

US EPA ARCHIVE DOCUMENT

# Current Status of Air Quality and Air Quality Management Activities in the St. Louis Area

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## Introduction

According to a 2007 public opinion survey of St. Louis area residents by the local chapter of the American Lung Association, 68 % of the respondents replied that poor air quality was a “very serious” or “mostly serious” problem. Additionally, 64% of survey participants agreed that air quality has a negative health impact, especially on people with respiratory problems.

In an effort to better characterize the public health benefits of air quality control programs and provide more opportunity for public input into air quality decision-making, a coalition of federal, state and local officials, working with the East West Gateway Council of Governments, is endeavoring to consolidate and improve the traditional approach towards air quality management. This multipollutant, “one atmosphere” approach, is designed to document a process that will integrate all existing State Implementation Plan requirements into a comprehensive plan along with the potential to address hazardous air pollutants. In addition, this type of effort will provide more certainty to the regulated community with respect to on-going changes in control requirements. This effort exists in the St. Louis area as part of three national pilot projects that also includes New York and North Carolina.

The U.S. EPA is currently scheduled to review all of the primary and secondary air quality standards by July 2012. The tight grouping of these reviews, as you will see in the following section, means that implementation of each NAAQS will overlap with other criteria pollutant implementation and with on-going control strategy programs. This is why programs like the multipollutant pilot project for St. Louis can help develop techniques that will address comprehensive planning, integrated analysis, multipollutant control approaches and one atmosphere studies as a way to understand and address these challenges to community health and environmental welfare.

## Air Quality Issues and Concerns

### *The Current Schedule for NAAQS Health and Welfare Review*

The Clean Air Act (CAA) requires EPA to issue and review (at 5-year intervals) air quality criteria and primary (health-based) and secondary (welfare-based) national ambient air quality standards (NAAQS) for the “criteria” pollutants that now include particulate matter (PM), ozone (O<sub>3</sub>), carbon monoxide (CO), sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), and lead (Pb). EPA at this time is actively involved in reviewing all of these NAAQS except ozone.<sup>1</sup> The review of the primary and secondary ozone NAAQS was completed on March 12, 2008 and EPA will begin a new review shortly of the ozone standards on the next five year cycle. For the other NAAQS, EPA has made public their plans to complete these reviews as shown in Table 1.

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<sup>1</sup> See <http://www.epa.gov/ttn/naaqs/> for more information on the NAAQS reviews.

**Table 1 – NAAQS Review Schedule**

<b>NAAQS Review</b>	<b>Projected Date of Final Rule<sup>2</sup></b>
<b>Lead</b> Primary and Secondary	<u><b>Sept 1, 2008</b></u>
<b>NO<sub>x</sub></b> Primary	<u><b>Dec 18, 2009</b></u>
<b>SO<sub>x</sub></b> Primary	<u><b>Mar 2, 2010</b></u>
<b>NO<sub>x</sub>/SO<sub>x</sub></b> Secondary	<u><b>Oct 19, 2010</b></u>
<b>PM</b> Primary and Secondary	<b>Oct 2011</b>
<b>CO</b> Primary	<b>Jul 2012</b>

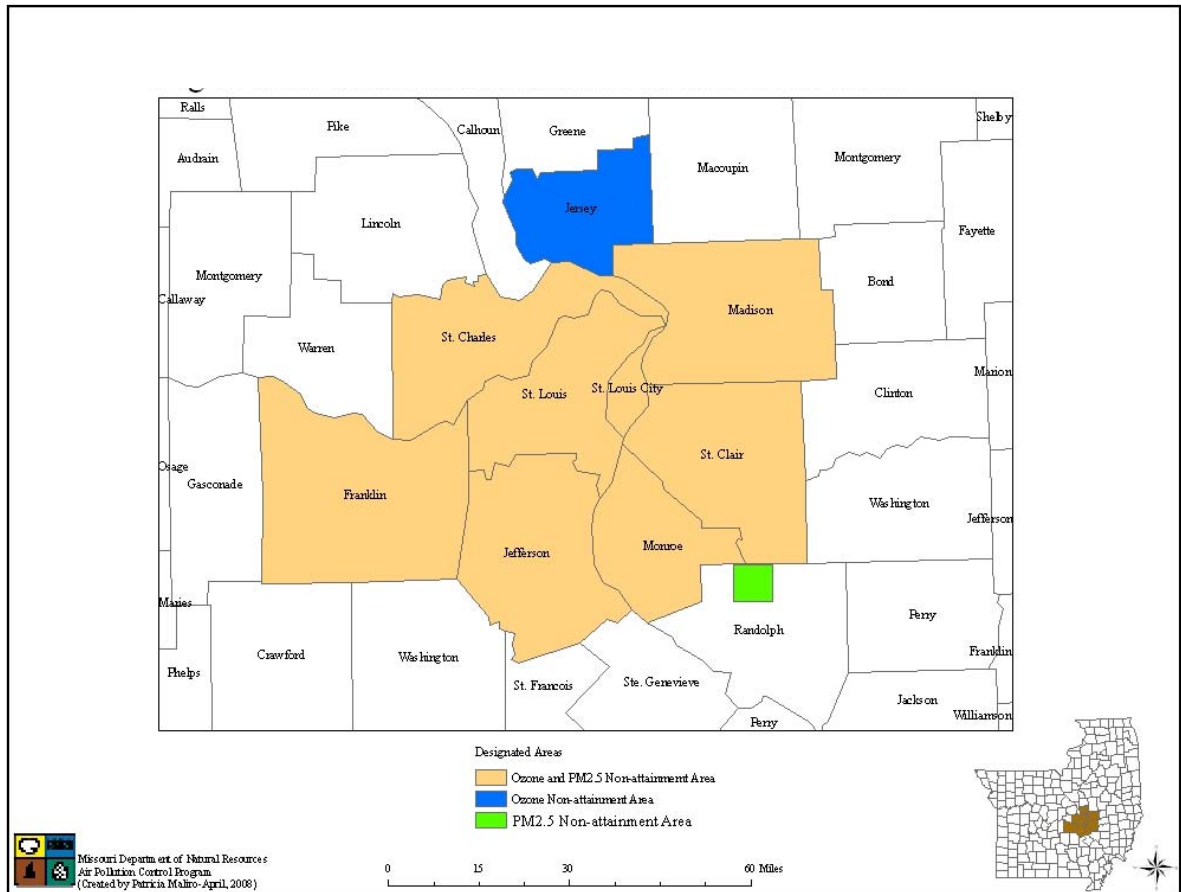
The overlapping NAAQS review schedules present challenges not only for the reviews of the standards but also for implementing any revisions to the standards in coordination with on-going control strategy programs.

### **Ozone**

Currently, the St. Louis metropolitan area is designated nonattainment for the 1997 8-hour ozone standard (moderate) and the annual PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS). The St. Louis ozone nonattainment area is composed of the following counties: Illinois – Madison, St. Clair, Monroe, and Jersey; and Missouri – St. Louis, St. Charles, Jefferson, Franklin, and the City of St. Louis. The St. Louis fine particulate nonattainment area is composed of Franklin, Jefferson, St. Charles and St. Louis counties and the City of St. Louis in Missouri and Madison, Monroe and St. Clair counties in Illinois. Baldwin Township in Randolph County, Illinois is also part of the fine particulates nonattainment area. Figure 1 illustrates the nonattainment boundaries for both the 1997 8-hour ozone and annual fine particulate standards.

<sup>2</sup> Underlined dates indicate court-ordered or settlement agreement deadlines.

**Figure 1 – Nonattainment Area for Ozone and PM 2.5**



### *Ozone Planning History*

Under the 1990 Clean Air Act Amendments (CAAA), St. Louis was classified as a moderate ozone nonattainment area for the 1-hour standard. The CAAA included very specific requirements for areas under each classification. The most important requirement for moderate areas was achieving attainment by 1996. Under the Amendments, failure to attain by the attainment date would result in reclassification (or “bump up”) to the more demanding classification of “serious.” Serious areas were subject to an additional set of mandatory requirements.

The St. Louis area was required to achieve a minimum of 15 percent reduction in emissions of volatile organic compounds (VOCs), and submit these Rate of Progress (ROP) plans for achieving that reduction. Missouri and Illinois submitted initial ROP plans in 1993 to the United States Environmental Protection Agency (US EPA).

Subsequent amendments to the original ROP plan were made in 1994, 1995, and 1996 by the state of Missouri. These amendments were the result of refinements to inventory calculations and improvements in the documents. Ultimately, the Missouri plan included

an enhanced inspection and maintenance program for the nonattainment area, a myriad of industrial VOC regulations for major sources, a Stage I and II gasoline vapor recovery program, and a reduced Reid Vapor Pressure regulation (later reformulated gasoline). An Illinois plan included similar provisions, including an enhanced inspection and maintenance program, Reasonably Available Control Technology (RACT) on major industrial VOC sources, and a reduced Reid Vapor Pressure regulation (and more recently reformulated gasoline).

Although the ROP requirement was one of the key obligations of the CAAA, the primary obligation was a plan to achieve the national ozone standard for the St. Louis region. This obligation is referred to as an attainment demonstration. An attainment demonstration was prepared and submitted in 1995, which showed that the area would attain the standard by 1996. The St. Louis area, however, was not able to attain the 1-hour ozone standard by 1996. The States of Missouri and Illinois proceeded with a request to US EPA to extend the attainment deadline. To qualify for this extension the states had to demonstrate that the area was significantly affected by ozone or ozone precursors transported from upwind sources, that all necessary local control measures have been implemented, and that the states had made the necessary administrative submittals. As part of this attainment date extension, additional photochemical grid modeling was conducted. This modeling included a number of regional control measures, in addition to the 15 percent ROP controls such as RFG and the enhanced I/M programs.

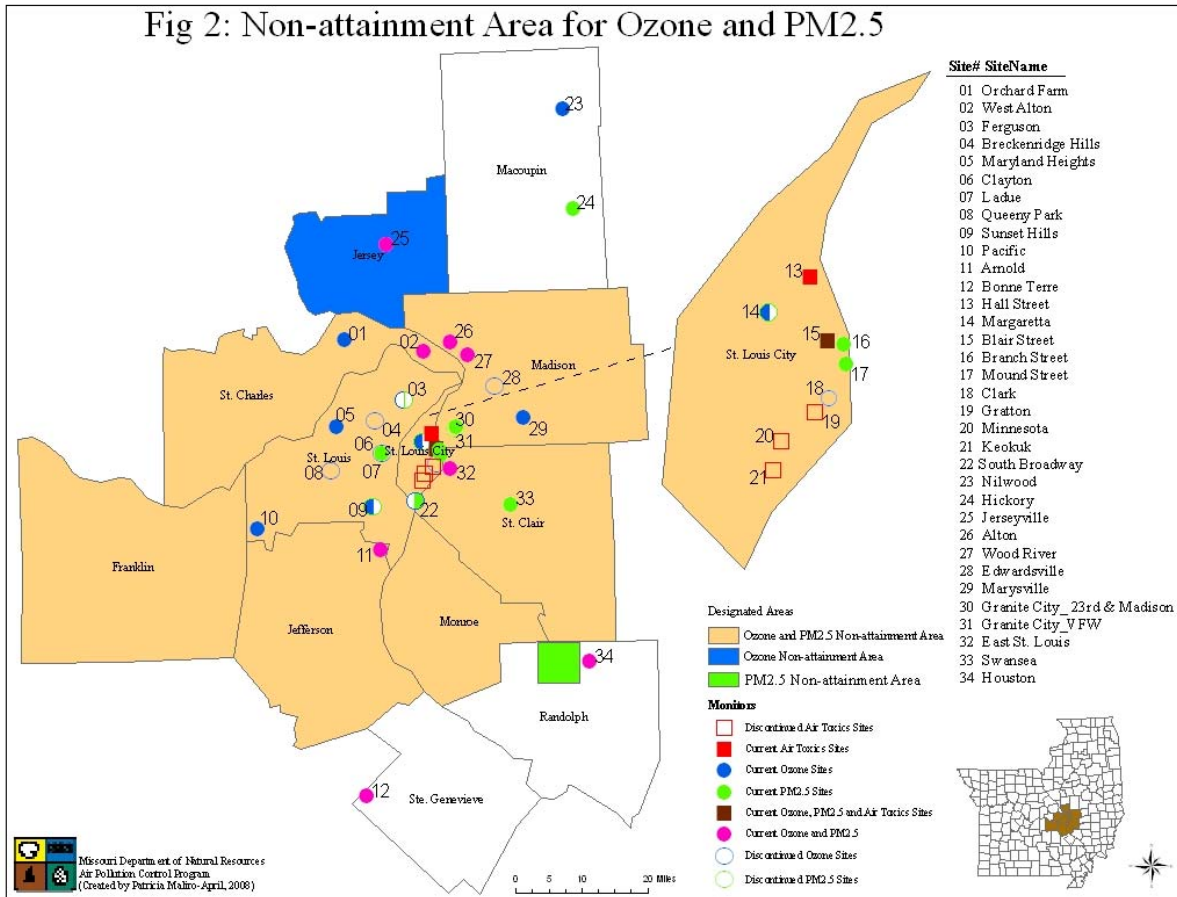
The attainment demonstration submitted as part of the 1-hour extension request focused on the evaluation of emission reductions that were expected from electric generating utilities resulting from US EPA's regional oxides of Nitrogen (NO<sub>x</sub>) control State Implementation Plan (SIP) call. The SIP call applied to twenty-two states in the eastern United States, and included emission reductions from sources located in the eastern one-third of Missouri and the entire state of Illinois. The study showed that both regional NO<sub>x</sub> controls and local VOC controls were necessary for attainment of the 1-hour standard, and that St. Louis was significantly affected by ozone transport and emissions from other states, and therefore, qualified for the attainment date extension. Missouri and Illinois were granted the extension and subsequently attained the 1-hour ozone standard in 2002.

On April 15, 2004, EPA designated the St. Louis metropolitan area as a moderate nonattainment area for the 1997 eight-hour ozone standard. This area includes the following counties: Illinois - Jersey, Madison, Monroe, St. Clair, and Missouri - St. Louis, St. Charles, Jefferson, Franklin and the City of St. Louis. The eight-hour ozone SIP submittal deadline was June 15, 2007, and the both the state of Missouri and the state of Illinois submitted a plan revision that demonstrates the St. Louis non-attainment area will reach attainment of the 8-hour ozone standard beginning in 2009.

The latest plan revision for the region requires a decentralized On-Board Diagnostic inspection and maintenance program, continued use of Phase II reformulated gasoline, new federal motor vehicle requirements (Tier 2/Tier 4), the NO<sub>x</sub> emission reductions from the NO<sub>x</sub> SIP call and scheduled NO<sub>x</sub> reductions for utilities in the Clean Air Interstate Rule (CAIR), and continued compliance with industrial VOC and NO<sub>x</sub> RACT regulations. Figure 2 shows the ozone and PM<sub>2.5</sub> monitoring sites in the St. Louis areas. Table 2 shows 2004-2007 8-hour Ozone levels in the area.



Figure 2 – St. Louis Area Ozone & PM2.5 Monitoring Sites



**Table 2 - 2004-2007 St. Louis 8-Hour Ozone Values (ppm)**



AIRS I.D.	Site Name	2004				2005				2006				2007				04-06 Design Value	05-07 Design Value
		Max.	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Max.	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Max.	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	Max.	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>		
ST. LOUIS METRO.																<b>.086</b>	<b>.089</b>		
MISSOURI:																			
29-099-0012	Arnold & Tenbrook	.080	.074	.073	.070	<b>.100</b>	<b>.097</b>	<b>.093</b>	<b>.092</b>	<b>.089</b>	<b>.085</b>	.084	.079	<b>.093</b>	<b>.093</b>	<b>.091</b>	<b>.087</b>	.080	<b>.086</b>
29-183-1002	West Alton	.081	.077	.077	.077	<b>.101</b>	<b>.095</b>	<b>.091</b>	<b>.089</b>	<b>.097</b>	<b>.091</b>	<b>.091</b>	<b>.091</b>	<b>.099</b>	<b>.094</b>	<b>.091</b>	<b>.089</b>	<b>.085</b>	<b>.089</b>
29-183-1004	Orchard Farm	.080	.080	.078	.076	<b>.098</b>	<b>.096</b>	<b>.093</b>	<b>.092</b>	<b>.095</b>	<b>.093</b>	<b>.092</b>	<b>.092</b>	<b>.095</b>	<b>.089</b>	<b>.085</b>	.083	<b>.086</b>	<b>.089</b>
29-189-0004	Sunset Hills	.076	.073	.072	.070	<b>.108</b>	<b>.093</b>	<b>.090</b>	<b>.089</b>	<b>.098</b>	.084	.083	.080	<b>.101</b>	<b>.098</b>	<b>.094</b>	<b>.089</b>	.079	<b>.086</b>
29-189-0006	Queeney Park	.075	.069	.067	.067	<b>.098</b>	<b>.090</b>	<b>.088</b>	.082	NO	NO	NO	NO	NO	NO	NO	NO	.074	N.A.
29-510-0086	Margaretta	.077	.074	.073	.072	<b>.096</b>	<b>.094</b>	<b>.092</b>	<b>.091</b>	.084	.079	.077	.076	<b>.113</b>	<b>.096</b>	<b>.091</b>	<b>.091</b>	.079	<b>.086</b>
29-189-0005	Pacific	NO	NO	NO	NO	<b>.099</b>	<b>.092</b>	<b>.087</b>	<b>.087</b>	<b>.090</b>	.081	.081	.079	<b>.093</b>	<b>.089</b>	<b>.089</b>	<b>.085</b>	N/A	.083
29-189-0014	Maryland Heights	NO	NO	NO	NO	<b>.097</b>	<b>.094</b>	<b>.089</b>	<b>.088</b>	<b>.092</b>	<b>.087</b>	<b>.087</b>	.084	<b>.103</b>	<b>.101</b>	<b>.094</b>	<b>.094</b>	N/A	<b>.088</b>
29-510-0085	Blair Street	NO	NO	NO	NO	<b>.099</b>	<b>.093</b>	<b>.091</b>	<b>.089</b>	<b>.085</b>	.083	.077	.076	<b>.102</b>	<b>.092</b>	<b>.088</b>	<b>.087</b>	N/A	.084
ILLINOIS:																			
17-083-1001	Jerseyville	.077	.076	.075	.073	<b>.089</b>	<b>.087</b>	<b>.087</b>	<b>.086</b>	.083	.079	.077	.075	<b>.085</b>	.077	.075	.075	.078	.078
17-119-0008	Alton	.080	.074	.074	.074	<b>.102</b>	<b>.096</b>	<b>.092</b>	<b>.091</b>	<b>.085</b>	.080	.080	.079	<b>.086</b>	<b>.085</b>	.083	.081	.084	.084
17-119-1009	Maryville	.082	.081	.080	.078	<b>.104</b>	<b>.095</b>	<b>.092</b>	<b>.088</b>	<b>.089</b>	.084	.077	.077	<b>.107</b>	<b>.094</b>	<b>.091</b>	<b>.087</b>	.081	.084
17-119-3007	Wood River	.081	.080	.073	.073	<b>.099</b>	<b>.093</b>	<b>.091</b>	<b>.087</b>	.081	.080	.078	.077	<b>.090</b>	<b>.089</b>	<b>.087</b>	<b>.086</b>	.079	.083
17-163-0010	East St. Louis	.078	.076	.075	.073	<b>.110</b>	<b>.103</b>	<b>.101</b>	<b>.094</b>	<b>.098</b>	<b>.097</b>	.082	.077	<b>.093</b>	.081	.078	.077	.081	.082

N.O. = Not Operating

N.A. = Not Available due to lack of data

**Bold** = Data values in shaded cells and bold print represent exceedances of the standard

Design values in **BLUE** cells and bold print represent violations of the standard, which may result in Non-Attainment

### *Relevant Ozone Information*

Based on the analyses used to support the 1-hour and 1997 8-hour ozone SIP development, there are several conclusions that can be drawn. First, the St. Louis area is impacted by transport from the Ohio River Valley, southern Missouri and Illinois, along with the Memphis metropolitan area. The meteorological analyses denote that ozone concentrations over the 8-hour ozone standard are caused by a variety of synoptic weather patterns that typically involve anti-cyclonic behavior. Most exceedance days have stagnant conditions in the early morning hours with southwesterly, southerly, southeasterly, or easterly surface wind flows later in the day. These wind differences are typically due to the location of a high pressure center to the east or north of the region. Second, even with the new controls, the St. Louis area contributes more than half of its own ozone concentrations. These results are based on CAMx APCA analyses conducted for 2009 emissions in St. Louis. Third, the large amount of biogenic VOC emissions to the south and southeast of the nonattainment area also contribute significantly to the formation of ozone in St. Louis. These emissions are generated from the large oak and pine forests of south-central and southeastern Missouri. Fourth, the nature of ozone formation in St. Louis has changed slightly over the years. Prior to the 1-hour ozone SIP development, the area's ozone formed under a mixture of VOC- and NO<sub>x</sub>-limited conditions depending on the meteorological conditions (e.g. wind direction) for that episode. Recently, St. Louis has shifted to more NO<sub>x</sub>-limited conditions, but with some days that are VOC-limited. This follows the overall trend of significant VOC emission reductions in the high emission density areas near downtown St. Louis. A summary of the 2002 and 2009 anthropogenic emission inventories (NO<sub>x</sub> and VOC) for the St. Louis area are provided as Tables 3 & 4.

Also, presented below is Figure 3 which illustrates the recent history of ozone concentrations at several critical sites in and around the St. Louis area. This figure illustrates a slight downward trend in concentrations influenced by previous SIP submittals from both Missouri and Illinois. Further, the year-to-year fluctuation in 4th highest concentration reflects the strong meteorological variability seen not only in St. Louis but throughout the Midwest. To be clear, based on Missouri's recent 8-hour ozone SIP submittal, the area should see a sizable reduction in ozone concentrations due to the federal mobile source measures, continued implementation of utility NO<sub>x</sub> controls, and other local measures in the next few years.

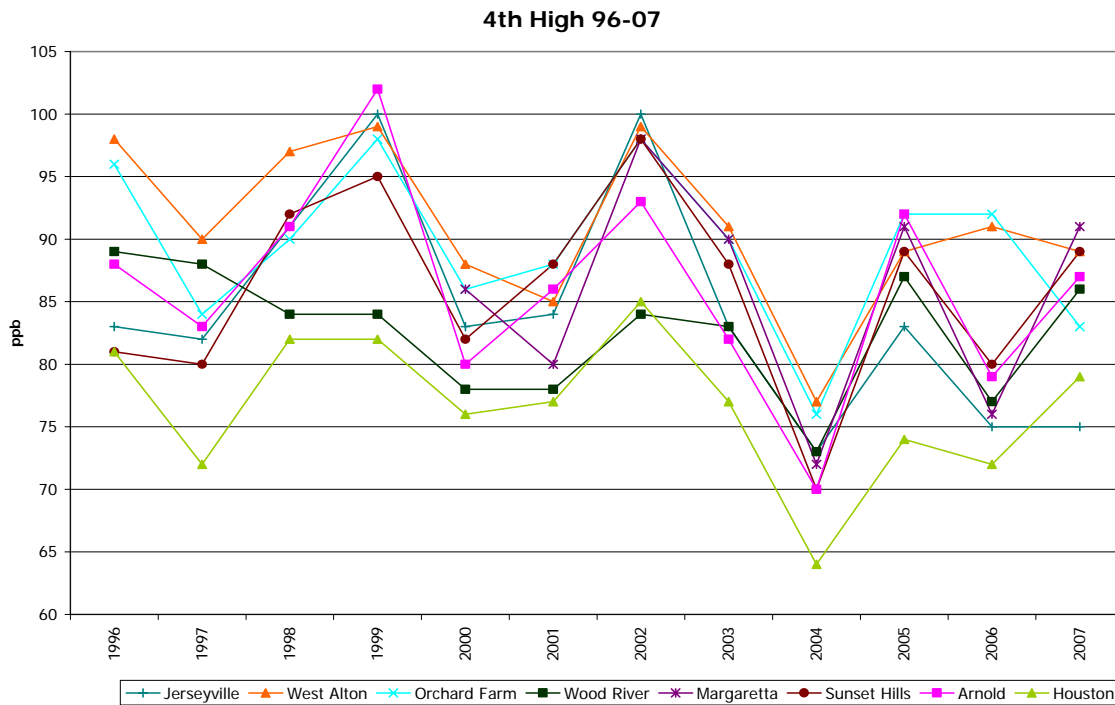
**Table 3 - Summary of Weekday NOx Emissions from the 2002 Base 4 Typical and 2009 On-the-Books Inventories for St. Louis Nonattainment Counties**

County	Area NOx (tpd)		Offroad Mobile NOx (tpd)		Onroad Mobile NOx (tpd)		Non-EGU Point NOx (tpd)		EGU Point NOx (tpd)		Total: All Source Categories NOx (tpd)	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
<b>Missouri</b>												
Franklin	1.7	1.8	4.8	3.8	15.1	7.7	0.1	0.1	24.2	28.1	46.0	41.6
Jefferson	1.4	1.5	5.3	5.4	17.7	9.6	15.4	18.3	10.6	15.2	50.4	50.0
St Charles	2.4	2.5	7.1	7.7	23.5	12.8	1.2	1.2	44.9	21.9	79.1	46.1
St Louis	9.9	10.2	31.5	31.6	97.4	52.7	2.3	2.3	23.1	17.9	164.1	114.8
St Louis City	4.0	4.4	12.0	10.5	26.4	14.4	5.4	5.1	0.0	0.0	47.9	34.5
<b>MO NAA Subtotal</b>	<b>19.4</b>	<b>20.4</b>	<b>60.8</b>	<b>59.1</b>	<b>180.1</b>	<b>97.2</b>	<b>24.4</b>	<b>27.1</b>	<b>102.8</b>	<b>83.1</b>	<b>387.4</b>	<b>286.9</b>
<b>Illinois</b>												
Jersey	0.1	0.1	2.6	2.4	1.7	1.0	0.0	0.0	0.0	0.0	4.4	3.5
Madison	0.7	0.8	15.6	13.1	24.2	11.7	29.7	25.7	13.9	9.5	84.1	60.8
Monroe	0.1	0.1	5.5	4.2	3.8	1.9	0.1	0.1	1.7	0.0	11.2	6.4
St Clair	0.5	0.6	10.8	8.8	23.6	11.4	3.3	4.7	0.4	0.0	38.6	25.5
<b>IL NAA Subtotal</b>	<b>1.4</b>	<b>1.5</b>	<b>34.5</b>	<b>28.5</b>	<b>53.3</b>	<b>26.1</b>	<b>33.1</b>	<b>30.5</b>	<b>15.9</b>	<b>9.6</b>	<b>138.3</b>	<b>96.2</b>
<b>NAA Totals</b>	<b>20.8</b>	<b>21.9</b>	<b>95.3</b>	<b>87.6</b>	<b>233.4</b>	<b>123.3</b>	<b>57.4</b>	<b>57.6</b>	<b>118.7</b>	<b>92.7</b>	<b>525.7</b>	<b>383.1</b>

**Table 4 - Summary of Weekday VOC Emissions from the 2002 Base 4 Typical and 2009 On-the-Books Inventories for St. Louis Nonattainment Counties**

County	Area VOC (tpd)		Offroad Mobile VOC (tpd)		Onroad Mobile VOC (tpd)		Non-EGU Point VOC (tpd)		EGU Point VOC (tpd)		Total: All Source Categories VOC (tpd)	
	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009	2002	2009
<b>Missouri</b>												
Franklin	3.9	4.2	2.7	3.3	5.3	3.7	1.9	1.9	0.8	0.8	14.5	14.0
Jefferson	8.7	9.0	4.0	4.5	8.3	4.7	1.7	1.7	0.4	0.5	23.1	20.4
St Charles	9.1	10.1	7.2	7.2	11.4	6.5	3.0	3.1	0.6	0.6	31.3	27.4
St Louis	36.2	39.2	27.5	20.3	49.3	28.0	13.2	13.4	0.2	0.3	126.4	101.3
St Louis City	13.4	14.1	5.6	4.1	14.5	8.3	11.1	10.8	0.0	0.0	44.6	37.2
<b>MO NAA Subtotal</b>	<b>71.4</b>	<b>76.6</b>	<b>46.9</b>	<b>39.4</b>	<b>88.9</b>	<b>51.2</b>	<b>30.8</b>	<b>30.9</b>	<b>1.9</b>	<b>2.3</b>	<b>239.9</b>	<b>200.3</b>
<b>Illinois</b>												
Jersey	2.2	2.2	0.5	0.5	1.1	0.5	0.1	0.0	0.0	0.0	3.8	3.2
Madison	13.8	13.3	4.4	3.3	11.3	5.5	11.0	7.9	0.3	0.2	40.8	30.1
Monroe	2.3	2.3	0.6	0.5	2.0	1.0	0.1	0.0	0.1	0.0	5.1	3.9
St Clair	11.6	11.0	3.4	2.4	11.7	5.7	3.7	3.9	0.0	0.0	30.5	22.9
<b>IL NAA Subtotal</b>	<b>29.9</b>	<b>28.8</b>	<b>9.0</b>	<b>6.5</b>	<b>26.1</b>	<b>12.7</b>	<b>14.9</b>	<b>11.9</b>	<b>0.4</b>	<b>0.2</b>	<b>80.2</b>	<b>60.1</b>
<b>NAA Totals</b>	<b>101.3</b>	<b>105.4</b>	<b>55.9</b>	<b>45.9</b>	<b>115.0</b>	<b>63.9</b>	<b>45.7</b>	<b>42.7</b>	<b>2.3</b>	<b>2.5</b>	<b>320.1</b>	<b>260.4</b>

**Figure 3 - 4<sup>th</sup> High Ozone Values 1996-2007**



The next topic described here is emission sources that continue to influence ozone concentrations in the St. Louis area. The average of the biogenic VOC emissions for all the episodes in the attainment demonstration from the nonattainment area is: Missouri NAA = 309.53 tons per day (TPD), Illinois NAA = 135.73 TPD with a total of 445.26 TPD. Sixty percent of the biogenic emissions in the nonattainment area are emitted from Franklin and Jefferson County, Missouri (south and west of the downtown area). In addition, the outlying Missouri counties to the south and west have substantially more biogenic VOC emissions. Over 90 percent of the total 2002 point source NO<sub>x</sub> emissions in the Missouri portion of the nonattainment area were emitted by the four Ameren electric generating facilities, a cement kiln, and a group of industrial boilers. Two of the Ameren facilities have computer-controlled staged combustion and overfire air NO<sub>x</sub> measures (less than 0.15 lb/MMBTU) and all four are in compliance with the NO<sub>x</sub> SIP call requirements and are included in the Clean Air Interstate Rule program. The 2002 point source VOC emissions in the Missouri portion of St. Louis were dominated by an aluminum foil pack manufacturer (JW Aluminum) and four automobile manufacturing facilities (GM, Chrysler (2), and Ford which is currently idle).

**Particulate Matter**

*Relevant PM Information*

The St. Louis metropolitan area was designated nonattainment for the annual PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS) on April 5, 2005. The St. Louis annual PM<sub>2.5</sub> nonattainment area is composed of the following counties: Illinois – Madison, St. Clair, Monroe, and Baldwin Township in Randolph County; Missouri – St.

Louis, St. Charles, Jefferson, Franklin, and the City of St. Louis. The highest observational data in the St. Louis area exhibit a consistent pattern of organic compounds contributing at or near the majority of the total PM mass, with typical seasonal variations of sulfate and nitrate contributing to a large extent as well (summer sulfate, winter nitrate).

The PM<sub>2.5</sub> State Implementation Plan is currently under development by both states. There is only one monitor that violates the annual standard based on 2005-2007 data. The Granite City, IL monitor located north-northeast of the downtown area is the violating monitor. The geographic pattern of ambient concentrations is higher concentrations in the downtown and East St. Louis/Granite City areas and slightly lower annual concentrations in the suburban and rural sites around the area. This leads to the conclusion that there is a contribution to these monitors from local sources in the area along with a sizable component that is transported into the area. Table yyy shows the three-year average design value concentration for all the PM<sub>2.5</sub> monitors in the St. Louis area [note: this table to be provided later]. Figure 2 illustrates the location of the monitors in the network.

The St. Louis area is one of the few urban areas in the nation that is unable to demonstrate compliance with the annual PM<sub>2.5</sub> standard using 2009 “on-the-books” control. Therefore, as part of the SIP submittal, Missouri and Illinois will be applying for an attainment date extension to 2012 to allow for additional controls to be implemented. The state of Illinois has promulgated a multi-pollutant utility rule for the entire state that will reduce SO<sub>2</sub>, NO<sub>x</sub>, and mercury emissions dramatically in the coming year. In addition, subsequently proposed RACT controls for Missouri and Illinois will likely have anticipated compliance dates in the 2011-2012 timeframe.

The PM<sub>2.5</sub> modeling inventory for the St. Louis area is depicted below. Each pollutant is illustrated with the 2002 base year inventory, a 2009 inventory, and the projected 2012 attainment inventory.

#### *Other Air Quality Concerns*

The St. Louis area contains the single remaining lead nonattainment area in the nation. The city of Herculaneum, Missouri in Jefferson County contains a primary lead smelting operation (Doe Run Company) and is currently in violation of the 1.5 ug/m<sup>3</sup> quarterly air standard. The state of Missouri submitted a SIP revision to address the most recent violations of the lead standard near the facility in spring 2007 and US EPA Region VII is preparing a rulemaking on that revision. The Doe Run Company is, also, the single largest non-utility source of sulfur dioxide in the PM<sub>2.5</sub> nonattainment area at around 40,000 tons per year. In addition, the lead NAAQS is currently under review by US EPA and the announcement of the new NAAQS will happen in the near future. Based on the new NAAQS, additional effort could be necessary for lead attainment in Herculaneum or in the St. Louis metropolitan complex.

The St. Louis Community Air Project (CAP) partnership conducted an evaluation of air toxics exposure in the downtown St. Louis area in 2001-2002. The focus of this evaluation was to identify air pollutants in the City of St. Louis and, then, identify pollutants of concern. The following compounds were identified as potentially harmful at current exposure levels: acetaldehyde, arsenic compounds, benzene, chromium

compounds, formaldehyde, and, possibly, diesel particulate matter. While this sampling effort was not geographically pervasive, the identification of these pollutants was a critical first step in this Air Quality Management Planning exercise. It will allow the process to focus on community concerns regarding air toxics and achieve results consistent with attainment of the applicable National Ambient Air Quality Standards.

**Table 5 - Summary of a Calendar Year NOx Emissions from the 2002, 2009 & 2012 for St. Louis Nonattainment Counties**

County	Area NOx (tpy)			Offroad Mobile NOx (tpy)			Onroad Mobile NOx (tpy)			Non-EGU Point NOx (tpy)			EGU Point NOx (tpy)			Total: All Source Categories NOx (tpy)		
	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012
<b>Missouri</b>																		
Franklin	706	742	764	1584	1138	845	5103	3268	2169	32	33	26	7820	10413	10534	15245	15594	14339
Jefferson	660	682	699	1781	1847	1492	6203	4090	2716	5206	6217	4716	3997	4900	4328	17846	17737	13952
St Charles	1225	1285	1317	2140	2409	1521	8325	5478	3640	461	477	254	14122	6982	2145	26273	16631	8876
St Louis	5321	5551	5670	9643	11022	7821	35406	23207	15413	928	1155	706	9489	5768	5460	60786	46703	35070
St Louis City	2102	2278	2327	4181	3777	3304	9475	6206	4131	1995	2526	1721	0	0	0	17753	14787	11483
<b>MO NAA Subtotal</b>	<b>10014</b>	<b>10538</b>	<b>10776</b>	<b>19329</b>	<b>20193</b>	<b>14984</b>	<b>64511</b>	<b>42250</b>	<b>28069</b>	<b>8622</b>	<b>10407</b>	<b>7423</b>	<b>35427</b>	<b>28063</b>	<b>22467</b>	<b>137903</b>	<b>111452</b>	<b>83720</b>
<b>Illinois</b>																		
Madison	1020	1122	1145	5560	4660	4274	8139	4787	3336	8065	3783	3705	2492	2787	1898	25276	17139	14358
Monroe	86	91	93	1978	1511	1454	1352	774	558	1	9	3	2	2	16	3419	2388	2124
Randolph*	138	154	158	2356	1777	1705	867	524	395	85	103	81	22374	5373	6944	25821	7930	9283
St Clair	711	770	783	3827	3122	2850	8202	4820	3362	366	622	501	6	2	16	13112	9336	7512
<b>IL NAA Subtotal</b>	<b>1955</b>	<b>2137</b>	<b>2179</b>	<b>13721</b>	<b>11070</b>	<b>10283</b>	<b>18561</b>	<b>10905</b>	<b>7650</b>	<b>8518</b>	<b>4517</b>	<b>4291</b>	<b>24874</b>	<b>8164</b>	<b>8874</b>	<b>67628</b>	<b>36794</b>	<b>33277</b>
<b>NAA Totals</b>	<b>11969</b>	<b>12675</b>	<b>12955</b>	<b>33050</b>	<b>31263</b>	<b>25267</b>	<b>83071</b>	<b>53155</b>	<b>35719</b>	<b>17139</b>	<b>14924</b>	<b>11714</b>	<b>60301</b>	<b>36228</b>	<b>31342</b>	<b>205531</b>	<b>148246</b>	<b>116997</b>

\*Emissions from Randolph County are for the entire county

Table 6 - Summary of a Calendar Year VOC Emissions from the 2002, 2009 & 2012 for St. Louis Nonattainment Counties

County	Area VOC (tpy)			Offroad Mobile VOC (tpy)			Onroad Mobile VOC (tpy)			Non-EGU Point VOC (tpy)			EGU Point VOC (tpy)			Total: All Source Categories VOC (tpy)		
	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012
<b>Missouri</b>																		
Franklin	2004	2023	2046	791	1158	610	2063	1358	987	562	558	766	252	315	318	5671	5412	4727
Jefferson	3703	3697	4093	1170	1589	887	2603	1755	1273	529	533	597	135	153	150	8140	7726	7000
St Charles	3664	3963	3975	2242	2514	1329	3595	2424	1757	1271	1301	1495	180	200	173	10951	10401	8729
St Louis	13781	14747	15353	8123	7145	4916	15340	10337	7483	4061	6043	4520	85	108	90	41391	38379	32362
St Louis City	5061	5246	5833	1555	1433	1000	4509	3038	2190	3794	6276	4058	0	0	0	14918	15994	13082
<b>MO NAA Subtotal</b>	<b>28212</b>	<b>29676</b>	<b>31300</b>	<b>13881</b>	<b>13839</b>	<b>8743</b>	<b>28110</b>	<b>18913</b>	<b>13690</b>	<b>10217</b>	<b>14711</b>	<b>11436</b>	<b>651</b>	<b>775</b>	<b>732</b>	<b>81072</b>	<b>77913</b>	<b>65900</b>
<b>Illinois</b>																		
Madison	6059	5895	5935	1554	1159	1101	4162	2418	1921	2684	1699	2321	44	61	64	14503	11232	11341
Monroe	1713	1709	1710	217	160	166	724	487	398	23	20	26	0	0	0	2676	2376	2301
Randolph*	1181	1150	1161	343	288	291	528	289	236	17	6	18	337	351	375	2407	2085	2081
St Clair	4634	4442	4475	1211	843	810	4311	2496	1983	1036	1174	1443	0	0	0	11191	8955	8711
<b>IL NAA Subtotal</b>	<b>13587</b>	<b>13196</b>	<b>13280</b>	<b>3325</b>	<b>2450</b>	<b>2368</b>	<b>9724</b>	<b>5690</b>	<b>4539</b>	<b>3759</b>	<b>2899</b>	<b>3808</b>	<b>382</b>	<b>413</b>	<b>439</b>	<b>30777</b>	<b>24648</b>	<b>24435</b>
<b>NAA Totals</b>	<b>41799</b>	<b>42872</b>	<b>44581</b>	<b>17206</b>	<b>16289</b>	<b>11111</b>	<b>37834</b>	<b>24603</b>	<b>18229</b>	<b>13976</b>	<b>17610</b>	<b>15244</b>	<b>1033</b>	<b>1188</b>	<b>1171</b>	<b>111849</b>	<b>102562</b>	<b>90335</b>

\*Emissions from Randolph County are for the entire county

Table 7 - Summary of a Calendar Year NH3 Emissions from the 2002, 2009 & 2012 for St. Louis Non-attainment Counties

County	Area NH3 (tpy)			Offroad Mobile NH3 (tpy)			Onroad Mobile NH3 (tpy)			Non-EGU Point NH3 (tpy)			EGU Point NH3 (tpy)			Total: All Source Categories NH3 (tpy)		
	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012
<b>Missouri</b>																		
Franklin	1923	573	594	1	2	0	138	159	163	32	39	42	0	157	159	2094	930	957
Jefferson	225	84	83	1	2	0	178	206	210	109	134	144	2	77	75	514	503	514
St Charles	793	258	268	2	5	0	242	280	286	15	20	21	1	54	47	1052	617	623
St Louis	2238	627	672	6	18	1	1032	1193	1220	588	725	779	2	54	45	3865	2616	2716
St Louis City	27	30	28	2	4	2	295	342	349	8	10	11	0	0	0	333	385	390
<b>MO NAA Subtotal</b>	<b>5205</b>	<b>1572</b>	<b>1645</b>	<b>12</b>	<b>30</b>	<b>3</b>	<b>1884</b>	<b>2179</b>	<b>2229</b>	<b>752</b>	<b>928</b>	<b>998</b>	<b>4</b>	<b>342</b>	<b>326</b>	<b>7857</b>	<b>5051</b>	<b>5201</b>
<b>Illinois</b>																		
Madison	1077	359	380	4	5	2	310	300	362	23	10	11	4	33	35	1418	707	789
Monroe	850	308	219	1	1	1	54	12	63	0	0	0	0	0	0	905	321	283
Randolph*	579	147	153	2	2	1	28	31	32	1	1	1	2	113	120	612	295	308
St Clair	810	170	363	3	3	1	318	308	371	14	15	16	0	0	0	1144	497	752
<b>IL NAA Subtotal</b>	<b>3316</b>	<b>985</b>	<b>1116</b>	<b>10</b>	<b>11</b>	<b>5</b>	<b>710</b>	<b>650</b>	<b>828</b>	<b>37</b>	<b>27</b>	<b>28</b>	<b>6</b>	<b>147</b>	<b>155</b>	<b>4079</b>	<b>1820</b>	<b>2132</b>
<b>NAA Totals</b>	<b>8522</b>	<b>2557</b>	<b>2761</b>	<b>22</b>	<b>41</b>	<b>9</b>	<b>2594</b>	<b>2829</b>	<b>3056</b>	<b>789</b>	<b>955</b>	<b>1026</b>	<b>10</b>	<b>489</b>	<b>481</b>	<b>11936</b>	<b>6872</b>	<b>7332</b>

\*Emissions from Randolph County are for the entire county



Table 8 - Summary of a Calendar Year SO<sub>2</sub> Emissions from the 2002, 2009 & 2012 for St. Louis Nonattainment Counties

County	Area SO <sub>2</sub> (tpy)			Offroad Mobile SO <sub>2</sub> (tpy)			Onroad Mobile SO <sub>2</sub> (tpy)			Non-EGU Point SO <sub>2</sub> (tpy)			EGU Point SO <sub>2</sub> (tpy)			Total: All Source Categories SO <sub>2</sub> (tpy)		
	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012
<b>Missouri</b>																		
Franklin	1045	1041	1044	138	25	8	98	21	16	3	2	2	47608	65489	53594	48892	66577	54665
Jefferson	793	771	773	180	36	14	127	27	20	16026	16190	16262	23256	30291	25356	40382	47315	42426
St Charles	2071	2017	2022	213	48	16	173	37	28	687	622	650	45955	2298	8790	49100	5021	11507
St Louis	10638	10793	10828	880	386	289	739	157	119	228	221	224	16453	20554	22511	28938	32112	33971
St Louis City	4129	4514	4529	358	65	28	212	45	34	6771	12972	7325	0	0	0	11469	17596	11915
<b>MO NAA Subtotal</b>	<b>18676</b>	<b>19135</b>	<b>19197</b>	<b>1770</b>	<b>561</b>	<b>355</b>	<b>1349</b>	<b>287</b>	<b>217</b>	<b>23716</b>	<b>30007</b>	<b>24463</b>	<b>133272</b>	<b>118632</b>	<b>110251</b>	<b>178782</b>	<b>168622</b>	<b>154483</b>
<b>Illinois</b>																		
Madison	109	120	122	446	80	28	309	28	33	19426	2416	2407	7266	8309	10583	27556	10953	13173
Monroe	12	13	13	163	29	9	54	1	6	0	0	0	0	0	0	228	44	29
Randolph*	18	20	21	191	34	11	34	3	3	28	30	30	26267	27697	6944	26539	27785	7009
St Clair	75	85	86	290	53	18	317	29	34	1541	1552	1606	0	0	0	2223	1719	1745
<b>IL NAA Subtotal</b>	<b>214</b>	<b>239</b>	<b>243</b>	<b>1090</b>	<b>197</b>	<b>66</b>	<b>714</b>	<b>62</b>	<b>77</b>	<b>20995</b>	<b>3998</b>	<b>4043</b>	<b>33533</b>	<b>36006</b>	<b>17527</b>	<b>56547</b>	<b>40501</b>	<b>21956</b>
<b>NAA Totals</b>	<b>18890</b>	<b>19374</b>	<b>19440</b>	<b>2860</b>	<b>758</b>	<b>421</b>	<b>2063</b>	<b>348</b>	<b>294</b>	<b>44711</b>	<b>34005</b>	<b>28506</b>	<b>166805</b>	<b>154638</b>	<b>127778</b>	<b>235329</b>	<b>209122</b>	<b>176439</b>

\*Emissions from Randolph County are for the entire county

Table 9 - Summary of a Calendar Year PM<sub>10</sub> Emissions from the 2002, 2009 & 2012 for St. Louis Nonattainment Counties

County	Area PM <sub>10</sub> (tpy)			Offroad Mobile PM <sub>10</sub> (tpy)			Onroad Mobile PM <sub>10</sub> (tpy)			Non-EGU Point PM <sub>10</sub> (tpy)			EGU Point PM <sub>10</sub> (tpy)			Total: All Source Categories PM <sub>10</sub> (tpy)		
	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012
<b>Missouri</b>																		
Franklin	27104	27095	27115	102	111	69	37	21	13	82	94	100	996	2207	1342	28321	29528	28640
Jefferson	42933	42948	42978	110	138	88	48	28	17	1113	1327	1437	513	1012	616	44716	45453	45136
St Charles	31829	31830	31841	212	271	152	65	37	23	219	258	279	156	1489	156	32481	33886	32449
St Louis	29968	29990	30021	698	864	561	276	159	96	572	634	668	318	717	316	31833	32365	31662
St Louis City	5505	5522	5531	157	155	130	79	46	28	935	1193	1230	0	0	0	6677	6915	6919
<b>MO NAA Subtotal</b>	<b>137338</b>	<b>137385</b>	<b>137487</b>	<b>1280</b>	<b>1539</b>	<b>1000</b>	<b>504</b>	<b>291</b>	<b>176</b>	<b>2921</b>	<b>3507</b>	<b>3714</b>	<b>1984</b>	<b>5425</b>	<b>2430</b>	<b>144027</b>	<b>148148</b>	<b>144806</b>
<b>Illinois</b>																		
Madison	1461	1598	1643	264	218	199	53	26	18	3469	1465	1553	145	1752	508	5392	5060	3921
Monroe	532	578	593	84	65	60	9	1	3	72	91	98	0	0	0	697	736	754
Randolph*	221	238	243	106	82	77	10	5	4	92	111	120	2139	1300	1683	2567	1737	2126
St Clair	1431	1544	1582	204	163	146	54	27	18	428	509	568	0	0	0	2117	2243	2314
<b>IL NAA Subtotal</b>	<b>3645</b>	<b>3959</b>	<b>4061</b>	<b>658</b>	<b>528</b>	<b>482</b>	<b>126</b>	<b>59</b>	<b>42</b>	<b>4061</b>	<b>2176</b>	<b>2339</b>	<b>2284</b>	<b>3052</b>	<b>2191</b>	<b>10774</b>	<b>9775</b>	<b>9115</b>
<b>NAA Totals</b>	<b>141078</b>	<b>141451</b>	<b>141660</b>	<b>1884</b>	<b>2028</b>	<b>1444</b>	<b>627</b>	<b>349</b>	<b>217</b>	<b>6907</b>	<b>5591</b>	<b>5952</b>	<b>4268</b>	<b>8478</b>	<b>4621</b>	<b>154801</b>	<b>157923</b>	<b>153921</b>

\*Emissions from Randolph County are for the entire county

Table 10 - Summary of a Calendar Year PM2.5 Emissions from the 2002, 2009 & 2012 for St. Louis Nonattainment Counties

County	Area PM2.5 (tpy)			Offroad Mobile PM2.5 (tpy)			Onroad Mobile PM2.5 (tpy)			Non-EGU Point PM2.5 (tpy)			EGU Point PM2.5 (tpy)			Total: All Source Categories PM2.5 (tpy)		
	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012	2002	2009	2012
<b>Missouri</b>																		
Franklin	4927	4921	4941	93	102	65	73	52	39	35	41	44	679	1805	915	5808	6920	6003
Jefferson	7675	7693	7723	101	127	82	94	67	50	189	231	250	350	836	420	8408	8953	8525
St Charles	6005	6013	6023	195	249	143	128	91	68	99	118	128	143	1467	143	6569	7938	6505
St Louis	6138	6179	6207	637	788	523	545	387	291	223	251	265	161	592	158	7704	8197	7444
St Louis City	1245	1263	1271	144	143	121	156	111	83	539	658	684	0	0	0	2084	2174	2159
<b>MO NAA Subtotal</b>	<b>25989</b>	<b>26069</b>	<b>26165</b>	<b>1171</b>	<b>1409</b>	<b>934</b>	<b>996</b>	<b>707</b>	<b>531</b>	<b>1084</b>	<b>1298</b>	<b>1370</b>	<b>1333</b>	<b>4699</b>	<b>1636</b>	<b>30572</b>	<b>34182</b>	<b>30637</b>
<b>Illinois</b>																		
Madison	674	725	739	241	199	185	118	75	69	23	15	15	63	1595	332	1119	2610	1340
Monroe	258	276	281	77	59	56	21	3	12	1	1	1	0	0	0	356	339	349
Randolph*	147	156	158	96	75	71	18	11	9	4	4	4	1038	1096	1577	1303	1342	1819
St Clair	537	576	587	186	149	137	121	77	70	25	24	24	0	0	0	870	826	818
<b>IL NAA Subtotal</b>	<b>1616</b>	<b>1733</b>	<b>1765</b>	<b>600</b>	<b>482</b>	<b>449</b>	<b>278</b>	<b>167</b>	<b>160</b>	<b>53</b>	<b>43</b>	<b>44</b>	<b>1101</b>	<b>2692</b>	<b>1909</b>	<b>3648</b>	<b>5117</b>	<b>4326</b>
<b>NAA Totals</b>	<b>27605</b>	<b>27802</b>	<b>27929</b>	<b>1771</b>	<b>1891</b>	<b>1384</b>	<b>1275</b>	<b>874</b>	<b>691</b>	<b>1137</b>	<b>1341</b>	<b>1414</b>	<b>2434</b>	<b>7391</b>	<b>3545</b>	<b>34221</b>	<b>39299</b>	<b>34963</b>

\*Emissions from Randolph County are for the entire county

## Air Toxics

In the area of Air Toxics, St. Louis is impacted by most of the urban air toxics typical of larger cities. In June 2005, EPA Region 7 - working with local officials - completed a St. Louis-specific air toxics study. The study produced a report titled “St. Louis Community Air Project Air Toxics Risk Characterization” (CAP Report). The CAP Report was a direct result of the region’s attempt to address environmental concerns expressed by residents, workers and business owners in St. Louis. Specific air toxics of concern to the community cited in the report included five “priority air toxics of concern”: acetaldehyde, arsenic compounds, benzene, chromium compounds and formaldehyde. It also listed a concern with diesel particulate matter. In addition to the CAP report, MDNR continues to monitor for specific toxics in the area.

Since 1720 lead has played an important role in the growth and development of Missouri. The history of Missouri begins with the history of its lead mining. Lead mining hastened the settlement of the wilderness, affected the building of roads and railroads, generated commerce and industry, and created an economic base for generations of Missourians. (*Source- <http://www.dnr.mo.gov/pubs/pub659.pdf>*)

Given the long history of lead production in Missouri, it is no surprise that Missouri is home to the only remaining primary lead smelter in the country in Herculaneum, Missouri. Currently, the state of Missouri is working with the facility to implement the

2007 lead attainment demonstration and complete a sulfur dioxide Reasonably Available Control Technology evaluation for the annual PM<sub>2.5</sub> State Implementation Plan. The proposed lead NAAQS revision is a significant upcoming event for the area that could cause significant additional control on the facility. EPA must finalize its decision on the lead NAAQS by September 2008. The outcome of the Administrator's decision is significant to our area and to this project.

The AQMP Pilot Project Team would like to wrap in these specific air toxics of concern in addition to others, working with members of the local community.

### **Current Staffing for State Implementation Plan, and Technical Analyses**

#### *Missouri*

The state of Missouri's Air Pollution Control Program (APCP) is under the direction of the Missouri Air Conservation Commission for regulatory actions and State Implementation Plan submittals. The APCP is located in the Division of Environmental Quality within the Department of Natural Resources. APCP performs the vast majority of the rulemaking activities for the Missouri portion of the St. Louis area and prepare the State Implementation Plans for submittal to USEPA. The development of the technical modeling and monitoring data analyses necessary for ozone and PM SIP submittals is conducted within the Air Quality Modeling and Monitoring Units. There are currently four staff in the Air Quality Modeling Unit and five staff in the Monitoring Unit. The rulemaking and remaining SIP development tasks are currently performed by the Rule and SIP Unit. This unit has nine staff for the development of rules throughout the state and the preparation of SIPs. During the development of the plan, 3 full time staff from the modeling unit worked on the plan, ½ -1 full time staff from the monitoring unit worked on the plan, and 1-2 full time staff from the Rule and SIP unit worked on the plan. The total time investment for the state of Missouri was over 2 years of effort from these staff along with a sizable computing resource commitment (~\$200,000) to finalize this plan and a contract to perform and supplement additional modeling analyses (~\$260,000).

#### *Illinois*

It should be recognized that the contractual and manpower estimates mentioned above do not reflect the total costs of SIP development efforts for PM<sub>2.5</sub> and ozone. Missouri and Illinois relied on extensive modeling and emissions databases prepared by the Regional Planning Organizations (RPO's) representing the Midwest and Central states. The RPO's provided in-kind manpower resources from several states and millions of dollars in contractual assistance to develop the technical tools relied on by Missouri and Illinois. Future regulatory efforts for ozone and PM<sub>2.5</sub> would likely require a similar regional-scale technical effort.

The development of the technical products for the 2007 revision to the 8-hour ozone SIP (Emission Inventory, RFP, attainment demonstration, RACT findings, etc.) were conducted in a manner very similar to the previous 1-hour ozone SIP. The development of each state's base year and future year emission inventory portions were conducted by staff from Missouri and Illinois, the meteorological modeling activities were conducted by staff from Missouri, Illinois, and EPA Region VII, the photochemical modeling

activities were accomplished through a contract along with a considerable effort from IEPA and MDNR staff. New to the most recent 8-hour ozone SIP was a combined effort from CENRAP, MWRPO, VISTAS, contractors, and Missouri/Illinois staff for the emissions modeling exercise (e.g. Frankenstein inventory development). Each state provided a RFP demonstration for their portion of the nonattainment area along with RACT findings that were independently derived. These portions of the plan development have typically been accomplished by each individual state.

Much of the coordination for these technical tasks was accomplished at the staff or first-line management level. Building the necessary working relationships between staff and management in each state was a critical component to achieving success in attaining the one-hour ozone standard and continued planning for the 1997 8-hour standard.

## **Rule Development**

### *Missouri*

The state rulemaking process in Missouri involves lengthy public participation requirements including a pre-proposal 60-day comment period, a Regulatory Impact Analysis development, “normal” 30-day public notice and hearing requirements, along with commission adoption. In addition, the state of Missouri is limited by a “no stricter or sooner than federal” law (643.055). In summary, this law precludes state regulation of pollutants that are governed under federal law/regulation unless the state regulation can be shown to “bring a nonattainment area into compliance and to maintain compliance.” However, it should be noted that this restriction does not apply to the two (2) Missouri-delegated local air pollution control agencies in the St. Louis metropolitan area, e.g. St. Louis County and the City of St. Louis. These agencies have the ability to implement regulations that are stricter than federal, although County regulatory changes do require County legislative approval. These facts create unique conditions for AQMP implementation for new air quality regulations.

### *Illinois*

The regulatory process in Illinois can be a lengthy process as well. Depending on the level of public interest, regulatory development and public outreach can take anywhere from 6 months to 3 years. Authority to adopt new environmental regulations in Illinois rests with the Illinois Pollution Control Board (IPCB). Typically the Illinois EPA develops a regulatory proposal, including technical support, and submits it to the IPCB. The IPCB conducts 2 or more hearings of at least one day duration. The IPCB will issue a 30 day notice before each hearing, and there is usually about 30 days between hearings. After the hearings have been completed, the IPCB will publish a First Notice of its intent to establish a rule, followed by another 30 day notice period where interested parties can offer further comments for the IPCB’s consideration. The IPCB then publishes the Second Notice, and sends the regulatory language to the Joint Committee on Administrative Rule (JCAR), a committee established by the Illinois Legislature. Typically JCAR completes its review within 45 days, after which the rule is published in the Illinois Register, and becomes effective.

## Energy Issues

St. Louis is involved in several renewable energy projects, under the St. Louis Regional Clean Cities Program. The airport has a fleet of 36 shuttle buses and other support vehicles using compressed natural gas and the program encourages alternative fuels for other major fleets as the opportunities arise. The largest transit operator in the region, Metro, operates a fleet of 38 compressed natural gas buses. More information can be found at [www.stcleancities.org](http://www.stcleancities.org).

Nine Missouri mayors in the St. Louis region have signed the U.S. Mayors Climate Protection Agreement. Cities involved are: Clayton, Florissant, Kirkwood, Maplewood, Overland, St. Louis, St. Peters, Sunset Hills and University City.

A number of industry, local government and academic partners in and around the St. Louis area participate in the U.S. EPA's Energy Star Building and Plants program. This program provides labels for individual facilities that have incorporated energy efficiency designs into their buildings.

### *Renewable Energy and Energy Efficiency items*

#### These bullet points are to be expanded

Illinois – in 2007 legislation established Renewable Energy Standard and Energy Efficiency Portfolio Standard for utilities serving over 100,000 customers. They are mandatory actions.

Missouri – in 2007 legislation established Renewable Energy Objective for the State. The objective is to be implemented through voluntary, “good faith” efforts of utilities in Missouri.

Online sources of information – Database of State Incentives for Renewables and Efficiency, Pew Center for Global Climate Change and Ameren Pure Power.

### *Climate Action Plans*

Several cities in the Saint Louis area participate in the US Conference of Mayors climate protection agreement. Participating cities include: St. Louis, Clayton, Florissant, Maplewood, Saint Peters, and University City. Under the Agreement, participating cities commit to take following three actions:

- Strive to meet or beat the Kyoto Protocol targets in their own communities, through actions ranging from anti-sprawl land-use policies to urban forest restoration projects to public information campaigns;
- Urge their state governments, and the federal government, to enact policies and programs to meet or beat the greenhouse gas emission reduction target suggested for the United States in the Kyoto Protocol -- 7% reduction from 1990 levels by 2012; and

- Urge the U.S. Congress to pass the bipartisan greenhouse gas reduction legislation, which would establish a national emission trading system

### **Ecosystem health**

There are a number of sensitive ecosystems in the area encompassed by the St. Louis AQMP, mainly within the river basins. There is little ecosystem assessment information related specifically to air quality impacts for this area. Most ecosystem assessment information relates to watershed protection efforts. Our Team will work to identify ecological assessment experts at the state, local or academic levels to identify specific ecosystems that are endangered at least in part due to air pollution. We also will attempt to quantify the economic impacts in terms of services provided by ecosystems that are threatened due to air pollution.

#### *Watershed Activities*

Placeholder for watershed activity information

### **Human Health Effects**

The AQMP Team is interested in developing a series of St. Louis area human health environmental indicators, using existing databases or previous health studies. An example of the type of health database tracking system we can refine to our local area is the CDC's Behavioral Risk Factor Surveillance System <http://www.cdc.gov/brfss/index.htm>.

The database contains Metropolitan-specific health information for various health topics including Asthma and Cardiovascular disease. One task for this pilot project would be to attempt to link health effects with poor air quality and build in to the comprehensive air quality management plan a mechanism to track whether measured improvements in human health can be documented as a result of the implementation of specific control strategies developed as part of the AQMP. Our team will need the assistance/analysis of local health department and other academic experts. This workgroup should work with academics and other health researchers to investigate the applicability of data and conclusions from health studies recently completed in conjunction with the Harvard Medical School and the St. Louis Clean Air Partnership.

### **Land use/Sprawl**

Perhaps one of the most profound changes that has occurred over the last fifty years in the St. Louis region is the transformation of the region's urban form. Figure 4 spatially depicts how the "urbanized" footprint has expanded since 1950. The St. Louis region's expanding footprint can be explained, in part, by geography. There are no natural barriers to expansion, and no major metropolitan areas competing for geographic dominance. The rate of land consumption has far outpaced the rate of population growth over the last five decades. The urbanized area grew by 286 percent between 1950 and 2000, while the population only grew 40 percent. (See Figure 5) However, 86 percent of the population growth in the region occurred prior to 1970, yet 64 percent of the growth in land area took place

after 1970. Since 1970, the region's population grew a bit over four percent, while the urbanized area expanded by 89 percent. The result of this outward expansion has been a resettlement of population and employment from the older, inner core of the region, particularly inner ring suburbs and City of St. Louis, to low-density development in the outlying areas of the region. Furthermore, the extensive highway system in the St. Louis region has provided residents the mobility necessary to live farther away from their travel destinations with little impact on travel time, resulting in highly dispersed urban development patterns. As a result, areas farthest from the St. Louis' urban core continue to experience the most rapid population and employment growth in the region. Commuters in the St. Louis region spent an average 24.6 minutes traveling between their home and work in 2005.

According to a February, 2008, report conducted by the East West Gateway Council of Governments, "Trends in Regional Traffic Volumes – Signs of Change?", the rate of growth in Vehicle Miles Traveled (VMT) is expected to continue to drop significantly from a high of 3.8 percent for the period 1982-1988 to the slower growth rate of 0.6 percent observed from 1998-2005. VMT is an indicator of regional mobility and has an indirect impact on local air quality conditions.

For the purposes of long term air quality management planning in the St. Louis area, the same report projects that VMT is likely to remain flat due to several demographic trends include:

- Female labor force participation has stabilized
- The working-age population is likely to decline in absolute terms over the next decade
- The number of two-parent households with children is declining
- Auto ownership rates are not likely to rise dramatically in the future
- Gasoline prices may add a further incentive to reduce driving

However, the area has experienced local "hot spot" VMT growth in several Counties.

### **Air Quality Outreach Efforts**

Both Missouri and Illinois place great emphasis on public input and education regarding St. Louis air issues. This public information emphasis resulted in strengthening credibility with the regulated community, the states' legislatures, and other stakeholders. A continued emphasis for this type of outreach is even more important when discussing multiple pollutants and their interaction including co-benefits of control technologies on individual sources.

Figure 4

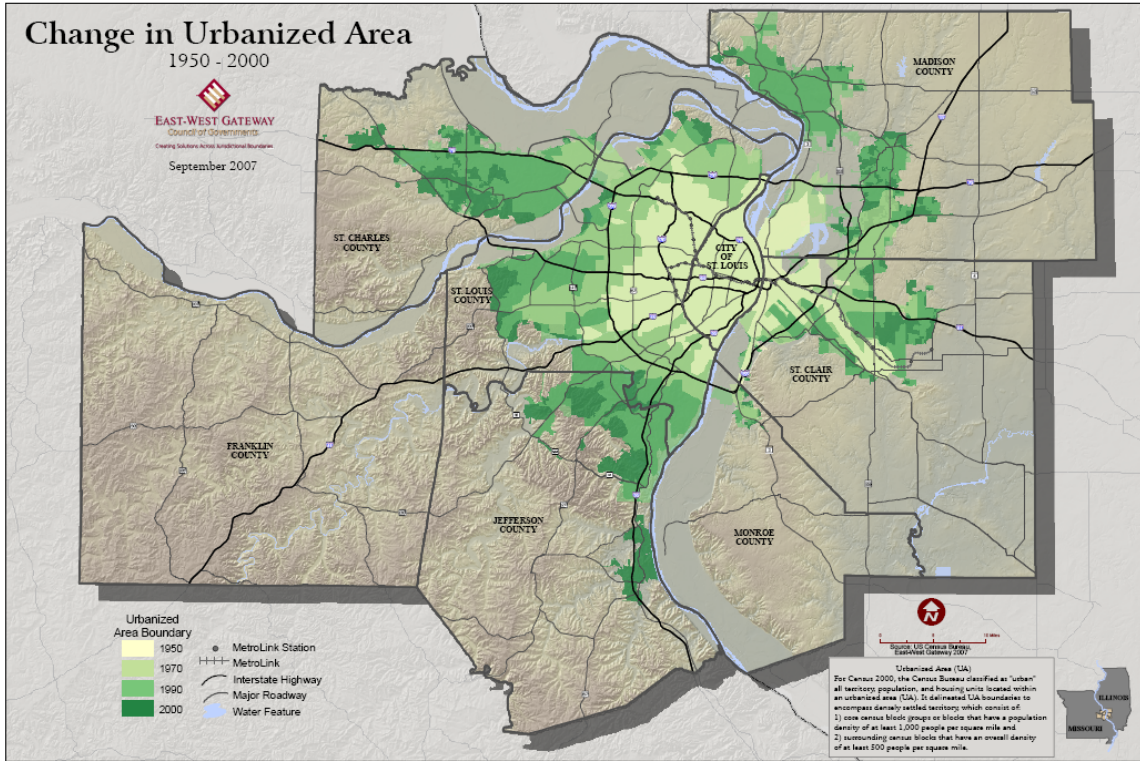
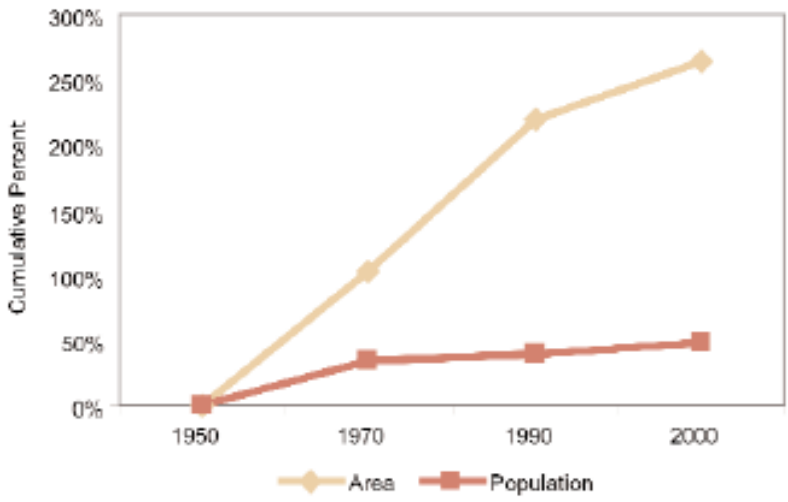


Figure 5

Growth of St. Louis Urbanized Area 1950-2000



Source: US Bureau of Census 1950-2000



The East-West Gateway Council of Governments (EWGCOG) is a membership organization for local governments in the St. Louis (Missouri-Illinois) metropolitan area formed in 1965 to address problems that cross the region's many political boundaries. It is designed to serve as a forum for cooperative planning and problem solving. Since the 1977 amendments to the Clean Air Act, East-West Gateway has been the lead air quality and transportation planning agency for the St. Louis metropolitan region. East-West Gateway's air quality planning efforts have focused on: working with the states of Missouri and Illinois on the development and implementation of Transportation Control Measures; insuring that transportation programs and projects do not have a negative impact on air quality; and serving as a regional clearing house of April-October daily measured ozone data.

In 1992, the Air Quality Advisory Committee (AQAC) was established by the East-West Gateway Board of Directors. The AQAC has an advisory role to the Board and serves as a public forum for the dissemination of information and receipt of feedback about air quality issues. The AQAC represents a wide spectrum of interests from public health to environment to business to government (local, state, federal). AQAC members and staff research the implications of federal and state legislation and air quality regulations. The AQAC monitors the region's progress in meeting air quality goals and SIP requirements. In addition, the AQAC prepares issue papers and policy statements for Board of Directors consideration, as needed.

### **Other Planning Efforts**

With respect to other local planning efforts that may have some bearing on AQMP activities such as emergency or contingency planning, the AQMP Team will coordinate with staff as appropriate to identify how other plans will impact the AQMP.