Missouri Department of Natural Resources

KANSAS CITY AREA

CURRENT AIR QUALITY

The current and recent past air quality information for 8-hour ozone in the Kansas City area is shown below in Tables KC1 and KC2. Table KC1 contains the 4th highest concentration and Table KC2 contains the design value for each monitor/year pair. The design value for each monitor is the metric used to determine compliance with the standard. The design value is calculated by averaging the 4th highest 8-hour ozone concentration at each monitor over a three-year period. For example, a monitor has the following 4th highest values in 2005-07: 80 parts per billion (ppb), 81 ppb, and 83 ppb. The average of those three concentrations would be 81.3 ppb. The design value for 2005-07 would be 81 ppb, because the average is truncated. Figure KC1 denotes the locations of the monitors within the Kansas City ozone network.

TABLE KC1

Monitor	2000	2001	2002	2003	2004	2005	2006	2007	2008
Liberty	91	79	87	88	71	88	93	81	66
Watkins Mill	84	73	83	85	67	79	91	73	66
KCI	90	79	85	77	70	86			
RG South	84	72	83	82	61	81	78	72	66
Rocky Creek			91	88	69	87	87	89	69
Trimble					71	87	85	83	70
Wyandotte Co. (KS)	87	76	80	84	63	79	81	73	63
U.S. Penitentiary (KS)				82	67	77	74	80	64
Heritage Park (KS)				81	66	81	76	71	62
Mine Creek (KS)	81	76	72	79	65	75	79	70	63

TABLE KC2

Monitor	00-02 Avg	01-03 Avg.	02-04 Avg	03-05 Avg	04-06 Avg	05-07 Avg	06-08 Avg
Liberty	85	84	82	82	84	87	80
Watkins Mill	80	80	78	77	79	81	76
KCI	84	80	77	77			
RG South	79	79	75	74	73	77	72
Rocky Creek			82	81	81	87	81
Trimble					81	85	79
Wyandotte Co. (KS)	81	80	75	75	74	77	72
U.S. Penitentiary (KS)				75	72	77	72
Heritage Park (KS)				76	74	76	69
Mine Creek (KS)	76	75	72	73	73	74	70

The 2008 fourth high information has not been validated at this time, but these data and the corresponding 2006-08 design value information is provided for completeness. For the Missouri sites, the 2006-08 data potentially changes only the Richards-Gebaur South site's attainment status. The remaining sites continue to monitor violations of the standard. All the Kansas monitoring sites in the Kansas City network are in compliance with the 2008 ozone standard using the 2006-08 monitoring data. The overall recommendation presented here did not change based on the attainment status of this monitor, but it does change the finding with respect to the Cass County's combined rationale for inclusion.

The Springfield/Joplin, Missouri, the Wichita, Kansas, and the Tulsa, Oklahoma, areas are potential upwind metropolitan areas for Kansas City. The Springfield area has the following design values: 77 ppb for the 2005-07 monitoring period and 73 ppb for the 2006-08 monitoring period. No monitoring data exists for Joplin, Missouri at this time, but the 2007 ozone network design for Missouri includes a monitor north of Joplin. The Wichita, Kansas, design value was 76 ppb for 2005-07. For Tulsa, the 2004-06 design value was 79 ppb and the 2005-07 design value was 80 ppb.

As noted previously, the appropriate quality assurance measures are not complete for the 2006-08 dataset at this time. Therefore, the design value may still change and the recommendation could be modified to reflect any change in design values necessary.

KANSAS CITY AREA EMISSION, POPULATION, AND TRAFFIC/COMMUTER INFORMATION

Table KC3 illustrates the precursor emissions and population data for the counties in the Kansas City area. Jackson County has the largest amount of anthropogenic emissions (with over one-third of the emissions) for VOC (35%) and NOx (36%) in the current Kansas City maintenance area. Johnson County (KS) has the second highest emission totals with 29% of the VOC emissions and 22% of the NOx emissions in the maintenance area. The next highest VOC emission totals are from Clay (15%) and Wyandotte – KS (14%) Counties. The next highest NOx emissions totals are Wyandotte – KS (17%), Platte (17%), Linn – KS (16%), and Douglas – KS (12%). All these counties are part of the maintenance area, except Linn and Douglas Counties in Kansas. Linn is part of the Kansas City metropolitan statistical area (MSA), while Douglas is the only county in the Lawrence, Kansas MSA.

The population data for the area illustrates that the core Kansas City metropolitan complex has the vast majority of the population in the area. Jackson County is the most populous county with over 650,000 people followed by Johnson – KS (526,319), Clay (211,952), and Wyandotte – KS (153,956). Population growth rates over 15 percent between 2000 and 2007 were projected for Clay, Platte, Cass, and Johnson (KS). Figure KC2 provides population density for the area. The Kansas City core population center contains nearly all of Jackson and Wyandotte (KS) Counties, Southwestern Clay County, extreme southeastern Platte County, eastern Johnson (KS) County, and northern Cass

County. Several counties outside the core metropolitan complex have some areas of higher population density. These include Douglas – KS (Lawrence MSA), Buchanon (St. Joseph MSA), and Leavenworth (KS) Counties. Figure KC3 provides the urbanized area information for the region. This figure illustrates a very similar outcome as Figure KC2 including St. Joseph and Lawrence, Kansas as more urbanized than the surrounding communities..

The overall annual Vehicle Miles Traveled (VMT) information was obtained from the Central Regional Air Planning Association (CenRAP) regional inventory compiled from each state's Department of Transportation grown from 2002 to 2009. These data illustrate a consistent pattern of higher VMT in the urbanized areas in Kansas City with substantial traffic on the Interstate highways. The highest annual VMT for the Kansas City area are found in Jackson County with 5.9 billion VMT/year and Johnson (KS) County with 5.2 billion VMT/year. The following counties also have annual VMT over 1 billion/year: Clay (2.3 billion/year) Wyandotte – KS (1.9 billion/year), Platte (1.4 billion/year), and Cass (1.1 billion/year).

Figure KC4 includes traffic count information from the Missouri Department of Transportation (MoDOT) and Kansas Department of Transportation (KDOT) for 2007. This figure illustrates the highest volume of traffic on the Interstates (29, 35, 70, 435, 470) along with considerable traffic on Highway 50 (going east into Jackson County and west into Johnson County on a daily basis.

To provide a spatial representation of ozone precursor emissions within the area, two sets of figures have been developed. The first set presented in Figures KC5 and KC6 contain point source emission locations for NOx and VOC, respectively. As expected, the largest numbers of point sources are located in the Kansas City core area (Jackson, Clay, Wyandotte). The two largest NOx sources in the region are power plants (one in Linn County (KS) and the other in northern Platte County). The second set presented in Figures KC7 and KC8 contain the composite low-level emission information for the area (including on-road and non-road mobile, low-level point, and area source emissions). Figure KC7 presents the NOx information for the area and Figure KC8 presents the VOC information for the area. These two figures also show the highest emission density in the Kansas City metropolitan complex (Johnson – KS and Jackson/Clay/Wyandotte (KS) boundary area) as well as in the St. Joseph and Lawrence metropolitan areas.

The Kansas City 8-hour maintenance area (Platte, Clay, and Jackson Counties in Missouri) has specific fuel requirements for control of VOC emissions. The applicable state regulations require 7.0 Reid Vapor Pressure (RVP) gasoline (10 CSR 10-2.330). There are several other point and area source regulations in place in the Missouri portion of the maintenance area:

1) aerospace manufacturing/rework 10 CSR 10-2.205,
2) solvent metal cleaning 10 CSR 10-2.210,
3) solvent cleanup operations 10 CSR 10-2.215,
4) liquified cutback asphalt 10 CSR 10-2.220,

5) industrial surface coating 10 CSR 10-2.230,
6) petroleum storage/transfer (Stage I) 10 CSR 10-2.260,
7) rotogravure/flexographic printing 10 CSR 10-2.290,
8) manufacturing of paint, laquer, varnish, enamels 10 CSR 10-2.300,
9) application of automotive underbody deadeners 10 CSR 10-2.310,
10) pesticide and herbicide production 10 CSR 10-2.320,
11) lithographic printing 10 CSR 10-2.340,
12) bakery ovens 10 CSR 10-2.360.

Further, the statewide utility NOx rule (10 CSR 10-6.350) requires the large power plants in this area to control NOx emissions to a level of 0.35 pounds per million British thermal units (lb/MMBTU) or 0.68 lb/MMBTU for cyclone units firing tire-derived fuel. Also, the Clean Air Interstate Rule (CAIR) will require a sizable NOx reduction in these utility sources by 2010.

METEOROLOGICAL IMPACTS IN KANSAS CITY

When evaluating all the meteorological information for the Kansas City areas, the trajectory analysis, the regime analysis, and the windroses), the metropolitan Kansas City area demonstrates the strongest likelihood of contribution to the nearly all the sites in the ozone network. It is important to note that since the ozone standard is now 75 ppb, the variety of meteorological conditions contributing to ozone exceedances for the area has increased substantially. The regime analysis conducted to support this recommendation is very similar to the analysis conducted to support the 2003 recommendation. Both sets of analyses show that the highest ozone concentrations occur when there is a high pressure center over the eastern United States with reduced wind speeds (southerly components to flow direction are predominant). Stagnation conditions are especially evident when ozone exceedances occur in the areas near downtown Kansas City at the Wyandotte County monitoring site. Many of the sites in the southern or western portion of the network exhibit two different transport characteristics; one from the Kansas City area and the other with more southerly contribution. The trajectory analysis for the monitors to the north of the metropolitan complex (Trimble, Rocky Creek, Leavenworth (KS), and Watkins Mill) illustrate that the Kansas City area has the most frequent upwind status for each monitor. It should be noted that when evaluating the trajectory analysis, the Lawrence (KS) monitoring site has the clearest signal of both the southerly and Kansas City wind flows.

These types of trajectory analyses give an indication of overall synoptic flow and not specific flow on any exceedance day. However, the patterns associated with these trajectories can be helpful in determining flow patterns for exceedance at the monitors. Also, the 2003-07 windrose for the area (using data from KCI Airport) during the months with ozone exceedances (April – September) provide that, by far, the most predominate wind direction is from the south. Further, the windrose has a very similar pattern for the peak ozone months in Missouri (June – August).

One other analysis was conducted to evaluate the number of 8-hour ozone exceedances within the last 5 years. In the Meteorological Analysis document, Table 12 illustrates the number of exceedances at every monitor. The monitoring network in Kansas City covers much of the downwind (northerly) urban/suburban areas and provides some near-field upwind sites at Richards-Gebaur South and Olathe and far downfield monitors like Trimble. Between 2003 and 2007, the Rocky Creek monitor (due north of the core emission area) has the highest number of 8-hour exceedances in the network (79). The Liberty monitor (north-northwest of the core emission area) has the second largest number of exceedances at 70. No other sites in the network had more than 50 exceedances (but the Trimble monitor has 48 exceedances from 2004-07. The upwind sites had a large number of exceedances as well (Richards Gebaur South – 25 and Olathe – 24). Overall, based on the analysis conducted by the department, the Kansas City area is potentially impacted by source regions to the south (possibly Tulsa or Oklahoma City) along with local impacts from emission sources within the region.

URBANIZATION AND OTHER INFORMATION REQUESTED IN THE EPA GUIDANCE

There are two different MSA boundaries in Missouri that are of interest to the designation process: Kansas City and St. Joseph. In addition, the Kansas City maintenance area boundary is also important for recommendation development. These boundaries are shown with the monitoring site information in Figure KC1. As seen in Table KC4, there is population growth from 2000-2020 above 30% for the following counties in the Kansas City area: Johnson – KS (55% growth), Cass (48% growth), Clay (42% growth), Platte (39% growth), Douglas – KS (38% growth), Miami – KS (33%) and Clinton (31% growth). The particular areas of interest with respect to growth are Johnson County (KS) with over 700,000 projected in 2020, Clay County with over 250,000 projected in 2020, and Cass County with over 120,000 people projected in 2020. It should be noted that Wyandotte (KS) and Lafayette Counties have a flat or decreasing population between 2000 and 2020 based on these projections.

Employment data were also incorporated into Table KC3. This data can provide a better understanding about counties outside the MSA that still have large industrial/commercial activity. This trend can be found in the Lawrence (KS) and St. Joseph areas in the Kansas City region. It should be noted that Jackson and Johnson (KS) Counties has 77% of the employment in the current Kansas City maintenance area.

There are significant geographic or topographic features that impact ozone concentrations in the Kansas City area.

The traffic and commuting pattern information is the final EPA criteria for evaluation. The workplace/resident relationship data was obtained from United States Census Bureau, Longitudinal Employer-Household Dynamics Program via Cornell University for the year 2004. This data is a projection of employees and their employer's block group locations. The department aggregated that information from Missouri's 1.8 million and Kansas' nearly 1 million individual block group level data points to summarize the

commuter relationships between counties in each region of interest. This data is summarized in Table KC5 and provides a matrix of residence versus employment location. Several important pieces of information can be gained from review of this data.

1) The vast majority of employed people who live in the Kansas City maintenance area work in the area (all counties - 85% or higher).
2) There is some interconnection between the Kansas City maintenance area and the Lawrence and St. Joseph MSAs.
3) Cass, Buchanon, Lafayette, Ray, Leavenworth (KS), Miami (KS), and Douglas (KS) are the most connected to the Kansas City maintenance area for counties outside the area (all over 5,000 residents working in the Kansas City maintenance area).

SUMMARY

Based on the first test for designation (the monitored violation test) using the 2005-07 design values; Clay, Johnson (KS), and Wyandotte (KS) violate the standard in the current nonattainment area and should be designated nonattainment. Further, the Richards Gebaur South monitor in Cass County, the Trimble monitor in Clinton County, and the US Penitentiary monitor in Leavenworth County also violate the standard. Since these monitors are in violation of the standard, this fact leads to designation as nonattainment for these three counties. However, the final 2006-08 monitoring data may change the required designation for Kansas. Since the monitored concentrations in 2008 have been less than in previous years, some or all of the monitors in Kansas may attain the standard based on 2006-08 monitored data. In Missouri, using the most current 2008 data, only one site could change from a monitored violation to attainment status (the Richards Gebaur site).

In order to understand the second test for designation (contribution to monitored violation), the following table summarizes the information for all counties in the evaluation process

TABLE KC6

County	Maint. Area/ MSA	2009 VOC Total % (TPD)	2009 NOx Total % (TPD)	2007 Pop. % (1000)	Total Non-Met Summary
Jackson	Yes/Yes	35.3 (59.4)	35.6 (92.1)	40.6 (667)	111.5
Johnson (KS)	Yes/Yes	29.1 (49.0)	21.5 (55.5)	32.0 (526)	82.6
Wyandotte (KS)	Yes/Yes	14.2 (23.9)	17.1 (44.1)	9.4 (154)	40.6
Clay	Yes/Yes	14.7 (24.8)	9.2 (23.6)	12.9 (212)	36.8
Platte	Yes/Yes	6.7 (11.3)	16.6 (43.0)	5.2 (85)	28.5
Douglas (KS)	No/No	6.6 (11.2)	11.7 (30.3)	6.9 (113)	25.3
Linn (KS)	No/Yes	2.1 (3.5)	16.2 (41.9)	0.6 (10)	18.9
Buchanan	No/No	6.2 (10.4)	5.8 (15.0)	5.3 (86)	17.2
Henry	No/No	4.9 (8.3)	9.3 (24.1)	1.4 (22)	15.6
Cass	No/Yes	5.3 (8.9)	3.6 (9.4)	5.9 (97)	14.8

Leavenworth (KS)	No/Yes	3.8 (6.5)	2.6 (6.8)	4.5 (74)	11.0
Miami (KS)	No/Yes	2.7 (4.5)	4.9 (12.7)	1.9 (31)	9.5
Johnson	No/Yes	3.4 (5.8)	2.4 (6.2)	3.2 (52)	9.0
Lafayette	No/Yes	3.7 (6.2)	3.2 (8.4)	2.0 (33)	8.9
Franklin (KS)	No/Yes	2.7 (4.5)	2.7 (7.1)	1.6 (26)	7.0
Ray	No/Yes	1.8 (3.1)	1.7 (4.5)	1.4 (23)	5.0
Bates	No/Yes	2.1 (3.5)	1.5 (4.0)	1.0 (17)	4.7
Jefferson (KS)	No/No	2.0 (3.4)	1.5 (3.8)	1.1 (18)	4.6
Clinton	No/Yes	1.9 (3.2)	1.2 (3.2)	1.3 (21)	4.4
Andrew	No/No	1.8 (3.0)	1.5 (3.8)	1.0 (17)	4.3
Atchison (KS)	No/No	1.4 (2.3)	1.3 (3.3)	1.0 (17)	3.7
Anderson (KS)	No/No	1.2 (2.0)	1.4 (3.6)	0.5 (8)	3.1
De Kalb	No/No	1.2 (2.1)	0.9 (2.3)	0.7 (12)	2.9
Caldwell	No/Yes	0.8 (1.3)	0.9 (2.3)	0.6 (9)	2.2

Percentages in Table KC6 are based on Kansas City maintenance area totals and are used to provide a comparative understanding on the overall emission inventory and population of the area. Other parameters, like total Vehicle Miles Traveled (VMT) or population density for each county, could have been evaluated. However, the use of these factors would potentially double count the importance of mobile emissions when using (VMT) or population when considering the use of population density. For the Kansas City Region, the following Missouri counties will receive no additional evaluation due to lack of contribution: Andrew, De Kalb, and Caldwell.

Further, based on the findings of this analysis, Clinton County does not have sufficient ozone precursor emissions to be found to contribute to the ozone problem in Clinton County. Therefore, the recommendation for Clinton County is a nonattainment designation as a monitored violation area and not as a contributory area to monitors in violation of the standard.

The meteorology of ozone formation in the Kansas City Region should be considered into this summary, in at least a qualitative fashion. As discussed previously, the predominant wind components that lead to elevated ozone concentrations in the Kansas City area are strong southerly components for the maximum design value sites.

The three in the Missouri portion of the current maintenance area (Jackson, Clay and Platte) all have a sizable amount of precursor emissions and can easily be considered as contributory to elevated ozone concentrations at numerous monitors in the area. These counties form the core along with Johnson and Wyandotte in Kansas of the Kansas City area. Therefore, these Missouri counties have all been recommended for inclusion in the Kansas City nonattainment area due to either monitored violations or their contribution to monitored violations in the Kansas City area.

Buchanan County, also, contains a very high level of VOC (10 TPD) and NOx (15 TPD) emissions. The population growth rate for Buchanan County is low compared to the counties in the Kansas City area. However, since Buchanan County is the center of St.

Joseph MSA, the population and employment data are sizable. Buchanan County is somewhat urbanized with the St. Joseph area having a higher population density, or some connection to the Kansas City metropolitan area. Nonetheless, this county is downwind for a large majority of ozone exceedance days around Kansas City. Also, there is one source in Buchanan County that is part of the statewide NOx rule (10-6.350) to control utility NOx and is included in the CAIR control package. Further, there is no ozone monitoring in the St. Joseph area, but the most recent ozone network review has recommended a site downwind of the St. Joseph area to provide a clearer picture of ozone concentrations in the area. This site will begin operation for the 2009 ozone season.

Henry County sources emit a very high level of NOx emissions (24 TPD). The VOC emissions for this county are (8.3 TPD). The population growth rate and population for Henry County are low compared to other counties in the area. Henry County is rural and has only a small component of high population density around the town of Clinton. The traffic patterns/connectivity data exhibit limited connection to the Kansas City area and the traffic count data does not illustrate any large VMT traveling back to Kansas City. The largest NOx source in Henry County is a power plant that is included in the statewide utility NOx regulation and will be included for control in the Clean Air Interstate Rule. Henry County is also somewhat distant from the metropolitan core and not contiguous with the current maintenance area for Kansas City.

Cass County sources emit a sizable amount of NOx and VOC emissions (9 TPD for both). The population growth rate and population for Cass County are substantial and are considerably greater than the more rural counties surrounding it to the west, south, and east. The population density and urbanization figures illustrate a contiguous urbanized area from the core metropolitan complex that extends into northern Cass County. The ozone monitor (Richard Gebaur South) had a design value of 77 parts per billion in 2005-07 and a design value of 72 ppb using current data for 2006-08. The commuter data for Cass County provides a strong connection between the county and the remainder of the Kansas City metropolitan area (largest connection of any “outside” county). Further, this county is south of the Kansas City metropolitan complex and is characterized as upwind for many of the remaining sites in the area.

Johnson County sources emit NOx and VOC emissions at a rate of 6 TPD for both. The population growth rate and population for Johnson are moderately high (50,000 population and 20% growth by 2020). Johnson County is part of the Kansas City MSA, but the population density and urbanization figures illustrate a less urbanized area with some higher population density along US Highway 50. The commuter data for Johnson County provides some connection between the county and the remainder of the Kansas City metropolitan area (4,530 residents working in the Kansas City maintenance area). Further, this county is east-southeast of the Kansas City metropolitan complex and can characterized as upwind on some days with elevated ozone concentrations, but would not be in the predominant wind direction for upwind contribution.

Lafayette County sources emit ozone precursor emissions at a rate of 6 TPD for VOC and 8 TPD for NOx. The population growth rate and population for Lafayette are both

relatively low (30,000 population and flat growth by 2020). Lafayette is part of the Kansas City MSA, but the population density and urbanization figures illustrate a less urbanized area with some higher population density along Interstate 70. The commuter data for Lafayette County provides a demonstrated connection between the county and the remainder of the Kansas City metropolitan area (over 5,000 residents working in the Kansas City maintenance area). Nonetheless, this county is due east of the Kansas City metropolitan complex and can characterized as upwind on few days with elevated ozone concentrations, but would not be in the predominant wind direction for upwind contribution.

Ray and Bates Counties sources emit less than 10 TPD combined ozone precursor emissions. The population and growth projections for these two counties are low compared with other counties in the area. Both are part of the Kansas City MSA, but only Ray County has a sizable connection to the Kansas City maintenance area (greater than 5,000 people from Ray working in the maintenance area). Ray County is downwind of the area under predominant winds, while Bates County is upwind but since Cass County is in between Bates and the metropolitan area there is considerably more distance to the downwind area.

Clinton County sources emit a low level of emissions for both ozone precursors (3.2 TPD – VOC and 3.2 TPD – NOx). The projected population growth rate for Clinton County is 30 percent, but the overall projected population in 2020 is only 25,000 people. Clinton County has 4,000 residents working in the current Kansas City maintenance area. Clinton County is part of the Kansas City MSA and does receive the majority of ozone impacts at the Trimble monitor from the upwind Kansas City area. Lincoln County has been recommended for inclusion in the Kansas City nonattainment area based on the evaluation of all the criteria. Its inclusion is primarily due to the facts that it part of the Kansas City MSA and its monitored violation is being impacted predominantly by the current maintenance area. It is important to note that Clinton County has not been found to contribute significantly to other monitors in the area.

To summarize, the following Missouri counties have been recommended for inclusion in the Kansas City 8-hour ozone nonattainment area: Cass, Clay, Clinton, Jackson, and Platte.

COUNTY BY COUNTY SUMMARY

The following is a county-by-county summary of the factors that were considered in the inclusion/exclusion evaluation for the Kansas City 8-hour ozone nonattainment area. These factors include precursor emissions, air quality data, population, urbanization, commuter/traffic patterns ("connectivity"), meteorology, growth, and jurisdictional boundaries. In addition, if special consideration should be given to some additional factors (i.e. location of emission sources in the county or distance from the core metropolitan area), this is also presented. All factors in the applicable EPA guidance were considered, but some are not relevant to the area (geography/topography).

Jackson County

1) Largest emissions for both VOC (59.4 TPD) and NOx (92.1 TPD) in the Kansas City area
2) No ozone monitoring in this county
3) Largest population in the area (666,890)
4) Largest annual VMT in the area (5.9 billion VMT/year)
5) Meteorological analysis is supportive of frequent contribution
6) 5% population growth rate predicted between 2000 and 2020
7) Located in the current 8-hour ozone maintenance area
8) Emission reductions have been realized from previous VOC/NOx control requirements

Johnson County (KS)

1) Second largest emission in Kansas City for VOC (49.0 TPD) and NOx (55.5 TPD)
2) Ozone site within the county monitors a violation of the standard in 2005-07, but is in compliance for 2006-08 (Heritage Park design values - 76 ppb for 2005-07 and 69 ppb for 2006-08)
3) Second largest population in the area (526,319)
4) Second largest VMT in the area (5.2 billion VMT/year)
5) Meteorological analysis is supportive of frequent contribution
6) 55% projected population growth rate between 2000 and 2020
7) Located in the current Kansas City maintenance area
8) Emission reductions have been realized from previous VOC/NOx control requirements

Wyandotte County (KS)

1) Third largest emission in Kansas City for NOx (44.1 TPD) and fourth largest for VOC (23.9 TPD)
2) Ozone site within the county monitors a violation of the standard in 2005-07, but is in compliance for 2006-08 (JFK – Wyandotte design values – 77 ppb for 2005-07 and 72 ppb for 2006-08)
3) Fourth largest population in the area (153,956)
4) Fourth largest VMT in the area (1.9 billion VMT/year)
5) Meteorological analysis is supportive of frequent contribution
6) Projected population reduction between 2000 and 2020 (-4%)
7) Located in the current Kansas City ozone maintenance area
8) Emission reductions have been realized from previous VOC/NOx control requirements

Clay County

1) Third largest emission in Kansas City for VOC (24.8 TPD) and NOx emissions of 23.6 TPD
2) All monitors within the county monitor a violation of the standard (highest design value – Liberty and Rocky Creek 87 ppb for 2005-07 and Rocky Creek 81 ppb for 2006-08)
3) Third largest population (211,952)
4) Third largest VMT in the area (2.3 billion/year)
5) Meteorological analysis is supportive of frequent contribution
6) 42% population growth between 2000 and 2020 (over 250,000 in 2020)
7) Located in the current Kansas City ozone maintenance area
8) Emission reductions have been realized from previous VOC/NOx control requirements

Platte County

1) Fourth largest emission in Kansas City for NOx (43.0 TPD) and VOC emissions of 11.3 TPD
2) No ozone monitoring in the county
3) Population over 75,000 (84,881)
4) Fifth largest VMT in the area (1.4 billion/year)
5) Meteorological analysis is somewhat supportive of frequent contribution
6) 39% population growth between 2000 and 2020 (over 100,000 in 2020)
7) Located in the current Kansas City ozone maintenance area
8) Emission reductions have been realized from previous VOC/NOx control requirements

Douglas County (KS)

1) Combined emissions over 40 TPD (VOC – 11.2 TPD and NOx - 30.3 TPD)
2) No current ozone monitoring within the county
3) Population over 100,000 people (113,488)
4) High VMT (1.0 billion VMT/year)
5) Sizable commuter connection to the Kansas City area (nearly 10,000 residents working in the maintenance area)
6) Meteorological analysis is not supportive of frequent contribution (trajectory analysis demonstrated this county as downwind for impacts from Kansas City on some elevated ozone days)
7) 38% projected population growth between 2000 and 2020 (over 130,000 population in 2020)
8) Douglas is the only county in the Lawrence (KS) MSA

Linn County (KS)

1) Combined emissions over 40 TPD (VOC – 3.5 TPD and NOx - 41.9 TPD)
2) Current ozone monitoring in this county shows attainment of the standard (Mine Creek design values of 74 ppb for 2005-07 and 70 ppb for 2006-08)

3) Low population (9,767)
4) Low VMT (134 million VMT/year)
5) Meteorological analysis is supportive of frequent contribution
6) 11% population growth between 2000 and 2020
7) Located in the Kansas City MSA, but not in the maintenance area
8) Single largest source is a power plant with a sizable emission reduction from previous designation analysis, but still county has over 40 TPD of NOx emissions

Buchanan County

1) Combined emissions of nearly 25 TPD (VOC - 10.4 TPD and NOx - 15.0 TPD)
2) No ozone monitoring in county; monitoring recommended to begin north of St. Joseph in 2009
3) Population of more than 75,000 (86,485)
4) Some connection to the Kansas City metropolitan area (6,100 residents working in the maintenance area)
5) Medium VMT (803 million VMT/year)
6) Meteorological analysis shows very limited contribution to all Kansas City monitors
7) 5% projected population growth between 2000 and 2020
8) Buchanan County is the center of the St. Joseph MSA, located adjacent to the Kansas City maintenance area
9) Largest NOx emission source part of the statewide utility NOx rule and CAIR

Henry County

1) Combined emissions over 30 TPD (VOC – 8.3 TPD and NOx – 24.1 TPD)
2) No ozone monitorinig in this county
3) Population of less than 25,000 (22,398)
4) Limited connection to Kansas City metropolitan area (along US-50)
5) Low VMT (411 million VMT/year)
6) Meteorological analysis is supportive of frequent contribution
7) 7% projected population growth between 2000 and 2020
8) Located adjacent to the Kansas City MSA
9) Largest NOx emission source part of the statewide utility NOx rule and CAIR

Cass County

1) Combined emissions over 15 TPD (VOC - 8.9 TPD and NOx – 9.4 TPD)
2) Richards Gebaur South monitor violates the 8-hour ozone standard using 2005-07 (design value – 77 ppb), but demonstrates attainment of standard (design value – 72 ppb) using current 2006-08 data
3) Population of nearly 100,000 (97,133)
4) Largest connection to the Kansas City maintenance area for a county outside the area (24,025 residents work in KC maintenance area)
5) High VMT (1.1 billion VMT/year)

6) Meteorological analysis is supportive of frequent contribution
7) 48% projected population growth between 2000 and 2020 (over 120,000 people in 2020)
8) Located within the Kansas City MSA, and upwind of the current Kansas City ozone maintenance area

Leavenworth County (KS)

1) Combined emissions less than 15 TPD (VOC – 6.5 TPD and NOx - 6.8 TPD)
2) Ozone site within the county monitors a violation of the standard for 2005-07, but is in compliance for 2006-08 (US Penitentiary design values – 77 ppb for 2005-07 and 72 ppb for 2006-08)
3) Population of nearly 75,000 (73,603)
4) Sizable connection to the Kansas City maintenance area (10,085 residents working in KC)
5) Medium VMT (624 million VMT/year)
6) Meteorological analysis shows limited support for frequent contribution
7) 28% projected population growth between 2000 and 2020 (2020 population of 88,000)
8) Located within the Kansas City MSA and adjacent to current Kansas City ozone maintenance area

Miami County (KS)

1) Combined emissions over 15 TPD (VOC – 4.5 TPD and NOx - 12.7 TPD)
2) No ozone monitoring in this county
3) Population of nearly 30,000 (31,078)
4) Some connection to the Kansas City maintenance area (7,649 residents working in KC)
5) Low/Medium VMT (493 million VMT/year)
6) Meteorological analysis shows support for frequent contribution
7) 33% projected population growth between 2000 and 2020 (2020 population of 38,000)
8) Located within the Kansas City MSA and adjacent to current Kansas City ozone maintenance area

Johnson County

1) Combined emissions under 15 TPD (VOC - 5.8 TPD and NOx – 6.2 TPD)
2) No ozone monitoring in this county
3) Population of more than 50,000 (51,928)
4) 4,530 residents work in current Kansas City maintenance area
5) Medium VMT (612 million VMT/year) – along US Highway 50
6) Meteorological analysis shows limited support for contribution
7) 20% projected population growth between 2000 and 2020
8) Located in the Kansas City MSA

Lafayette County

1) Combined emissions under 15 TPD (VOC - 6.2 TPD and NOx – 8.4 TPD)
2) No ozone monitoring in this county
3) Population of less than 50,000 (32,677)
4) 5,367 residents work in current Kansas City maintenance area
5) Medium VMT (759 million VMT/year) – along Interstate 70
6) Meteorological analysis shows limited support for contribution
7) Flat population growth between 2000 and 2020
8) Located in the Kansas City MSA

Franklin and Anderson Counties (KS)

1) Combined emissions under 12 TPD for both (VOC/NOx Franklin - 4.5/7.1 TPD and Anderson 2.0/3.6 TPD)
2) No ozone monitoring in either county
3) Population of less than 30,000 (Franklin – 26,479 and Anderson 7,908)
4) Limited connection to the current Kansas City maintenance area (3,771 residents in Franklin and 518 in Anderson working in the KC area)
5) Low VMT (417 million for Franklin and 107 million VMT/year for Anderson)
6) Meteorological analysis is supportive of frequent contribution
7) Franklin 18% population growth between 2000 and 2020 (nearly 30,000 in 2020); Anderson flat projected population
8) Franklin located in the Kansas City MSA and Anderson located south of and adjacent to Franklin

Ray and Caldwell Counties

1) Combined emissions less than 10 TPD (Ray/Caldwell VOC – 3.1/1.3 TPD and NOx -4.5/2.3 TPD)
2) No ozone monitoring in either county
3) Population of less than 25,000 (Ray 23,482 and Caldwell 9,284)
4) Some connection to the Kansas City maintenance area for Ray and very limited connection to the maintenance area for Caldwell
5) Low VMT (Ray 216 million and Caldwell 177 million VMT/year)
6) Meteorological analysis suggest downwind of the Kansas City area under predominant winds
7) Both counties are projected to grow less than 15% between 2000 and 2020 (2020 population of less than 25,000 for both)
8) Both located in the Kansas City MSA with Ray adjacent to current Kansas City maintenance area

Bates County

1) Combined emissions less than 10 TPD (VOC – 3.5 TPD and NOx – 4.0 TPD)
2) No ozone monitoring in county

3) Population of less than 20,000 (17,034)
4) Limited connection to the Kansas City area
5) Low VMT (338 million VMT/year)
6) Meteorological analysis is somewhat supportive of frequent contribution
7) 9% projected population growth between 2000 and 2020
8) Included in the Kansas City MSA,

Jefferson and Atchison Counties (KS)

1) Combined emissions under 10 TPD (Jefferson/Atchison VOC – 3.4/2.3 TPD and NOx – 3.8/3.3 TPD)
2) No ozone monitoring in counties
3) Population of less than 20,000 for both
4) Limited connection for both counties to the Kansas City area
5) Low VMT (Jefferson 233 million and Atchison 137 million VMT/year)
6) Meteorological analysis illustrates that these counties are downwind of violating monitors in the area
7) Limited population growth between 2000 and 2020 (both counties less than 25,000 people in 2020)
8) Located adjacent to the Kansas City MSA

Clinton County

1) Combined emissions under 10 TPD (VOC - 3.2 TPD and NOx – 3.2 TPD)
2) Trimble monitor in violation of the standard (2005-07 design value – 85 ppb; 2006-08 design value – 79 ppb)
3) Population of less than 25,000 (20,894)
4) Moderate connection to the current Kansas City maintenance area (4,156 residents working in KC MA)
5) Low VMT (356 million VMT/year)
6) Meteorological analysis illustrates the Trimble monitor is a recipient of ozone and precursors from the upwind Kansas City area)
7) 31% population growth between 2000 and 2020 (nearly 25,000 in 2020)
8) Located in the Kansas City MSA, adjacent to the Kansas City maintenance area

Andrew and De Kalb Counties

1) Combined emissions less than 10 TPD (both VOC less than 4 TPD and both NOx less than 4 TPD)
2) No ozone monitoring in counties; monitoring recommended to begin north of St. Joseph in 2009
3) Populations of less than 20,000
4) Very limited connection to the Kansas City metropolitan area
5) Low VMT (Both less than 400 million VMT/year)
6) Meteorological analysis suggest downwind of the Kansas City area under predominant winds

7) Both counties are projected to grow less than 12% between 2000 and 2020 (2020 population of less than 20,000 for both)
8) Both counties are located in the St. Joseph MSA and are not adjacent to the Kansas City MSA