



CONSEQUENCES OF A NONATTAINMENT DESIGNATION FOR WICHITA MSA

BACKGROUND: Wichita’s air quality may soon violate the federal ozone standard. Many factors including vehicle emission standards, unseasonably mild weather, and significant reductions in air emission made by local industries have helped to keep the area in compliance over the last decade. However, seasonal ozone levels for the area in 2010 and 2011 were significantly higher, making the three year rolling average of the fourth highest value very close to exceeding the 2008 federal Environmental Protection Agency (EPA) standard of 0.075 parts per million (ppm). Another factor to consider is EPA’s desire to change the standard. EPA evaluates the standard every five years. In the future EPA may increase the standard by reducing the numeric value because studies indicate that the U.S. continues to experience significant adverse health impacts from ozone. A new standard is expected to be discussed in 2013.

Although Wichita’s challenge with EPA’s ozone standard is long-established, hotter summers, certain weather conditions, transport of ozone into Wichita from other areas and states as well as other factors are pushing the area very close to noncompliance with the federal ozone standard. (A designation of noncompliance is called “nonattainment us”; likewise, a designation of compliance is called “attainment”.) Many questions are being asked regarding the consequences of a nonattainment designation for the Wichita area. Some of these questions have clear answers. Unfortunately, many do not. This paper will address the questions and issues, providing answers when possible and professional opinion and explanation to the uncertainties.

➤ **What is a Nonattainment Area and how much of the Wichita Metropolitan Statistical Area (MSA) could or would be “in nonattainment”?**

A nonattainment area is a federal designation given to an area not meeting one or more National Ambient Air Quality Standards (NAAQS). The designation process provides opportunity for local and state negotiation with the EPA to best determine the appropriate nonattainment boundary. In the boundary determination, EPA considers factors such as locations and concentrations of industrial sources, county population density and traffic and commuting patterns. Most often an area includes its entire metropolitan statistical area and for Wichita, that consists of four counties, Butler, Harvey, Sedgwick and Sumner. The Kansas Department of Health and Environment (KDHE) is the lead agency responsible for negotiations with EPA to determine the boundary. Once there is a violation of the standard, KDHE will study the area and work with local stakeholders to develop a boundary recommendation. KDHE will work with local stakeholders to submit the boundary recommendation through the Governor to EPA for approval.

➤ **How soon after a violation of the standard will nonattainment occur?**

The designation *process* begins once the area violates the standard; however, the actual *nonattainment designation* is not immediate. The area is officially placed in nonattainment when EPA publishes the designation in the Federal Register. A timeline for nonattainment is provided below based on a new standard in 2011.

EPA Expected Timeline for Nonattainment Designations	
Milestone	Date
EPA Finalizes Rule for Ozone standards	Planned for 2013



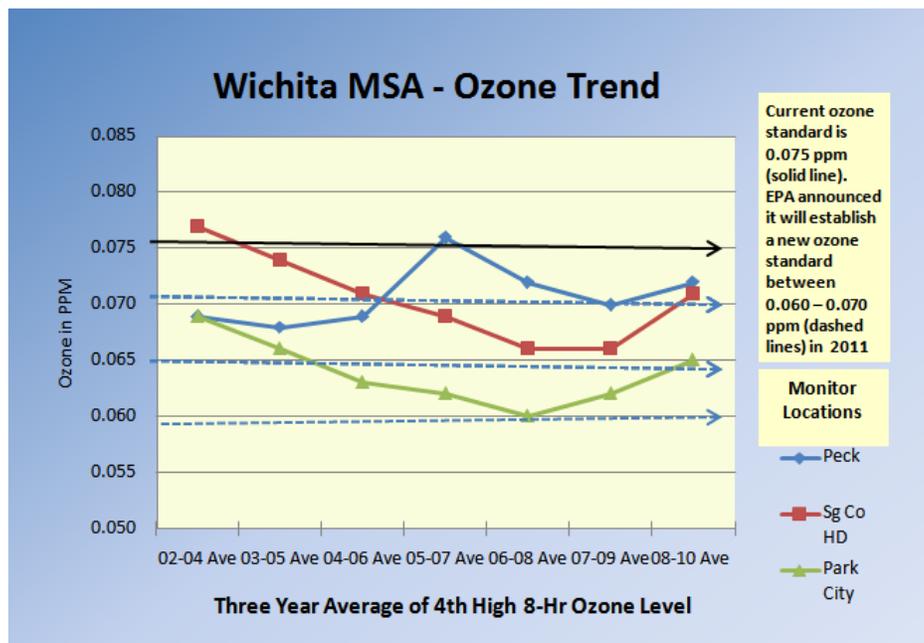
Governor Recommends Ozone Nonattainment Areas to EPA	2013/2014
Final Designations Become Effective	2013/2014
Highway Conformity Analysis Required**	One year from Designation
Attainment State Implementation Plans (SIPs) Due to EPA	To Be Determined
Attainment Dates	2014 – 2031? – To Be Determined

* Potential timeline if new standard is announced in 2013

**See Cost of 'Transportation Conformity', page 4

➤ **What is the EPA ozone standard?**

The EPA sets the ozone standard to protect the public from ozone exposure over an extended period of time. The standard is calculated by averaging hourly ozone data throughout the highest eight-hour ozone period of the day. These highest daily '8-hr averages' are captured for each monitor. At the season's end, each monitor's fourth highest value is averaged with the 4th highest value for the two previous years. Thus, the standard calculates a 'rolling' 3-year average of 4th highest 8-hour ozone values. Using the most recent EPA ozone standard, a violation of the standard occurs if the 3-year average for any monitor is greater than 0.075 ppm (or ≥ 0.076 ppm). The table below reflects Wichita's ozone data in relation to meeting the EPA ozone standard at three monitor locations. Another monitoring location has been added in the town of Sedgwick. Using the most recent data, any new standard will be violated at two past locations – Peck and the Sedgwick County Health Department and at the new monitoring location at Sedgwick.





The table below shows the 4th High 8-Hr Ozone Level for each Wichita MSA monitor in 2009, 2010, and 2011* data. The three year average of the fourth highest 8-hr value for each monitor is also provided.

Table: Fourth Highest 8-Hour Ozone (ppm) Levels for Wichita MSA Air Quality Monitors

Site	2009(4 th Highest)	2010 (4 th Highest)	2011 (4 th Highest)*	Ave 2009 – 2011 (4 th Highest)*	Critical Design value 2012 (4 th Highest)*
Peck	0.073 ppm	0.075 ppm	0.078 ppm	0.075 ppm	0.075 ppm
Health Dept.	0.072 ppm	0.075 ppm	0.079 ppm	0.075 ppm	0.074 ppm
Sedgwick	0.069 ppm	0.072 ppm	0.080 ppm	0.072 ppm	0.076 ppm

*Current as of October, 2011

➤ **So what do all the numbers mean?**

Based upon 2011 data gathered through October 31st, 2011:

- The area is currently in attainment. However, if 2012 produces similar or higher fourth high values at any one of the monitors, the Wichita MSA will violate the federal ozone standard of 0.075 ppm.
- If EPA lowers the ozone standard in the future and the 4th high values for 2012 and/or 2013 continue to be high, then the Wichita MSA would likely be recommended for nonattainment.

➤ **What are the requirements of an ozone nonattainment area?**

The Clean Air Act (CAA) requires that EPA review the national air quality standards at least every five years; and when setting the standard, the CAA restricts EPA from considering economic costs to achieving the standard. When an area is designated not in compliance with the standard (nonattainment), the CAA requires state and local governments to take steps to reduce ozone pollution and regain compliance with the standard. The steps must be detailed in technically supported and legally enforceable plans known as State Implementation Plans (SIPs). A SIP must be submitted and approved by EPA within three years of the date for nonattainment designations as published in the Federal Register. Potential reduction strategies are listed in the next section.

➤ **Since the exact consequences cannot be determined, what are the “likely” consequences to a nonattainment designation for the Wichita area?**

A nonattainment designation for any area not only reflects a health concern, but also brings a business and economic development concern. Attaining the standard will likely require a diversity of emission reduction measures. Although these exact measures cannot be known, a nonattainment designation will result in both direct and indirect costs to both citizens and businesses in the Wichita MSA.

Potential direct economic consequences could include:

- More costly summer gasoline specifically designed to reduce ozone-forming emissions.
- More stringent and expensive control equipment for industry. Most affected would include those using burners, boilers and heavy engines as well as painting, coating and solvent users.
- A costly and inconvenient new vehicle inspection and maintenance program. KDHE estimates that such a program for the Wichita MSA could cost over \$13,760,000 per year.
- Reduced speed limits on highways and expressways in the metropolitan area.



- Increased energy cost. Westar Energy operates three power plants in south central Kansas. Emission improvements to these plants would be costly and will be passed on to the consumer.
- Existing business expansion could be limited and new business could be denied air emissions permits. This could result in lost jobs as businesses relocate to areas with cleaner air.
- Other actions may be mandated by the state of Kansas or KDHE such as no idling regulations.
- A public education campaign and an ozone alert program are generally required in nonattainment areas. It is estimated this program would cost greater than \$30,000.

Potential indirect consequences could include:

- Cost of establishing the State Implementation Plan (SIP) – The SIP is the technical and strategic document outlining emission reduction strategies developed to bring the area back into compliance with the standard. SIPs include the enforceable strategies for implementation and must be approved by EPA no later than three years from nonattainment designation. To develop the SIP, photochemical modeling may be required to support the effectiveness of the emission reduction strategies within the SIP. This type of computer modeling would also likely require significant resources to upgrade local emissions inventories (off and on-road mobile, area source industry, large point source industrial and biogenic) and dedicated ongoing resources to keep the inventories and model current.
- Cost of ‘Transportation Conformity’ – Nonattainment communities are required to conduct extensive analysis and coordinate transportation and air quality issues. Computer modeling is used to ensure transportation projects do not affect the area’s ability to regain and/or maintain attainment. Transportation conformity requirements are time consuming, costly and include using a mobile emissions ‘budget’ from which to determine the impact transportation projects, once implemented, would have on regional air quality. In nonattainment areas, transportation projects can proceed only if it can be demonstrated that they will not result in increased emissions. Air quality conformity analysis is generally the responsibility of the community’s transportation planning organization.

➤ **What is the actual cost of a nonattainment designation?**

In 2005, City staff was asked to develop a cost estimate to the community if the Wichita MSA became an ozone nonattainment area. Staff compiled data from seven cities of various sizes across the U.S. that were currently ozone nonattainment, and found that the costs are somewhat related to the size of the MSA. **For an MSA the size of Wichita, the estimated cost to local government, local businesses, and citizens would be approximately \$10,000,000 per year for at least ten years.** A better cost model has not been found. However, Pima County, Arizona estimates it costs their community \$39 million per year.

➤ **Why are we unable to determine an actual ‘cost of a nonattainment designation’ at this time?**

Many issues create significant challenges to determining clear and concise economic cost analysis of a nonattainment designation for the Wichita MSA. There is a massive disconnect between estimating the cost of various emission control strategies and what the Wichita area may or may not actually be required to do upon a nonattainment designation. Explanations to some of these challenges include:

- **EPA guidance for nonattainment designation is unknown because the area is currently in attainment.** Until the area goes out of attainment and the extent of nonattainment is identified, guidance and information explaining the requirements is not clear. Implementation guidance will specify criteria for nonattainment, degrees of severity and corresponding industrial emission requirements, whether or not photochemical modeling is required and if so to what degree, and how long areas will have to get back into attainment.



- **The extent of emission reductions necessary is unknown.** Costs of emission reduction strategies for ozone precursors are most often proportional to the amount of ozone reduction required to regain compliance with the standard. Importantly, until an actual nonattainment designation occurs, it will not be known how much ozone an area must reduce to get back into compliance. Unknowns at the federal level (i.e. the actual standard, policy and economic uncertainties) may force EPA to delay designations. Every year designations are delayed provides Wichita an opportunity to continue ozone improvement to achieve compliance with the standard and an attainment designation.
- **Cost to individual businesses and manufacturing companies are difficult to predict.** Each company that has a point source air permit may be required to add new and costly control technology if a community is designated a nonattainment area. The cost of control technology is unique to each company and individual industrial processes. This is also dependant on the degree of severity of the community's ozone status. Also, new regulations and permit requirements may be imposed on previously unregulated businesses and industries.
- **We cannot simply look to other areas to identify emission reduction strategies we will need to implement.**
 - The chemical structure of an area's ground-level ozone is complex and will not be the same in any two metropolitan areas. It is possible for a NOx emission reduction strategy to effectively decrease ozone in one metro area, and for that same strategy in another area to result in an ozone increase.
 - The Kansas City MSA is the only area in Kansas with a nonattainment designation. KDHE has developed a SIP for the area. Unfortunately, the Kansas City area has different industries and chemical emission components compared to the Wichita MSA. Kansas City has high NOx levels and Wichita has high VOC levels. Therefore, some emission reduction strategies will likely need to be different.
 - Tulsa and Oklahoma City are in a different EPA region with different rules and requirements. Their industries and transportation needs are different compared to the Wichita MSA. They are similar to Wichita in that ozone transport is a significant factor in the ozone measured at downwind monitors. This creates an element of uncertainty relative to the influence of costly emissions reductions.
 - EPA has made no designations under a new standard in many years. When designations were made under the previous standard (2004), all 'new' nonattainment areas were either already in nonattainment/ maintenance under the former standard, or were new nonattainment areas in states which already had defined nonattainment boundaries. States with nonattainment areas have existing air shed boundaries, emissions inventories, transportation conformity analyses are being performed, etc.
 - Changing technologies (industrial, automobile engines/emission standards, fuel standards/ requirements) have eliminated the effectiveness of many previously consistent, quantifiable, and EPA approved emission control strategies. One example is the Stage II Vapor Recovery devices currently found on gasoline pumps in many nonattainment areas throughout the nation. Although many nonattainment areas formerly included this strategy in their SIPs, it is no longer a viable emission reduction strategy for new nonattainment areas. Auto manufactures now install simple onboard vapor recovery systems in all vehicles, making Stage II Vapor Recovery devices obsolete and a strategy no longer considered by EPA.
- The EPA standard for ozone continues to tighten. As the standard changes, the implementation and industrial requirements will change.
- Annual rangeland burning in the Flint Hills has contributed to ozone exceedance days in Wichita and Kansas City including April 2009, April 2010 and April 2011. The massive area burned creates high ozone levels and, depending on the weather, may cause an area to exceed the ozone standard. EPA could designate high level ozone days due to the Flint Hills as "exceptional events". Previously, EPA informed



the state of Kansas that a management plan was needed to in order to grant an “exceptional event” designation. In December, 2010 KDHE approved the Kansas Flint Hills Management Plan to provide some voluntary control mechanisms for routine rangeland burning. This plan includes limited burn restrictions that may help urban areas stay in compliance. However, agricultural burning was not restricted and voluntary efforts did not reduce the impact of the 2011 burn season. Regardless of “exceptional event” designations, a high level of ozone that exceeds the ozone standard due to rangeland burning can impact health. Health impacts are possible whenever the standard is exceeded.

➤ **How will we proceed?**

Wichita’s ozone levels over the last decade have generally improved. However, recent high summer temperatures and weather conditions have caused an increase in ozone levels in the last two years. Although it is still too early to tell, an ozone nonattainment designation may unavoidable. The Wichita area has remained in attainment since 1990. Cleaner air quality, better health and lower costs of living are obvious benefits to many years of having met the challenge and avoiding the significant and long-term economic costs of a nonattainment designation.

Wichita’s aggressive collaborative Air Quality Improvement Task Force (AQITF) and exemplary community and corporate voluntary efforts have helped to improve our air quality. As the 2012 ozone season progresses, we will continue to work in close partnership with KDHE, EPA and AQITF members. Although there are many uncertainties regarding the consequences of a nonattainment designation; we continue to pursue solutions, promote economic development, and improve air quality in our community.

➤ **For more information, contact:**

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Wichita Air Quality Improvement Task Force Member Organizations	
City of Wichita	Sedgwick County
Spirit Aerosystems, Inc.	Wichita Metro Chamber of Commerce
Cessna Aircraft Corporation	Kansas Sierra Club
KS Small Business Environmental Assistance Program	U.S. Environmental Protection Agency, Region VII
The Boeing Corporation	U.S. Dept. of Transportation, Federal Highway Administration
Hawker-Beechcraft Corporation	Wichita Area Metropolitan Planning Organization
Kansas Department of Health and Environment	Westar Energy
Kansas Department of Transportation	The Coleman Company
Kansas Chapter American Lung Association	Kansas Unified School District 259
Wichita State University	Wichita League of Women Voters
Wichita Independent Neighborhood Association	University of Kansas School of Medicine - Wichita
Newman University	Occidental Chemical Corporation
Kansas Unified School District 259	Green Business Wichita
Harvey County	Sumner County
Butler County	