Ozone National Ambient Air Quality Standard for Some Counties in the States of Kansas and Missouri". This rule redesignated the KCMA as being in attainment for the eight-hour standard, effective June 2, 2005. EPA revoked the one-hour ozone standard on June 15, 2005. Although designated attainment for the 8-hour ozone NAAQS, the Phase-1 Implementation Rule for the 8-hour ozone standard promulgated in April 2004 required that former 1-hour maintenance areas, like Kansas City, prepare and submit no later than June 15, 2007, a plan under section 110 of the CAA to maintain the 8-hour ozone standard for a ten-year period from the date of designation.

The KCMA is in a somewhat unique position due to its maintenance status under the previous one-hour ozone standard and as an attainment area under the current 8-hour standard. The EPA recognized that a number of areas would be in the same position when they published Phase I of the 8-Hour Ozone NAAQS. Therefore, the rulemaking established Sections 51.905 (c) and (d) that set forth anti-backsliding requirements for areas such as the KCMA. These provisions require these areas to submit a 10-year maintenance plan under Section 110 (a)(1) of the CAA if they were a nonattainment area, or an attainment/unclassifiable area with a Section 175A maintenance plan under the one-hour ozone standard.

The 8-Hour Ozone Maintenance Plan under Section 110 (a)(1) of the CAA, constitutes a SIP revision. The plan must provide for the continued maintenance of the 8-hour ozone NAAQS for 10 years from the effective date of the KCMA's designation as unclassifiable/attainment for the 8-hour ozone standard. It must also include contingency control measures that would be implemented as a result of a violation of the 8-hour ozone standard. Guidance provided by the EPA to aide states in the development of this maintenance plan recommends that the plan include the following elements:

1) Attainment Inventory – An inventory based on a typical summer day of emissions of VOCs and NOx. As suggested by the EPA, the inventory developed for the 2002 Consolidated Emissions Reporting Rule was used as the attainment emission inventory base year for the maintenance plan.
2) Maintenance Demonstration – It must show how the area will remain in compliance with the 8-hour ozone standard for the 10 year period following the effective date of designation as unclassifiable/attainment. Therefore, the plan must project attainment through 2014.
3) Ambient Air Quality Monitoring – Missouri and Kansas agree to operate air quality monitors in accordance with 40 CFR 58 to verify maintenance of the 8-hour standard in the area. Any proposed network modifications must be accompanied by technical and statistical analysis sufficient to document the need to remove, move or add monitors.
4) Contingency Plan – Both states must develop a contingency plan that will, at minimum, ensure that any violation of the 8-hour ozone standard is promptly corrected. The plan must also assure that the contingency measures are adopted expeditiously once they are triggered. The EPA expects the plan to clearly identify the measures to be adopted, including a schedule and procedure for adoption and implementation, and offer a specific time limit for action by the States. A maximum

time limit of 24 months for adoption and implementation of contingency measures is anticipated by the EPA. In addition, both Kansas and Missouri must identify specific indicators, commonly referred to as "triggers", to be used to determine when contingency measures need to be adopted and implemented.

5) Verification of Continued Attainment – This verification is an indication of how the two states will track the progress of the maintenance plan. Verification is necessary based on the fact that the emissions projections made for the maintenance demonstration are based on assumptions of point, area, and mobile source growth. By verifying the assumptions on a periodic basis, States are assuring that the area is in attainment during the entire 10-year maintenance period, not just showing that the area will again be in attainment at the end of the 10-year time period.

In addition to the above requirements, the KCMA must keep all of the controls that are in place for maintaining the one-hour standard. According to Phase I of the 8-hour Rule, an area must first submit a Section 110 (a)(1) maintenance plan before a revision to make any changes to the one-hour controls or contingency measures is considered. At that time, any modifying or removing of one-hour controls must be done under Section 110 (l) of the CAA. This plan revision will address these requirements under Section 110(a)(1) of the Clean Air Act.

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EXISTING STATE REGULATIONS AND CONTROLS

2.1 Existing State Controls on Sources in the Redesignated Area

2.1.1 VOC RACT Rules for the Formerly Designated Non-Attainment Area

The State adopted a series of reasonably achievable control technology or "RACT" rules as required by section 182 of the Clean Air Act. These rules were implemented in Johnson and Wyandotte counties beginning in 1980 to aid in controlling emissions of volatile organic compounds (VOCs). The full set of Kansas air quality statutes and regulations are provided as Appendix I. The following table lists the state RACT rules adopted for the former non-attainment area.

Table 2-1. Kansas RACT rules in Johnson and Wyandotte Counties.

VOC Sources	State Regulation
Surface Coating of Automobiles & Light Trucks	K.A.R. 28-19-63
Tank Truck Gasoline Loading Terminals	K.A.R. 28-19-64
Gasoline Service Stations - Stage I	K.A.R. 28-19-72
Fixed Roof Petroleum Storage Tanks	K.A.R. 28-19-65
Misc. Refinery Sources	K.A.R. 28-19-67
Cutback Asphalt	K.A.R. 28-19-69
Solvent Metal Cleaning (Degreasing)	K.A.R. 28-19-75
Leaks From Petroleum Refinery Equipment	K.A.R. 28-19-68
Surface Coating of Misc. Metal Parts & Products	K.A.R. 28-19-73
Graphic Arts - Rotogravure & Flexography	K.A.R. 28-19-71
Petroleum Liquid Storage in External Floating Roof Tanks	K.A.R. 28-19-66
Leaks From Gasoline Tank Trucks & Vapor Collection Systems	K.A.R. 28-19-70
Wool Fiberglass Manufacturing	K.A.R. 28-19-74

VOC Sources	State Regulation
Lithography Printing Operations	K.A.R. 28-19-76
Liquid Detergent & Chemical Processing Facilities That Operate Hydrogenation for Alcohol Plants	K.A.R. 28-19-77
Solvent Metal Cleaning	K.A.R. 28-19-714
Commercial Bakery Ovens	K.A.R. 28-19-717
Fuel Volatility	K.A.R. 28-19-719

2.1.2 Federal Motor Vehicle Program

The KCMA will also benefit from the continued Federal motor vehicle program which has resulted in significant reductions through time of VOCs and NO_x from motor vehicles. These include such program elements as those that limit tailpipe emissions from motor vehicles (the Tier 0, Tier I, and Tier II rules), the national low emission vehicle (NLEV) program, the on-board refueling vapor recovery program (OBRVR), and those that limit emissions from heavy duty diesel vehicles beginning with model years 1991, 2004, and 2007. The inventory reflects the positive results of the Federal program.

2.2 Enforcement of Existing Ozone State Implementation Plan

This SIP revision updates the 1991, 1997, 2002 and 2005 maintenance plan/SIP revisions. The State of Kansas will continue to enforce the requirements of the 1991, 1997, 2002 and 2005 revisions until this revision is approved. All elements of the 1991, 1997, 2002 and 2005 revisions that are relevant, and unchanged or unaffected by this revision are incorporated by reference to this revised SIP. The State certifies that all existing RACT controls required in past KCMA Ozone SIP revisions will remain in effect after this revision is approved.

2.3 Assurance that Existing VOC Control Measures Have Been Fully Implemented

The State of Kansas certifies that VOC sources in the KCMA subject to the State RACT rules have either installed and are operating RACT controls in compliance with State law, or are on an enforceable compliance schedule.

2.4 Permitting of Existing, New, or Modified Sources

Implementation of the construction and operating permit programs is administered in Wyandotte County by the state and the local air quality agency under an agreement between the state and the agency, and in Johnson County by the state. Existing VOC sources are required to demonstrate compliance with applicable requirements including RACT controls required by the SIP. New and modified sources, prior to construction of a source in the KCMA, must meet the applicable best available control technology (BACT) requirements if subject to the prevention of significant deterioration (PSD) program, or for minor sources, the appropriate levels, which may be RACT. The Kansas operating permits program was approved by EPA on January 30, 1996.

The operating permit program provides the mechanism for defining, implementing, and enforcing controls and limitations on emissions of, among other pollutants, VOCs.

2.5 Voluntary Measures

The State of Kansas, in concert with the Mid-America Regional Council (MARC) and the Missouri Department of Natural Resources (MDNR), have continued to foster voluntary measures to aid in reducing the emissions of VOCs and NO_x in the KCMA. One example, the Kansas City Clean Air Action Plan (CAAP) is included in Appendix G. The Clean Air Action Plan (CAAP) represented a comprehensive, community-based voluntary strategy for reducing ground-level ozone pollution in the Kansas City metropolitan area. Metropolitan Kansas City has a long history of working to improve its air quality through both regulatory and voluntary measures, but the CAAP represented the first time that the region worked to develop a systematic and comprehensive clean air strategy outside of a regulatory framework. At the end of 2003, when violations of the eight-hour standard appeared imminent, the MARC Air Quality Forum created a 12-member Air Quality Working Group (AQWG) to oversee the development of a Clean Air Action Plan for the Kansas City metropolitan region. The group consisted of four elected officials, four representatives of business and regulated industry, and four community group representatives. The AQWG was supported by a technical advisory group consisting of state and local air agency staff.

The working group set an aggressive meeting schedule and, beginning in February 2004, embarked on a mission to better understand the dynamics of the region's ozone problem. The Kansas Department of Health and Environment, MARC, Sonoma Technology, Inc., the Missouri Department of Natural Resources, and EPA Region 7, worked to complete the development of a photochemical model to assess the dynamics of ozone pollution in the region and to evaluate measures that could be used to reduce emissions (see modeling in Section 5).

The largest voluntary commitment to the CAAP was made by Kansas City Power and Light (KCP&L). KCP&L decided to assume a leadership role in keeping the Kansas City area's air clean by investing approximately $280 million in technologies to substantially reduce certain air emissions at existing power plants. The plan would ensure KCP&L meets or exceeds existing and anticipated federal air quality standards. The first plant slated for emission control equipment under the plan is Unit #1 at LaCygne, Kansas. This large electrical generating facility is located south of the KCMA in Linn County, Kansas and has two electrical generating units. Since the prevailing winds during the ozone season are from the south, these additions could have significant impact on ozone production in the Kansas City metropolitan area. Installation of Selective Catalytic Reduction (SCR) equipment at LaCygne unit #1 is scheduled for completion before the ozone season in 2007. This equipment has been codified in a construction permit issued by the State of Kansas on November 18, 2005, and has an emissions limit of 0.15 lb/MMBtu. This equipment will produce NO_x reductions in the range of 63 tons per day or around 23,000 tons per year.

In accordance with the CAAP, MARC has hosted a number of workshops to inform small businesses on innovative methods to decrease their VOC and NO_x emissions. These workshops have focused on area emissions points such as lawn and garden, printing, and autobody painting. Public education and outreach has continued to inform both companies and individuals on how they can do their part to reduce their emissions on high ozone days. MARC has begun to focus on the more long term planning aspects of the CAAP. Transportation has been chosen as the main focus. MARC believes that it offers the most beneficial opportunities for long term air pollution reduction.

The State of Kansas and other local and county governments and businesses continue to implement measures that were identified in MARC’s CAAP. Johnson County Government’s Environmental Department (JCED), active in air quality issues since the late 1980s, initiated their own Ozone Action Plan to determine which portions of the CAAP they could most effectively implement. A strong focus is the use of 85% ethanol, or E85, a form of ethanol which does not increase evaporative emissions. Many of the county’s fleet vehicles run on this alternative fuel, and current efforts are to promote E85 use and to build a fueling station to accommodate fleet needs. Additional fleet vehicles include gas/electric hybrids and two gas/propane hybrids. JCED also issues Ozone Alerts to approximately 25,000 people through the JoCo Link software. This software, designed to issue emergency warnings and alerts to individual computers within county offices as well as for the public, is free and may be accessed on the county’s main website, http://www.jocogov.org. These Ozone Alerts are one of the ways Johnson County participates in MARC’s Workplace Initiative.

The Unified Government of Wyandotte County and Kansas City Kansas is very active in promoting air quality both within the Unified Government (UG) and through outreach. Fleet maintenance is a priority, and members of the air quality team meet with the fleet managers to encourage proper maintenance and tire inflation. The Environmental Services building has incorporated native plants into the surrounding landscaping in order to reduce mowing in order to prevent pollution. They are also working with the Parks and Recreation department to promote the use of native plants throughout the Unified Government’s landscaping.

To educate employees, a bulletin board displays ozone information and tips, which supplements the Ozone Alerts received by employees via email. To facilitate carpooling, the Unified Government maintains an on-line sign-up on their intranet.

The UG has worked with two Wyandotte County school districts to encourage them to voluntarily reduce school bus engine idling time in the time before the anti-idling ordinance is implemented. Ozone Alerts are sent to area schools via fax and holds a poster contents. Schools also receive information about the health effects of ozone. The community at large has the opportunity to take advantage of the UG’s programs which exchange charcoal chimneys for lighter fluid and no-spill gas cans for regular ones.

School districts and bus contractors, recognizing the impact of diesel emissions on students and the community at large, have partnered with the Mid-America Regional Council to retrofit qualifying school buses with diesel emissions technology. Through EPA’s Clean School Bus Program and funding provided by the States of Kansas and Missouri through their Congestion Mitigation and Air Quality (CMAQ) Improvement Program, many school districts will be able to retrofit their buses. The participating school districts include, Blue Springs, Grain Valley, Grandview, Independence, Lee’s Summit, Liberty, North Kansas City, North Platte, Park Hill, Olathe, Blue Valley, Turner, Edwardsville/Bonner Springs, Shawnee Mission, Spring Hill, Desoto, Kansas City Kansas, and bus contractors include Laidlaw, Durham, and Apple Bus. In addition, school districts and bus contractors have various forms of anti-idling policies and practices in place.

The State of Kansas is working with the Greater Kansas City Chamber of Commerce to develop information on Kansas City’s air quality problems that they can present to their members. This information will be presented to the Chamber’s members through newsletter articles, website publications, meetings and possible workshops. The information is intended to increase their member's awareness of the air quality problems and present them with ideas that they can use to help improve the air quality in the Kansas City metropolitan area.

The State also continues to work with the Union Pacific and Burlington Northern and Santa Fe railroads to reduce emissions from their rail yards in Kansas City. The State has attended several meetings with the two main rail companies in Johnson and Wyandotte Counties to explain the air quality issues facing the area. The State discussed several ways that they could voluntarily reduce emissions from their locomotives and the trucks and equipment that they use in their day to day operations. The State will continue to stress the importance of the installation of anti-idling equipment on the switcher locomotives or company policies that reduce the amount of idling from these locomotives.

Another source of emissions that the State of Kansas has actively pursued is that of burning. Agricultural and residential burning can have impacts on the air quality in Kansas City. An example of this occurred in April of 2003, when burning of prairie grass in the Flint Hills region of Eastern Kansas coupled with a weather front led to ozone exceedances in Kansas City and a number of other downwind cites in other states. Since that episode, the State has actively worked with EPA, Kansas State University range management researchers, Kansas State University Research and Extension, the Kansas Department of Agriculture, the Kansas Livestock Association, and other agricultural interests to mitigate future impacts of the yearly burning that occurs in the Flint Hills. With the help of these organizations, the State has taken a voluntary/educational approach to dealing with this issue. The State continues to work with those in the Flint Hills to implement best management practices and to educate them on the potential health effects associated with burning. The State believes this voluntary/educational approach will provide the proper balance between protecting public health and preserving the benefits associated with rangeland burning.

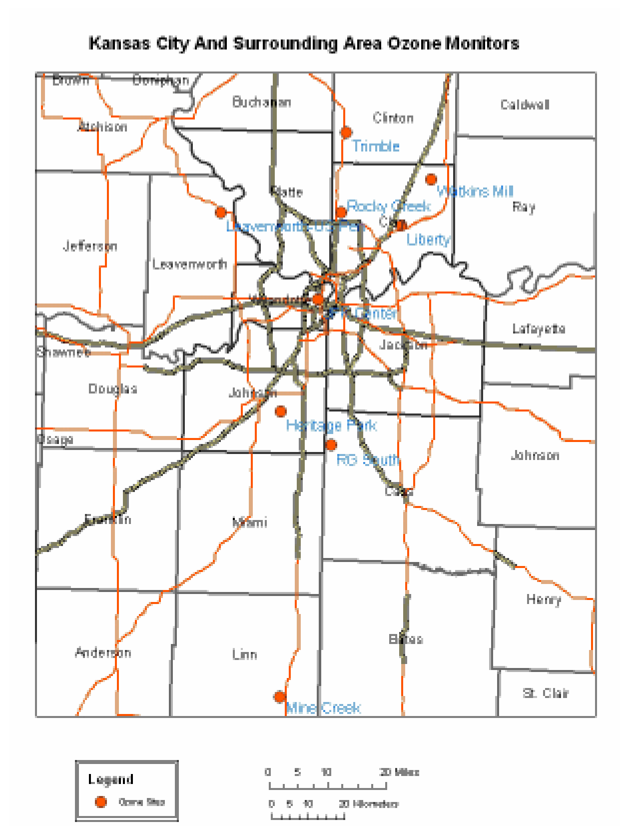
The Small Business Environmental Assistance Program (SBEAP) provides small businesses with technical assistance to achieve environmental regulatory compliance. The program supports companies in their effort to prevent pollution and to improve the bottom line by improving the company's environmental performance. This program continues to be funded by the Kansas Department of Health and Environment and was initiated as a result of the Clean Air Act Amendments of 1990.

The State of Kansas will continue to aggressively pursue all voluntary emissions reduction activities in the Kansas City metropolitan area. Additional information on the voluntary measures being implemented in the Kansas City metropolitan area can be found in Appendix K.

MONITORING NETWORK

<u>3.1 Ozone Monitoring Network</u>

The Kansas City ozone monitoring network consists of eight sampling stations located throughout the region (see **Map 3-1**). Five monitors, Liberty, Watkins Mill Park, JFK, Heritage Park and Rocky Creek, are placed directly in the KCMA. The other three, Leavenworth, Trimble and Richards Gebaur-South are located in adjoining counties. Liberty, Watkins Mill Park, Leavenworth, Trimble and Rocky Creek, are placed downwind of the Kansas City metropolitan area, assuming winds are predominantly from the southwest to southeast, to record peak afternoon eight-hour ozone readings. One monitor is placed in a populated urban core area at the JFK Community Center in Wyandotte County, Kansas. The last two monitors are placed upwind, at Richards Gebaur-South and Heritage Park, to monitor ozone transport from outside the area. For the 2006 ozone season, one monitor was removed from the monitoring network. This monitor was located at the Kansas City International Airport (KCI). The KCI monitor had been in use since 1969. The site was discontinued based on the EPA's recommendations from the Kansas City metropolitan area's monitoring network review. This review also resulted in the movement of a monitoring site from World's of Fun to Rocky Creek.



Map 3-1. Kansas City and Surrounding Area Ozone Monitors.

The State of Kansas revised the SIP Monitoring Plan to update and streamline the existing Monitoring Plan. This Monitoring Plan update was reviewed by EPA, and final action to approve the Plan into the SIP was made on October 29, 2002. The State is operating its monitoring program consistent with the revised Monitoring Plan.

3.2 Ambient Air Monitoring

In 1997, the ozone NAAQS was reviewed, and EPA recommended that the ozone standard be changed from the then current one-hour standard of 0.12 ppm to a new standard of 0.08 ppm averaged over eight hours. As with the one-hour standard, an exceedance is determined on a per monitor basis. An exceedance of the eight-hour standard at a specific monitor is determined by taking the fourth highest ozone reading each year for three years and averaging them together. If this three year average value is greater than 0.08 ppm, that monitor has experienced a violation of the eight-hour ozone NAAQS. The number of significant figures in the level of the standard dictates the rounding convention for comparing the computed 3-year average annual fourth-highest daily maximum 8-hour average ozone concentration with the level of the standard. The third decimal place of the computed value is rounded, with values equal to or greater than 5 rounded up. Thus, a computed 3-year average ozone concentration of 0.085 ppm is the smallest value that is greater than 0.08 ppm.

Table 3-1. Eight-Hour Ozone Exceedances by Year in KC Maintenance Area

Maintenance Monitors Site Address	Year of Ozone Monitoring (April 1st to October 31st)			
Missouri	2003	2004	2005	2006
Liberty-Hwy 33 and County Hwy	7	0	6	10
Lawson-Watkins Mill State Park Road	4	0	1	4
Kansas City – 13131 NE 169th Hwy Rocky Creek*	6	0	8	7
Kansas City- Richards Gebaur South	1	0	2	1
Kansas City – 11500 N. 71 Hwy Kansas City International Airport	1	0	4	N/A
Trimble – Clinton County	N/A	0	4	4
Kansas	2003	2004	2005	2006
Wyandotte County JFK Community Center	3	0	2	2
Leavenworth, KS Sportsman Park	2	N/A	N/A	N/A

Leavenworth, KS U.S. Penitentiary	N/A	0	1	4
Olathe, KS Heritage Park	3	0	1	3
Total	27	0	29	35

* Formerly located at Worlds of Fun

The total number of eight-hour ozone exceedances during the ozone seasons from 2003 through 2006 is listed in Table 3-1. The KCMA has experienced ninety-one exceedances of the eight-hour ozone standard since 2003. Twenty-seven of these exceedances occurred in 2003, twenty-nine occurred in 2005 and thirty-five occurred in 2006. No exceedances of the eight-hour standard occurred in 2004. The Liberty site had seven exceedances in 2003, six in 2005 and ten in 2006 . Watkins Mill Park (Lawson) experienced four exceedances in 2003, one in 2005 and 4 in 2006. Rocky Creek recorded six exceedences in 2003, eight exceedances in 2005 and 7 in 2006. Trimble recorded four exceedances in 2005 and 2006. The monitor at Richards-Gebaur South had one exceedance in 2003, three in 2005 and one in 2006. KCI had one exceedance in 2003 and four in 2005. The Wyandotte County site in Kansas registered three exceedances in 2003, two in 2005 and two in 2006. The site at Heritage Park in Olathe, Kansas registered three exceedances in 2003, one in 2005 and three in 2006. The monitor in Leavenworth, Kansas was located at Sportsman Park in 2003 and registered two exceedances. In 2004, it was moved to the grounds of the U.S. Penitentiary in Leavenworth and recorded no exceedances for that year. In 2005, this monitor recorded one exceedance of the ozone standard, while in 2006 it recorded 4 exceedances.

Table 3-2. Eight-Hour Ozone Exceedances by monitor in the Kansas City Area (in parts per million)

Monitor Location	Year	1st High	2nd High	3rd High	4th High	Total
JFK Community Center 1210 N. 10th St Kansas City, Kansas (Wyandotte County)	2003 2004 2005 2006	0.096 0.115 0.099	0.088 0.104 0.085	0.085		3 0 2 2
Kansas City International Airport Kansas City, Missouri (Platte County)	2003 2004 2005 2006	0.092 0.093 N/A	 0.091 N/A	 0.087 N/A	 0.086 N/A	1 0 4 N/A
(*Replaced Worlds of Fun) Rocky Creek Kansas City, Missouri (Clay County)	2003 2004 2005 2006	0.101 0.097 0.094	0.089 0.089 0.091	0.089 0.088 0.087	0.088 0.087 0.087	6 0 8 7

Watkins Mill Park Kansas City, Missouri (Clay County)	2003	0.096	0.087	0.086	0.085	4
	2004					0
	2005	0.086				1
	2006	0.105	0.093	0.093	0.091	4
County Home Road Liberty, Missouri (Clay County)	2003	0.099	0.094	0.090	0.088	7
	2004					0
	2005	0.092	0.091	0.089	0.088	6
	2006	0.106	0.094	0.094	0.093	10
Trimble (Clinton County)	2003	N/A	N/A	N/A	N/A	N/A
	2004					0
	2005	0.093	0.088	0.087	0.087	4
	2006	0.089	0.087	0.086	0.085	4
Richards Gebaur - South Belton, Missouri (Cass County)	2003	0.097				1
	2004					0
	2005	0.091	0.086			2
	2006	0.087				1
Sportsman Field Leavenworth, Kansas (Leavenworth County) (*moved to U.S. Penitentiary site in 2004)	2003	0.094	0.085			2
U.S. Penitentiary Leavenworth, Kansas (Leavenworth County)	2004					0
	2005	0.096				1
	2006	0.091	0.088	0.087	0.085	4
Heritage Park Olathe, Kansas (Johnson County)	2003	0.106	0.096	0.092		3
	2004					0
	2005	0.085				1
	2006	0.089	0.088	0.086		3

Design values are used as indicators of a region's air quality. The design value is defined as the fourth-highest eight-hour ozone reading over a three-year period at a site.

For each monitor, the design value for the eight-hour standard is determined by averaging the fourth highest eight-hour concentration value that a monitor records in each of three consecutive years. When the three-year average from the same time period is compared across all monitors in the KCMA, the highest value is designated the design value for the KCMA. For the eight-hour ozone standard, the design value for the 2002 through 2004 and 2003 through 2005 time periods achieve attainment for the KCMA. Table 3-3 includes the design values for the eight-hour standard for the KCMA.

Table 3-3. Highest Eight-Hour Design Values for the KCMA

Time Period	Design Value (ppm)	Monitor Location
2002 through 2004	0.082	Liberty, Watkins Mill
2003 through 2005	0.082	Liberty
2004 through 2006	0.084	Liberty

3.3 Eight-Hour Ozone/Missing Data

Eight-hour "missing" days are determined when less than 18 valid eight-hour averages are calculated for the day. For each three-year compliance period, 90% of the 214 ozone season days must be validly monitored. Any one year can include only 75% of the days, but the three year average must be 90%. If these criteria are not met, then compliance cannot be established. To date, acceptable monitoring has been maintained and this criterion has been met in Kansas for the eight-hour standard.

3.4 Commitment to Continue Monitoring Within the Ozone Maintenance Area

The State of Kansas commits to continuing the eight-hour monitoring throughout the period covered by this maintenance plan and to implementing an ozone monitoring network consistent with the recently revised 40 CFR Part 58.

EMISSIONS INVENTORY

4.1 Overview

An emissions inventory is an itemized list of emission estimates for sources of air pollution in a given area, for a specified time period. The two main or most important pollutants that lead to the formation of ground level ozone are VOCs and NO_x. The KCMA is currently in attainment for the 8-hour ozone standard. The main objective of the emissions inventory is to support the revisions of the KCMA's Maintenance Plan as required by the CAA Section 110 (a)(1) and the EPA's Phase I Implementation Rule for 8-hour ozone. In addition, this emissions inventory may be used in future regional ozone modeling applications.

The Phase I Implementation Rule provides that the 10-year maintenance period began as the effective date for the 8-hour ozone standard for the area. The effective date for the initial designation of unclassifiable for the KCMA was June 15, 2004. Therefore, emissions for the KCMA must be projected to 2014. The affected States were given the option of choosing one of the three years that the 8-hour attainment designation is based upon (2001, 2002 and 2003). Since the states were required to develop and submit an inventory for the 2002 National Emissions Inventory (NEI) under the EPA's Consolidated Emissions Reporting Rule (CERR) (40 CFR Part 51), Kansas chose to use 2002 as the attainment emission inventory base year for the Section 110 (a)(1) maintenance plan.

The BAR prepared an inventory for the 2002 NEI as required by the CERR. However, subsequent to submitting the data to the 2002 NEI, substantial revisions and improvements were made to the point, area, and offroad mobile source emissions through the Central Region Air Planning Association (CENRAP) workgroup process for regional haze planning and analysis. In addition, the Missouri Air Pollution Control Program developed updated 2002 onroad mobile emissions estimates for the base year inventory using more current input data, based on the latest MARC vehicle miles traveled (VMT) estimates. The 2002 base year inventory for the KCMA is a composite of inventory data prepared by the Missouri Air Pollution Control Program and data generated through the CENRAP process.

This inventory is comprehensive and current for all 2002 actual emissions of the pollutants that contribute to ozone formation in the KCMA. The inventory addresses emissions of VOCs, NO_x and carbon monoxide (CO) from stationary point and area sources, onroad and offroad mobile sources, and biogenic sources for all five counties of the KCMA. This attainment inventory is based on actual typical ozone season day (OSD) emissions. Ozone season day emissions are defined as emissions occurring during a typical weekday during the high ozone season, which is June through August. Emissions for all categories were calculated for 2002 and 2014 in tons per OSD.

The 2002 KCMA base emissions inventory was a cooperative effort. In addition to the work completed through the CENRAP workgroup process that has been incorporated, MARC, and Missouri's Air Pollution Control Program also made contributions. MARC provided the onroad VMT data for the five county KCMA. Missouri's Air Pollution Control Program developed all of the emissions estimates for all point, area, offroad and onroad mobile categories based on information provided by MARC and the State of Kansas. The State generated the biogenic emissions for the counties in the KCMA from the 2002 EPA NEI inventory located at the ftp site: ftp://ftp.epa.gov/EmisInventory/2002finalnei/biogenic_sector_data/ . An ozone emissions inventory was prepared for the Kansas City Maintenance Area (KCMA) for calendar year 2002. The inventory addresses emissions of volatile organic compounds (VOCs), oxides of nitrogen (NO_x), and carbon monoxide (CO) from point, area, onroad mobile, and offroad mobile sources. VOC and nitrogen oxide (NO) emissions from biogenic sources are also addressed. The complete KCMA inventory includes emissions from Johnson and Wyandotte counties in Kansas and Clay, Jackson, and Platte counties in Missouri.

More detailed information is provided in the Inventory document provided as Appendix B.

4.2 Point Source Emissions

Point source emissions data on certain sources are collected each year, in Kansas, via the annual operating permit fee program. All facilities in Kansas that have actual emissions more than 100 tons of VOC and/or NO_x per year are required to submit a fee, which is based upon quantities of emissions.

Point source emissions were taken from the State of Kansas' I-Steps emissions inventory database for calendar year 2002, or 2005 for EGU's and other selected sources. The reported emissions represent the results from facility surveys of actual annual emissions emitted in 2002. Following submission of the Kansas point source inventory to the 2002 NEI, additional quality assurance and revision of the data was completed through the CENRAP process. Pechan, through a contract with CENRAP, obtained the Kansas point source inventory and worked with the BAR to make corrections where needed.

Pechan also converted the point source inventory to the Sparse Matrix Operator Kernel Emissions / Inventory Data Analyzer (SMOKE/IDA) format. Pechan's work is described in detail in the two documents *The Consolidation of Emissions Inventories* (April 28, 2005) and *Refinement of CENRAP's 2002 Emissions Inventories* (August 31, 2005). These two documents can be found in Appendix E and Appendix F respectively.

The SMOKE/IDA-formatted file prepared by Pechan was considered to be the most accurate and current version of the 2002 Kansas point source inventory and therefore was used as the basis for the base year inventory summarized in this document. The file contained the annual emissions for all point sources and ozone season day emissions where this information was provided in inventory reports. Because ozone season day emissions information was not complete, the SMOKE model was used to calculate typical ozone day emissions for almost all point sources in the KCMA in order to apply consistent procedures to all sources. An explanation of how the typical ozone season day was calculated can be found in Appendix D.

The ozone season day emissions data available from emissions reports and SMOKE model calculations were used to determine the emissions levels for the future attainment year of 2014. To project the future emissions levels, the EPA's Economic Growth Analysis System (EGAS) v5.0 software was used to determine the growth factors for all emissions sources. EGAS v5.0 allows the user to first set the base year of the known emissions. The future year is then chosen and EGAS calculates the growth factor based on Source Classification Code (SCC) and county codes for all emissions sources. The following equation can then be used to determine the 2014 emissions levels from all point sources:

2014 OSD emissions = 2002 OSD emissions x 2014 growth factor

This calculation was done on most of the point sources to project their emissions. There were a small number of point sources that had undergone significant changes since the 2002 emissions inventory. Kansas and Missouri identified those point sources that had either closed; added emissions control devices, or recently opened. Depending on the status of the point source, the emissions from these sources were removed, reduced or added to the inventory for the 2014 projected emissions. The number of sources that had significant changes that required adjustments to their emissions inventory totaled less than ten for the five county KCMA.

The only source category that was calculated differently from the basic growth method was the projected emissions from EGUs. Due to the dramatic changes in the energy sector between 2002 and 2005, it was determined that 2005 was a more representative year for current and future emissions from various EGUs rather than 2002. Therefore, 2005 emissions year data was used in place of 2002 emissions source data for projections in the KCMA. The 2005 point source EGU emissions data was then used to calculate the 2014 projected emissions using the same growth factor calculation listed above.

A comparison of the Kansas point source emissions for 2002 versus 2014 reflects a slight increase in both NO_x and VOC emissions.

More detailed information is provided in the Inventory document provided as Appendix B.

4.3 Area Source Emissions

Area sources are stationary sources that do not qualify as point sources under the relevant emissions cutoffs. Area sources encompass more widespread sources that may be abundant but individually release small amounts of a given pollutant. Examples of area sources include autobody painting, fires, dry cleaners, and consumer solvent use.

The 2002 area source inventory is a consolidation of the best available area source emissions data. It includes emissions estimates prepared by the Air Pollution Control Program of MDNR and CENRAP, with remaining gaps filled in with data from the EPA's NEI. For the categories developed by MDNR's Air Pollution Control Program, the data and methods used are described in the document *Missouri Stateside Estimates for the 2002 National Emissions Inventory (NEI): Area Sources*. This document can be found in Appendix L. The data and methods used to develop the prescribed burning inventory for CENRAP are discussed in Sonoma Technology's report *Research and Development of Planned Burning Emission Inventories for the Central States Regional Air Planning Association* (July 30, 2004). Sonoma Technology's report is located in Appendix G. Documentation of the EPA's methods for the NEI may be found on the EPA's Clearinghouse for Inventories and Emissions Factors (CHIEF) website at http://www.epa.gov/tnn/chief/net/2002inventory.html.

In a contract with CENRAP, Pechan consolidated the area source data from the various sources, conducted additional quality assurance, and worked with BAR to make revisions where needed. Pechan also converted the area source inventory to the SMOKE/IDA format. Pechan's work is described in detail in the two documents *The Consolidation of Emissions Inventories* (April 28, 2005) and *Refinement of CENRAP's 2002 Emissions Inventories* (August 31, 2005).

The SMOKE/IDA-formatted file prepared by Pechan was considered to be the most accurate and current version of the 2002 Kansas area source inventory and was used as the basis for the base year inventory summarized in this document. The file contained the annual emissions for all area sources and ozone season day emissions for some categories. Because ozone season day emission information was not complete, the SMOKE model was used to calculate typical ozone day emissions for all area sources in the KCMA in order to apply consistent procedures to all sources.

The ozone season day emissions data available from the SMOKE model calculations were used to determine the emissions levels for the future attainment year of 2014. To project the future emissions levels, the EPA's EGAS v5.0 software was used to determine the growth factors for all emissions sources. EGAS v5.0 allows the user to set the base year of the known emissions. The future year is then chosen and EGAS calculates the growth factor based on SCC and county codes for all emissions sources. The following equation can then be used to determine the 2014 emissions levels from all area source categories:

2014 OSD emissions = 2002 OSD emissions x 2014 growth factor

Some portions of the federal ORVR requirements that have been enacted on a rolling basis have also reduced emissions from some area SCC categories. When the Onroad mobile model is run, we do not include refueling. That option is shut off on the model. The model runs even say "NO REFUELING" at the top. Refueling is considered to be an area source. Therefore, refueling appears in the area source category rather than being included in the mobile source total emissions value. Therefore, since onboard vapor recovery systems (ORVR) in a vehicle control emissions during refueling, it is taken into account by taking reductions from the area source categories it affects. These adjustments were taken into account by the following equation:

2014 adjusted OSD emissions = 2014 OSD emissions x (1-[(CE)x(RE)x(RP)]/1000000)

where CE is the control efficiency of the rule, RE is the rule effectiveness, and RP is the rule's penetration, all in percentages. Control efficiency represents the amount of a source category's emissions that are controlled by a control device, process change, or reformulation. CE values for area sources represent the weighted average control for the category. Rule effectiveness is an adjustment to the CE to account for failures and uncertainties that affect the actual performance of the control. The EPA recommends a default value of 80 percent for RE, if information cannot be acquired to substantiate the true value of RE. If controls are irreversible process changes or reformulations, RE can be set at 100 percent. Rule penetration is defined as the percentage of the area source category that is covered by the applicable regulation or is expected to be complying with the regulation. The RP value can be based on a percentage of the source category that is covered by a regulation.

A comparison of Kansas' typical ozone season day area source emissions for the 2002 ozone season versus the 2014 ozone season reflects a slight decrease in VOCs and a slight increase in NO_x.

More detailed information is provided in the Inventory document provided as Appendix B.

4.4 Mobile Source Emissions

Onroad mobile sources include motor vehicles such as cars, vans, trucks, buses, and motorcycles that are used for transportation of passengers and goods on public roads and streets. Internal combustion (IC) engines power nearly all mobile sources other than jet or turboprop aircraft. IC engines can be either spark–ignition engines such as most automobiles have, or compression-ignition (diesel) engines such as larger (heavy duty) trucks. Almost all mobile sources use liquid fuels such as gasoline or diesel fuel.

4.4.1 Onroad Mobile Sources

The Missouri's Air Pollution Control Program used the Mobile 6.2 model to estimate onroad vehicle emissions for the 2002 base year inventory and the 2014 projected year inventory for both the Kansas and Missouri portions of the KCMA. Input file information was adjusted to reflect the 7.0 RVP fuel requirement for the KCMA, as well as the maximum, minimum and mean temperature data for the ozone season. Temperature information was obtained from the Weather Channel's website at www.weather.com. For the 2014 projected emissions, the Mobile 6.2 model takes into account any federal control measures that will result in a decrease in emissions. Table 6-1 in Appendix B provides a table of the settings that were changed from the default Mobile 6.2 values. The Mobile model provides an emissions rate in grams/mile.

The 2002 and 2014 VMT county data for the each of the five counties in the KCMA was obtained from MARC in July of 2006. MARC developed the average daily VMT estimates for each county for both 2002 and 2014 using the EMME/2 regional travel demand model. EMME/2 was validated against 1998 average daily traffic counts and count-derived VMT to determine whether it reasonably reflects vehicular travel patterns. Some factoring of model-based assignments and/or count data was required because the regional travel demand model estimates are for the year 2000, consistent with MARC's regionally adopted forecasts for population and employment. The validation of the EMME/2 included a review of the network coding and a check of the accuracy of counts used for validation, as best as possible, versus available historical counts. Network estimated traffic speeds generated by EMME/2 were also checked versus recently observed values. Seasonal adjustments were made to the average daily VMT based on summer travel information from the Missouri and Kansas Departments of Transportation. The VMT data for each county in the KCMA can be found on Table 6-2 in Appendix B.

In order to determine the typical ozone season daily emissions, the Mobile 6.2 emissions rate is converted to tons/mile and multiplied by the VMT for each county. The following equation was used to determine the OSD emissions:

2002 onroad emissions = 2002 emissions rate (g/mi.) x (1 ton/907184.74g) x VMT for county

The individual county emissions were then added together to determine the total emissions for the Kansas portion of the KCMA.

A comparison of the Kansas onroad mobile sources emissions for 2002 versus 2014 shows a large decrease in VOC and NO_x emissions. These large reductions can be traced to the federal control measures that are being enacted between 2002 and 2014.

More detailed information is provided in the Inventory document provided as Appendix B.

4.4.2 Off-Road Mobile Sources

Offroad mobile sources are mobile and portable I/C powered equipment not generally licensed or certified for highway use. Offroad engines are classified according to distinct offroad equipment categories. These categories range from small lawn and garden equipment to heavy-duty construction equipment, large aircraft and diesel locomotives.

The Missouri's Air Pollution Control Program calculated the majority of the offroad emissions using the EPA's NONROAD2005 Model. This model provides the emissions for all offroad source categories except aircraft, commercial marine vessel, and railroad locomotive. For the 2002 ozone season day run, most settings were left as default. The maximum, minimum and average summer temperatures were changed, and the gasoline fuel RVP was set to 7.0 psi. For the 2014 projected ozone season day run, these variables were changed, as was the sulfur content for diesel fuel. By 2014, Ultra Low Sulfur Diesel will be required for all offroad use except locomotive and marine. Table 5-1 in Appendix B provides all of the settings that were changed from the default values for the NONROAD2005 runs.

The emissions calculations for aircraft, commercial marine vessels, and railroad locomotives were calculated from the SMOKE/IDA formatted file prepared by Pechan. The SMOKE model was used to calculate the typical ozone day emissions from these sources for 2002. The 2014 projected emissions were determined by using the EPA's EGAS v5.0 software. EGAS v5.0 allows the user to set the base year of the known emissions. The future year is then chosen and EGAS calculates the growth factor based on SCC and county codes for all emissions sources. The following equation can then be used to determine the 2014 emissions levels from aircraft, commercial marine vessels, and railroad locomotives:

2014 OSD emissions = 2002 OSD emissions x 2014 growth factor

These emissions were then incorporated into the offroad emissions tables.

A comparison of the 2002 and 2014 offroad emissions for Kansas show a large reduction in both VOCs and NO_x emissions.

More detailed information is provided in the Inventory document provided as Appendix B.

4.5 Biogenic Emissions

Biogenic sources are biological sources of ozone precursor emissions such as trees, agricultural crops, or microbial activity in soils or water. The EPA's *Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations* (August 2005) encourages the use of biogenic estimates for the NEI as the basis for SIP and Maintenance Plan inventories. The county-level biogenic emissions estimates summarized in the KCMA base and projected year inventories were obtained from the 2002 NEI inventory from the EPA's ftp site: ftp://ftp.epa.gov/EmisInventory/2002finalnei/biogenic_sector_data/ . The EPA prepared the biogenic emissions using the BEIS3.12 model via the SMOKE modeling system. The BEIS3.12 inputs were based on 2001 annual meteorology and the BELD3 land use data. The county-total emissions from SMOKE were estimated based on the "land area" spatial surrogate.

The biogenic emissions data for a typical ozone season day were determined by summing the emissions for the months of June, July and August for each county, and dividing the county's three month total by 92 days. The result is the biogenic emissions for a typical ozone season day. It was assumed that the biogenic emissions for 2002 and 2014 would be similar.

More detailed information is provided in Table 2-3 in the Inventory document provided as Appendix B.

4.6 Maintenance Demonstration

The 2002 total anthropogenic emissions for the total KCMA are 226.42 tons/OSD of VOCs and 316.09 tons/OSD of NO_x. The projected 2014 anthropogenic emissions for the KCMA are 181.07 tons/OSD of VOCs and 180.08 tons/OSD of NO_x. Currently the KCMA is in attainment for the 8-hour ozone standard. Based on the emissions reductions of ozone precursors as a result of upcoming federal rulemakings already in place, the emissions projections of this maintenance plan demonstrate that the area's emissions will remain below the 2002 attainment year's emissions in 2014. It is important to note that the formation of ozone is dependent on a number of variables that cannot be estimated by emission growth and reduction calculations. These variables include weather and the transport of ozone forming compounds from outside of the maintenance area.

4.7 Commitment to Update Emissions Inventory

The State of Kansas commits to update the emissions inventory for the KCMA Ozone Maintenance Area every three years, beginning with the 2005 date, which is three years after the 2002 base year used for this Plan revision. For the 2005 inventory only, The State will provide point source information recorded in our I-STEPS database and will use area, mobile, and biogenic information produced by the EPA. Information from these future updates of the emissions inventories will be compared with the 2002 inventory data to assure that the standard is maintained.

-5-

Modeling

<u>5.1 Purpose of Modeling</u>

To help support the development of the CAAP, photochemical modeling was performed on a single historical ozone episode in Kansas City. The State of Kansas understands that EPA has specific guidelines regarding the manner in which photochemical models can be used to assess regional ozone problems and to evaluate proposed controls. For SIP modeling purposes, EPA requires that <u>multiple</u> meteorological regimes be evaluated to determine the effect that different weather conditions may have on ozone formation and dispersion. EPA also requires that modelers use the most recent emissions inventory data available, as well as meteorological data from the most recent high ozone episodes, when modeling is used to demonstrate future year attainment of federal air quality standards. Although the work performed in support of the CAAP does not meet the multiple meteorological regime requirements, the modeling episode evaluation plan followed the procedures recommended by the USEPA (U.S. Environmental Protection Agency, 1991, 1999) for ozone attainment demonstration modeling. The results of the modeling were utilized to inform the decisions regarding selection of source categories to include in the contingency measures. The modeling was <u>not</u> used to demonstrate future attainment of the 8-hour ozone standard.

<u>5.2 Modeling</u>

The working group set an aggressive meeting schedule and, beginning in February 2004, embarked on a mission to better understand the dynamics of the region's ozone problem. The Kansas Department of Health and Environment, MARC, Sonoma Technology, Inc., the Missouri Department of Natural Resources, and EPA Region 7, worked to complete the development of a photochemical model to assess the dynamics of ozone pollution in the region and to evaluate measures that could be used to reduce emissions. As part of that modeling effort, August 17-22, 1998, a historical period with high ozone concentrations, was selected for analysis. The first step in the process was to prepare an emissions inventory that was as representative as possible for that historical event. An initial 1998 base year emissions inventory was assembled and processed through the EPA's Sparse Matrix Operator Kernel Emissions Modeling System (SMOKE) by the State of Kansas as part of the modeling effort, and improvements were subsequently made to this inventory by the State including the use of:

- The Biogenic Emission Inventory System Version 3 (BEIS3) to estimate emissions from biogenic sources.
- EPA's MOBILE6 model to estimate emissions from on-road mobile sources.
- Continuous Emissions Monitoring (CEM) data for Kansas and Missouri electric generating units.

Further improvements were made to the 1998 inventory by Sonoma Technology, Inc. (STI), including reprocessing mobile source emissions to better account for link-based vehicle miles traveled (VMT) in the Kansas City area and refueling emissions throughout the modeling domain. To assess air quality in the future, the State of Kansas and STI with assistance from the Missouri Department of Natural Resources (MDNR), the Mid-America Regional Council (MARC), and the U.S. EPA constructed a 2010 emissions inventory.

Area source emissions were derived by projecting the US EPA's 1999 National Emission Inventory (NEI) to 2010 using growth factors generated by the US EPA's Economic Growth Analysis System (EGAS). For some source categories, such as locomotives and commercial marine vessels, alternative growth factors were chosen in keeping with federal regulatory support documents. Also, control factors were applied to some sources, such as locomotives and consumer/commercial solvent use, to represent existing federal control measures.

Emissions from non-road mobile sources other than locomotives, commercial marine vessels, and aircraft[1] were estimated using the EPA's NONROAD model. This model was run for 2010 with default activity data and temperature and fuel characteristics inputs specific to the Kansas City area. NONROAD outputs were reformatted and processed through SMOKE.

Emissions from on-road mobile sources were estimated using vehicle miles traveled data and emission factors produced by the EPA's MOBILE6 model. For all areas outside Kansas City, 1998 VMT were grown to 2010 levels using EGAS projection factors. For the Kansas City area, 2010 link-based VMT data were developed by MARC, and all VMT data were processed through SMOKE in order to apply MOBILE6 emission factors and estimate emissions. MOBILE6 input files for 2010 were developed using controls currently scheduled to be in place before 2010, such as gasoline Reid vapor pressure (RVP) standards, inspection-and-maintenance (IM) programs, and Stage II controls on vehicle refueling processes. All MOBILE6 runs were performed within the SMOKE modeling system.

For all states except Kansas and Missouri, emissions for electric generating unit (EGU) point sources were derived from runs of the EPA's Integrated Planning Model (IPM). For Missouri, 2010 EGU emissions were estimated by MDNR from surveys of specific facilities, and 2010 EGU emissions for Kansas were similarly estimated by the State. For non-EGU point sources, 1999 NEI point source data was projected to 2010 using EGAS growth factors, and control factors were also applied to represent existing control measures.

The photochemical grid model chosen for use in this study is the Comprehensive Air Quality Model with extensions (CAMx). CAMx has been used in air quality assessments for SIP's and early action compacts by various regulatory agencies throughout the US. Because air quality models must account for the effects of long-range pollutant transport, multiple grid domains are utilized, with the grid resolution becoming finer and finer the closer one gets to the area of interest. For the Kansas City model runs, three nested domains were used: a large 36-km domain, an intermediate 12-km domain, and a 4-km domain for the Kansas City and St. Louis areas (see **Figure 5-1**).

Once the model was run for 1998, an evaluation of the simulations was made in accordance with the EPA guidelines. Comparisons of model-predicted ozone levels were made with ambient air quality data to determine how closely ozone concentrations predicted by the model correspond to observed concentrations.

It is important to establish a framework for assessing whether the photochemical modeling system (i.e., the emissions, meteorological and dispersion models and their supporting data sets) performs with sufficient reliability to justify its use in developing ozone control strategies. The framework for assessing the model's reliability consists of the following principles:

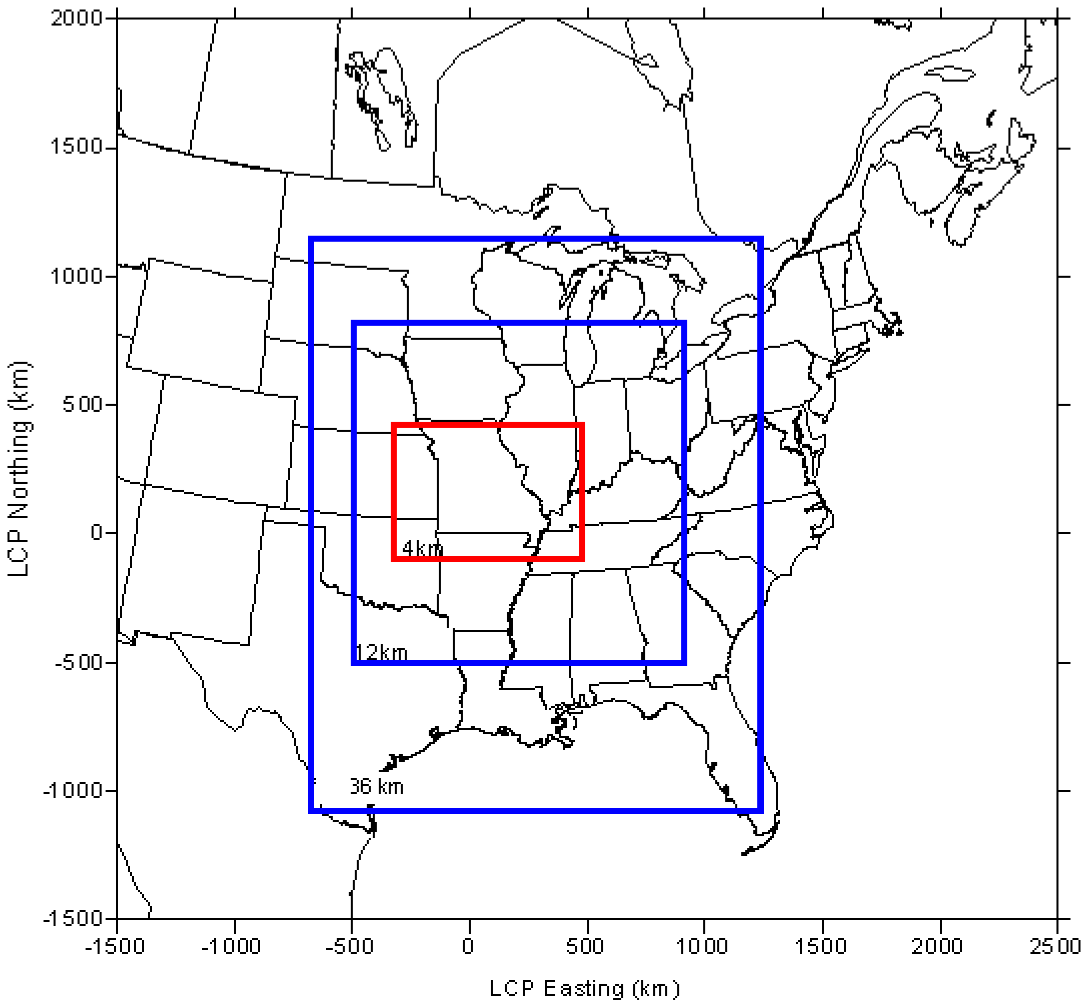


Figure 5-1. Grid definitions for the 36-km, 12-km, and 4-km modeling domains.

- **The model should be viewed as a system.** When one refers to evaluating a "model", one means the model in the broad sense. Model includes not only the photochemical model, but its various components: companion preprocessor models (i.e., the emissions and meteorological models), the supporting aerometric and emissions database, and any other related analytical and numerical procedures used to produce modeling results. A principal emphasis in the model testing process is to identify and correct flawed model components.

- **Model acceptance is a continuing process of non-rejection.** Over-reliance on explicit or implied model "acceptance" criteria should be avoided. This includes USEPA's performance goals (U.S. Environmental Protection Agency, 1991). Models should be accepted gradually as a consequence of successive non-rejections. Over time, confidence in a model builds as it is exercised in a number of different applications without encountering major or fatal flaws that cause the model to be rejected.

- **Previous experience should be used as a guide.** Previous photochemical modeling experience serves as a primary guide for judging model acceptability. Interpretation of the modeling results for each episode, against the backdrop of previous modeling experience, will aid in identifying potential performance problems and suggest whether the model should be tested further or rejected.

- **Criteria for judging model performance should remain flexible.** The criteria for judging the acceptability of model performance should remain flexible.

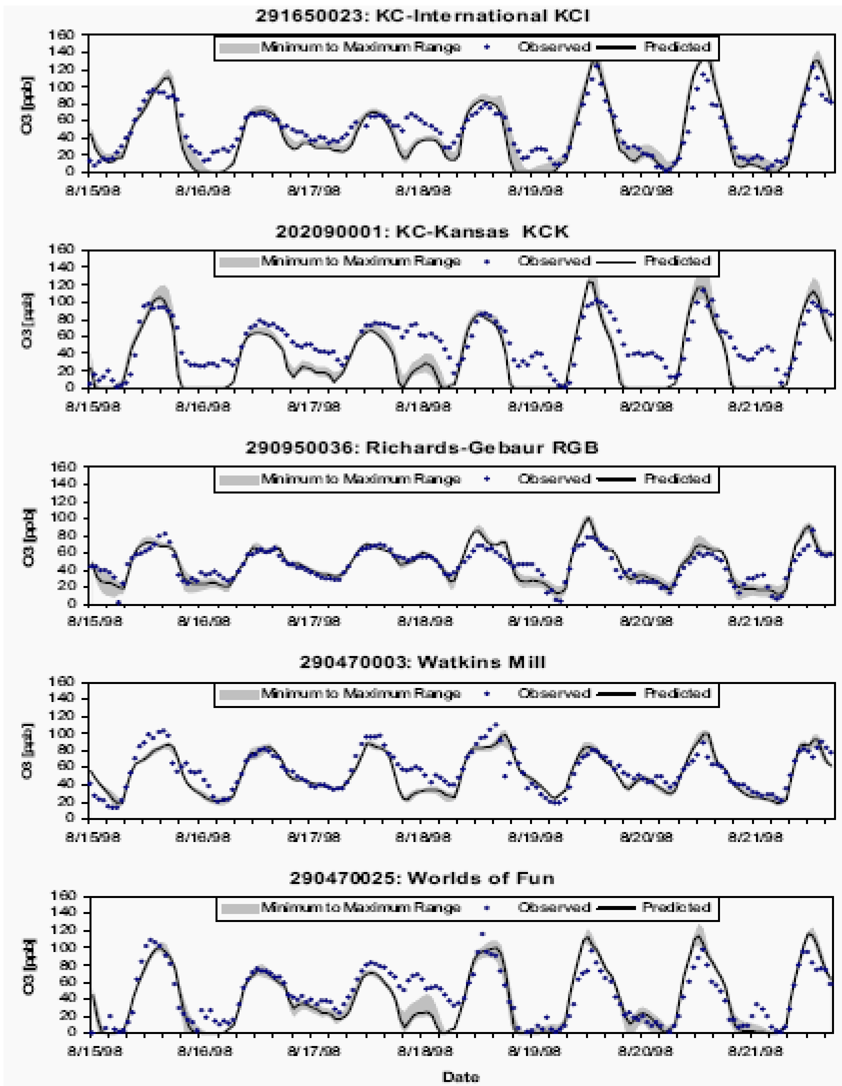


Figure 5-2. Observed vs. predicted one-hour ozone concentrations for monitoring sites in the Kansas City area.

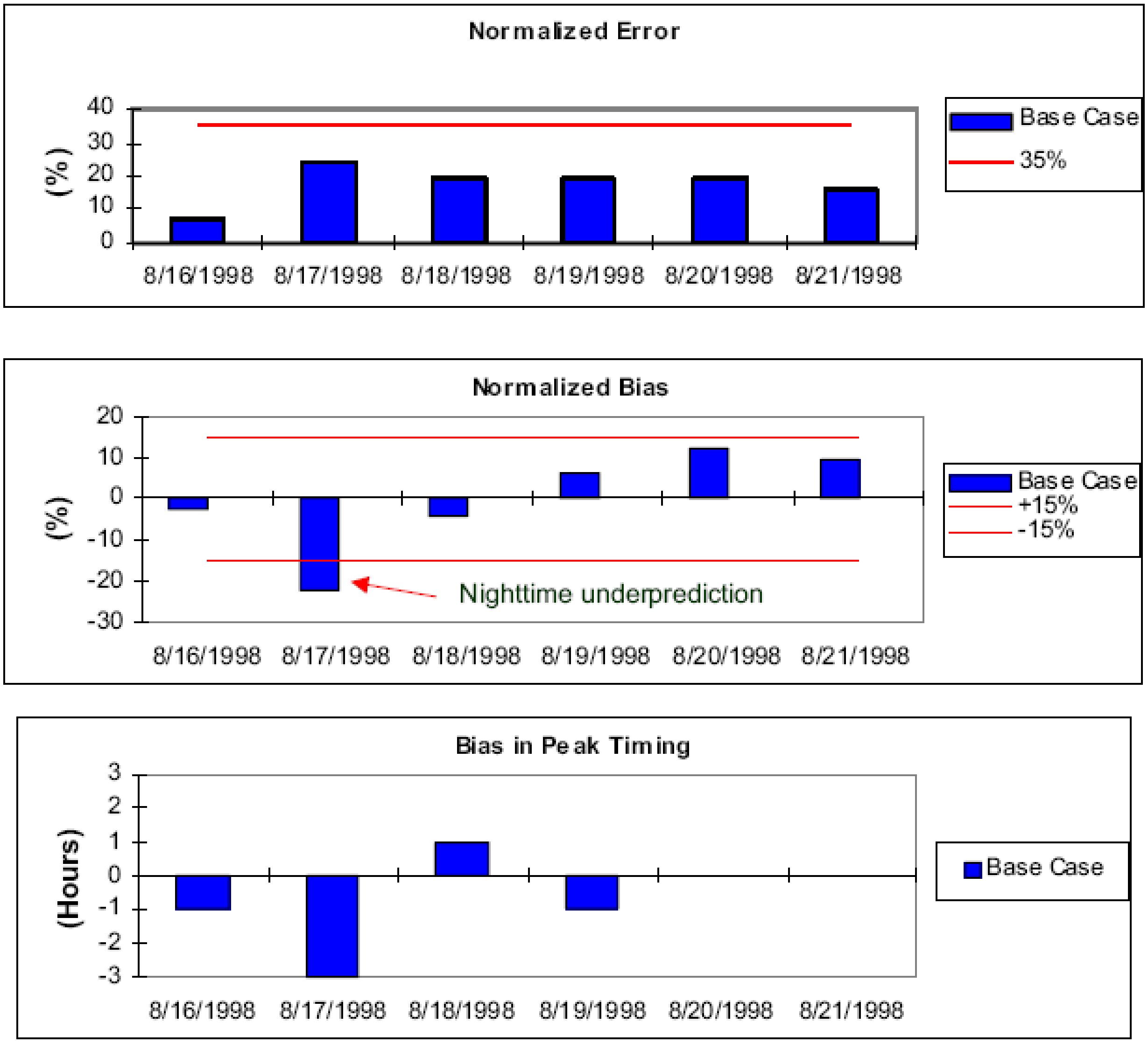


Figure 5-3. Model performance evaluation statistics.

Figure 5-2 depicts the time-series plots of predicted ozone and observed ozone for each hour of the day over the entire ozone episode. As shown in the figure, the model predicts ozone quite well at all sites and for most hours of the day with a few minor exceptions (the model tends to under-predict ozone levels at night in the urban core area). The deviations however, do not reach a level of concern and the overall model performance statistics met EPA criteria for acceptance as shown in Figure 5-3.

Once it was established that the air quality modeling system was adequately reproducing ozone levels for the historic (August 1998) episode, the model was re-run substituting emissions from 1998 with projected 2010 emissions (without any additional local controls) to predict future-year ozone concentrations. The model predicts a peak 8-hour ozone concentration of 93 ppb in 2010, which is categorized as unhealthy for sensitive groups (see **Figure 5-4**). For the chosen ozone episode, this peak value was predicted to occur in northern Platte County – an area that does not currently have an ozone monitor. Using the relationship between the peak ozone and the ozone design value for the Kansas City area historically, the predicted ozone design value for 2010 would fall just below the 8-hour ozone NAAQS. Since, the predicted peak ozone level is above the standard and the ozone design value is close to the NAAQS, it was determined that assessing control strategies to reduce emissions leading to ozone formation in the Kansas City area would be a valuable tool for policy makers.

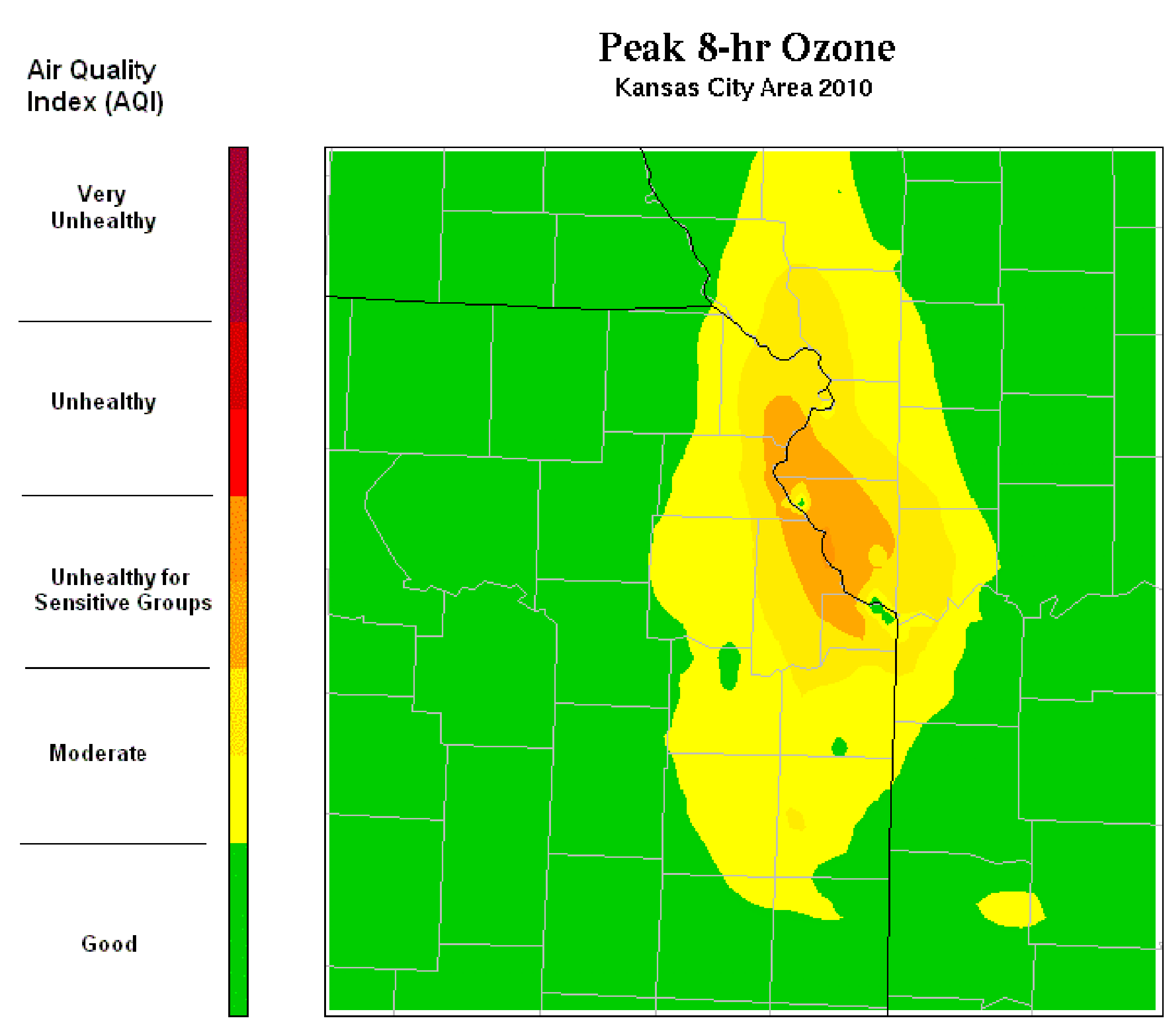


Figure 5-4. Peak 8-hour ozone concentrations in the Kansas City area for 2010.

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CONTINGENCY PLANNING

6.1 Purpose of Contingency Planning

Section 110(a)(1) of the Federal Clean Air Act requires that maintenance plans include VOC and NO_x control measures necessary to assure prompt action to correct any violation of the standard which occurs after the area is redesignated to attainment. For attainment areas, additional controls are to be implemented in response to ozone violations, and/or increases in VOC or NO_x emissions that threaten the standard after an area is redesignated to attainment. The purpose of these controls in attainment areas is to achieve sufficient VOC and/or NO_x emission reductions to eliminate further ozone violations. Implementing controls in response to ozone violations in attainment areas can occur without federal redesignation of the area to nonattainment. It should also be noted that the pollutant of concern is ozone, for which VOCs and NO_x are precursors.

After the 2005 transitional plan was completed, EPA informed the State in March of 2005 that a maintenance plan for Kansas City would be due in June of 2007. With this information in hand, work began on the new 8-Hour Ozone Maintenance Plan for the KCMA. Discussions were held between the states of Kansas and Missouri to establish a tentative outline for the organization of the plan, as well as the emissions inventory and potential modeling of a new episode for the area. A technical workgroup was created to provide the opportunity for concerned stakeholders from the Kansas City area to take part in the creation of the Maintenance Plan that would act as the air quality guidance for the area until 2014.

Due to the KCMA's current status as an attainment area for the 8-hour standard, one of the main focuses of the plan was the contingency measures and associated triggers. Over the course of several months, this group looked at a wide range of possible measures that could be implemented in the KCMA as contingency measures. Once a short list of measures had been developed, a large NO_x stakeholder's meeting for those that might be impacted by the contingency measures was organized. Letters to all potentially affected sources were sent out and the meeting notice was posted on the BAR website. The meeting was held on September 11, 2006 and was a success and all invited sources, except one EGU, attended the meeting.

As a follow up to this meeting, the State met several times individually with an electrical generating facility, a glass manufacturing plant and a large automobile manufacturing plant to discuss the contingency measures and how they might affect their facilities and what they might be required to do as a result of implementation of these measures. Phone calls and letters were also exchanged between these facilities and the State as further discussions were needed. Discussions were also held with several fiberglass manufacturing facilities located in Wyandotte County during the fall of 2006 and several contacts were made with the Kansas Motor Carriers Association.

To continue the public participation process, the Plan and its contingency measures were also presented and discussed at numerous meetings across the area. Some examples included two Clean Air Act Advisory Group meetings in August 2006 and February 2007, a Midwest Air and Waste Management Association annual meeting in January 2007 and numerous MARC Air Quality Forum meetings in Kansas City. The attendance records of all participants in these meetings have been or can be obtained by the State.

These meetings provided companies the opportunity to discuss their reactions to the proposed contingency control measures. It also allowed those regulating the industries the opportunity to communicate their goals and plans for various contingency control measures. The final outcome of all of the meetings and workgroups was a contingency control measures list that included a variety of control measures that would impact sources of both VOCs and NO_x.

The State collected information based on these discussions and information from industry, metropolitan planning organizations, EPA and other states regarding the magnitude of VOC and NO_x emission reductions from various control strategies. The effectiveness and viability of possible control measures were compared. Some controls interact with other controls thereby decreasing the overall effectiveness. Estimates of the emission reductions expected from implementation of mobile source measures have been obtained from MOBILE6 estimates where applicable. The major considerations that went into choosing the following control strategies were:

- overall benefit of controls;
- cost effectiveness, and;
- easily realized reductions with minimal lead in time.

Two potential contingency measures that have been looked at in past Kansas City Maintenance Plans but were not included in this Plan were Stage II Vapor Recovery and Inspection and Maintenance (I & M). The three factors listed above figured heavily in deciding not to pursue these measures.

Stage II Vapor Recovery

Stage II vapor recovery is an emissions control technique used to prevent the release of gasoline vapors while vehicles are refueling. Gasoline vapors consist of volatile organic compounds (VOCs), such as benzene and formaldehyde, which are precursors to ground level ozone.

Stage II vapor recovery systems (VRS) capture the vehicle refueling vapors and return them back into the gas station's underground storage tank. Two common types of VRS are vapor balance systems and vacuum assist systems. Vapor balance systems use a corrugated boot placed over the nozzle to form a seal between the nozzle and the vehicle. Vacuum assist systems are often "bootless" using a vacuum pump to pull vapors from the fuel tank.[1] Stage II programs can achieve between 50-90% control efficiency depending on how well the program is implemented.[1] Efficiency varies with the availability of resources for program oversight and the number of exemptions allowed. While many areas have achieved VOC reductions with the use of Stage II vapor recovery, the continued effectiveness of such programs has declined due to technological advances in automobile design.

In 1994, federal standards were promulgated requiring new vehicles to be equipped with on-board refueling vapor recovery (ORVR) technology. In a vehicle equipped with ORVR technology, the gas tank and fill pipe are designed so that an activated carbon packed canister adsorbs the fuel vapors released during refueling. When the engine operates, it draws the gasoline vapors into the engine intake manifold to be burned as fuel. The phase-in of ORVR was completed as follows: light duty vehicles (< 6,000 lbs) began in 1998 and were completed in 2000, pickup trucks and SUVs (6,001-8,500 lbs) began in 2001 and were completed in 2003, and heavy duty vehicles (8,501-10,000lbs) began in 2004 and will be completed with the 2006 model year.

The efficiency of ORVR controls is estimated to be 95-98%.[1] In some cases, ORVR is incompatible with vapor recovery systems. When vacuum assist systems are used in conjunction with ORVR, emissions may actually be higher than with ORVR alone.[1] The State of California has developed the Enhanced Vapor Recovery (EVR) program to improve ORVR compatibility and increase the overall efficiency of Stage II systems. However the upgraded technology required by the EVR program raises the cost of implementation significantly.[3]

According to a study completed in Tennessee, the cost of implementing Stage II vapor recovery ranges from $10,000-$29,000/ton of VOC reduction.[2] The California Air Resources Board (CARB) estimates the cost of upgrading existing Stage II vapor recovery systems to EVR standards to be $32,260/ton of VOC reduced. CARB projects the cost of installation in stations without existing systems to be $13,400/ton in 2009 dollars.[2] In order to administer a Stage II vapor recovery program, adequate resources must be available for establishing a permit program, performing inspections, and enforcement.

Given the cost of implementation and the declining potential for emission reductions, many areas that implemented Stage II programs as a result of non-attainment designations are currently in the process of phasing out their programs. Section 182(b)(3) of the CAA gives the EPA authority to waive Stage II control requirements for serious or worse ozone attainment areas after it is determined that ORVR systems are in “widespread” use. At the present, EPA is working with states and other stakeholders to define widespread use.

While Stage II vapor recovery programs have been instrumental in reducing emissions in the past, the continued usefulness of these programs is declining. Stage II programs are expensive and cumbersome to implement, with less emission reductions benefit due to ORVR standards.

Even areas with serious ozone problems are planning on phasing out Stage II programs because of the declining cost effectiveness. For these reasons, the Bureau of Air and Radiation will not be including Stage II vapor recovery as a contingency measure in the Kansas Eight-Hour Ozone Maintenance Plan for Kansas City.

[1] Stage II Vapor Recovery Systems Issues Paper. 2004. US EPA. Office of Air Quality Planning and Standards.
[2] Cost Benefit Analysis for Stage II VRS Control in the Knoxville EAC Area. 2004. Tech Environmental.
[3] Interim White Paper on Gasoline Dispensing Facilities. 2006. Midwest Regional Planning Organization.

6.2 Contingency Control Measures

The ability of the KCMA to continue meeting the eight-hour ozone standards depends both on local meteorological conditions and levels of VOC and NO_x emissions in the KCMA. The design value is defined as the fourth-highest eight-hour ozone reading over a three-year period at a site. For each monitor, the design value for the eight-hour standard is determined by averaging the fourth highest eight-hour concentration value that a monitor records in each of three consecutive years. When the three-year average from the same time period is compared across all monitors in the KCMA, the highest value is designated the design value for the KCMA. The State of Kansas has developed the following triggers and contingency measures as required by Section 110(a)(1) of the Clean Air Act. These measures are included as part of this maintenance plan for Johnson and Wyandotte Counties. A two phased approach will be used if the contingency measures are required.

Phase I would be implemented in Wyandotte and Johnson Counties as a result of a violation of the ozone standard. The violation of the 8-hour standard, once quality assured, would trigger the following control measures to be implemented in the Kansas portion of the KCMA:

1.) Reduction in NO_x emissions from point sources >1000 tons of <u>actual</u> annual emissions from the entire facility averaged over the last three (3) years of complete, quality assured inventory data in Wyandotte and Johnson Counties. This would be accomplished through either NO_x Reasonable Available Control Technology (RACT) Rules or signed agreements with the affected sources.
2.) Diesel Idle Reduction in Wyandotte and Johnson Counties through administrative regulations or local ordinances. If this measure is implemented, the BAR would develop the enforcement mechanism through contracts with local agencies.

Phase I, measure #1 will affect the Board of Public Utilities' (BPU's) two power generating facilities in Wyandotte County. These facilities, Nearman and Quindaro, will be required to implement NO_x controls (best combustion practices) in the event of the implementation of Phase I controls. Phase I would require that they implement control measures for NO_x on Nearman Unit #1 and Quindaro Unit #2. NO_x emissions from these two units in 2005 totaled 5360.28 tons. It is projected that if controls are required at these two units, NO_x emissions would be reduced by 2948 tpy or 8.08 tpd.

Another potentially affected source under Phase I, measure #1 would be AFG Industries in Johnson County. This flat glass manufacturing facility is near the >1000 ton limit and could potentially be included in Phase I. NO_x emissions from this facility in 2005 totaled 974.63 tons. It is projected that if controls are required at this facility, NO_x emissions would be reduced between 292 tpy (0.80 tpd) and 487 tpy (1.33 tpd) depending on the controls implemented.

In the event that technical feasibility or other conditions change after the submittal date of this SIP that would result in any of the Phase I contingency measures not being able to be implemented, the State of Kansas will propose alternate measures that would result in equivalent or greater emissions reductions. The EPA's desired timeline for adoption and implementation of control measures is as expeditious as practicable, but no longer than 24 months. It is anticipated that all of these control measures can meet the desired timeframe.

Phase II of the contingency plan would be triggered by the occurrence of either of the following two events once quality assured. The first trigger would be the three-year design value for the area equaling or exceeding 0.089 ppm. This triggering event would become active one year following the end of the ozone season that triggered the Phase I contingency measure. The second triggering event would be three consecutive years following the Phase I trigger year with a design value greater than 0.084 ppm. Either of these events would implement the selection of control measures of Phase II. The State continuously evaluates all ozone exceedance days and episodes to determine whether the causes are meteorological or related to anthropogenic emissions and whether those emissions are the result of a non-routine event such as a pipeline break or fire. Following the implementation of Phase I, if any one year has a three-year design value equaling or exceeding 0.085 ppm, the State of Kansas will cooperate with MDNR by providing any technical information that may be needed, including emissions inventory, monitoring and meteorological data, for a technical evaluation to determine the possible cause of the violation and what appropriate action will be undertaken by the two states.

The purpose of keeping Phase II's trigger inactive for a year following the implementation of Phase I is to allow for Phase I controls to be implemented and have an effect on air quality in the region before Phase II is implemented. It also allows for further evaluation of the various control measures that could be implemented under Phase II. Further study of Phase II controls will result in those that provide the greatest cost effective controls and greatest benefits to be implemented. Control options being considered for the Kansas portion of the KCMA for Phase II include:

1.) Reductions in NO_x emissions from point sources >100 tons of actual annual emissions from the entire facility averaged over the last three (3) years of complete, quality assured inventory data from Wyandotte and Johnson Counties. This would be accomplished through either NO_x Reasonable Available Control Technology (RACT) Rules or signed agreements with the affected sources.
2.) Reduction in NO_x emissions from point sources >1000 tons of actual annual emissions from the entire facility averaged over the last three (3) years of complete, quality assured inventory data in areas located south of the KCMA (Miami and Linn Counties). Based on the current emissions inventory, this would affect two sources. Because of this fact, these two counties would not be incorporated into the KCMA. This would be accomplished through either a regional NO_x administrative regulation or signed agreements with the affected sources.
3.) Open burning restrictions in Wyandotte and Johnson Counties.
4.) Lower threshold for major sources of VOC to 75 tpy in Wyandotte and Johnson Counties. The BAR would evaluate remaining large VOC emitters subject to existing VOC RACT rules to determine if further reductions could be achieved. (VOC RACT Rules)
5.) VOC control for 46 Architectural and Industrial Maintenance Coatings, including traffic coatings in Wyandotte and Johnson Counties.
6.) Diesel Engine Chip Re-flash regulation in Wyandotte and Johnson Counties.

As previously mentioned, control measures will be selected from the above list based on emission reduction benefits, cost effectiveness and timeframe of implementation. In order to aid in determining the most beneficial control measures, photochemical modeling may be used as a tool for evaluation. The state of Kansas also reserves the right to consider additional potential contingency control measures if beneficial emission reduction methods are found in the future. Adoption and implementation of controls shall take place no later than 18-24 months after the BAR makes a determination, based on quality-assured ambient data, that a trigger established by this plan has been exceeded.

6.3 Implementation

Adoption of additional control measures is subject to necessary administrative and legal processes. The BAR will solicit input from all interested parties and affected persons in the KCMA prior to selecting appropriate Phase II contingency measures. A number of workgroups and meetings will be held with sources that would be affected by these contingency measures.

These meetings will provide individuals and companies the opportunity to discuss their reactions to the proposed contingency control measures. It will also allow those regulating the industries the opportunity to communicate their goals and plans for various contingency control measures. Any new regulations that may be developed by the State of Kansas as a result of implementing the Phase I or Phase II contingency measures will allow for full public participation. This process will include publication of notices, an opportunity for public hearing, and other measures required by state regulations.

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Conformity

7.1 Purpose of Conformity

Conformity analysis is a demonstration that the regional emissions from proposed transportation projects would not exceed the motor vehicle emissions budgets. If the conformity requirements cannot be met, then only certain types of project may proceed until the requirements can be met. The emissions inventory provides a basis for establishing new motor vehicle budgets, which are used to demonstrate consistency between the region's air quality goals and emissions expected from implementation of transportation plans and programs.

7.2 Conformity Requirement

The KCMA was required to perform transportation conformity after violating the one-hour standard. The CAA, Section 176(c) and regulations under 40 CFR part 51 subpart W, continued this requirement for areas that were designated as maintenance areas for any criteria pollutant or standard for which there is a NAAQS. Therefore, the EPA determined that once the one-hour ozone standard was revoked, areas that were designated attainment under the 8-hour standard would no longer be required to perform transportation conformity. The KCMA meets this determination. Therefore, conformity has not been required in the KCMA since 2004. Although conformity has not been required in Kansas City, MARC has continued to evaluate transportation projects for air quality effects.

On December 22, 2006, the U.S. Court of Appeals for the District of Columbia Circuit handed down a decision in *South Coast Air Quality Management District v. EPA* that may affect the determination that areas such as the KCMA are no longer required to perform conformity analysis. The EPA has not provided any guidance to the States in regards to this court decision. Therefore, at this time, the BAR commits to participating in the KCMA conformity process and implementing Kansas conformity regulations if required to do so by the EPA.

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Reference Information

8.1 List of References

1 CENRAP Emissions Inventory 2002, www.cenrap.org

2 Economic Growth Analysis System (EGAS) v4.0, U.S. Environmental Protection Agency, http://www.epa.gov/ttn/chief/emch/projection/index.html.

3 EPA NEI BEIS3.12 by County and Month ftp://ftp.epa.gov/EmisInventory/2002finalnei/biogenic_sector_data/

4 I-Steps Point Source Database, Kansas Department of Health and Environment; Bureau of Air and Radiation, Topeka, KS, 2002

5 Missouri Emissions Inventory System (MoEIS), Missouri Department of Natural Resources, Air Pollution Control Program, Jefferson City, MO, 2002

8.2 List of Acronyms and Abbreviations

AIRS	Aerometric Information Retrieval System
AQF	Air Quality Forum
AQWG	Air Quality Working Group
CAA	Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAP	Clean Air Action Plan
CE	control efficiency
CENRAP	Central Regional Air Planning Association
CERR	Consolidated Emissions Reporting Rule
CHIEF	Clearinghouse for Inventories and Emissions Factors
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CO	carbon monoxide
EGAS	Economic Growth Analysis System
EGU	electric generating unit
EIQ	Emissions Inventory Questionnaires
EPA	United States Environmental Protection Agency
FHA	Federal Highway Administration
I/M	vehicle inspection and maintenance program
IC	internal combustion
IDA	Inventory Data Analyzer
KCI	Kansas City International Airport
KCMA	Kansas City Maintenance Area
LRTP	Long Range Transportation Plan
MARC	Mid-America Regional Council
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standard
NEI	National Emissions Inventory
NO_x	nitrogen oxides
ORVR	Onboard Refueling Vapor Recovery
OSD	ozone season day
Pechan	E.H. Pechan & Associates, Inc.
ppb	parts per billion
ppm	parts per million
psi	pounds per square inch
RE	rule effecitiveness
RFG	reformulated gasoline
RP	rule pentration
RVP	Reid vapor pressure
SCC	Source Classification Code
SIC	Standard Industrial Code
SIP	state implementation plan
SMOKE	Sparse Matrix Operator Kernel Emissions
TCM	transportation control measures
tpd	tons per day

ULSD	Ultra Low Sulfur Diesel
VMT	vehicle miles traveled
VOC	volatile organic compounds