



MID-AMERICA REGIONAL COUNCIL  
AIR QUALITY PROGRAM

# Kansas City Ozone

Amanda Graor  
Air Quality Program Manager



# Overview

- Ground-level ozone basics
- Kansas City Ozone History
- Revisions to 2008 Ozone Standard
- Clean Air Action Plan





# What is Ground Level Ozone?

- Chemically identical to upper-level ozone, BUT
- At ground level, is a man-made pollutant; hurts respiratory system
- Ozone not emitted directly – chemical reaction involving volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>)



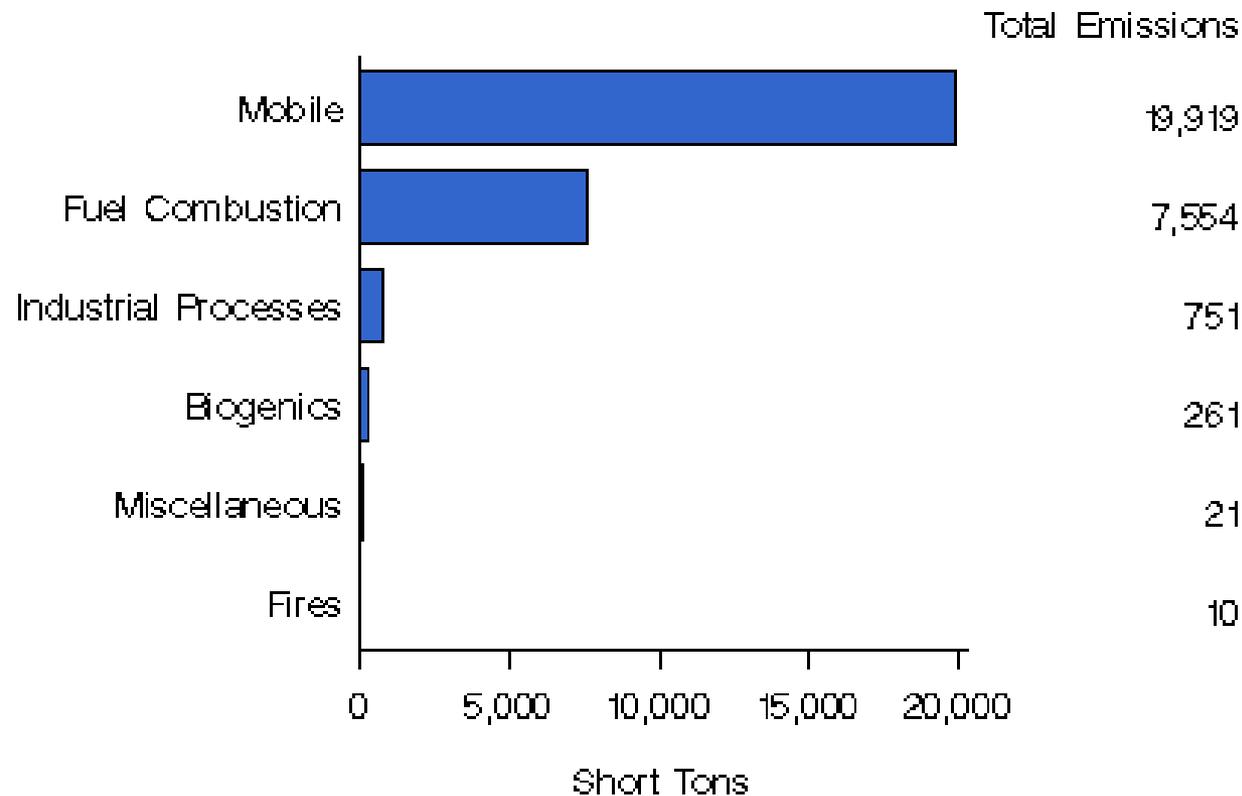
# Ozone Basics

- VOCs, NOX come from cars, trucks, small businesses, utilities & large industry
- GLO concentrations typically highest on warm, sunny days
- Can trigger breathing problems, especially in those who have asthma, emphysema, or other respiratory conditions





## Nitrogen Oxides Emissions by Source Sector in Jackson County, Missouri (NEI 2011 v1 GPR)

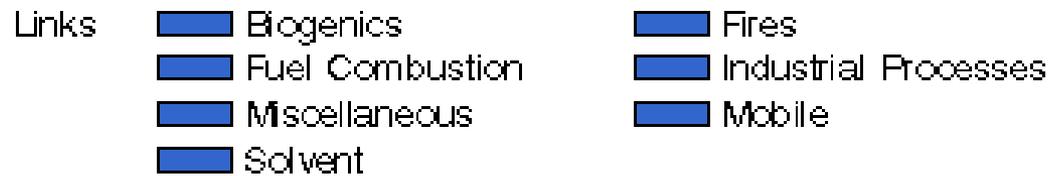
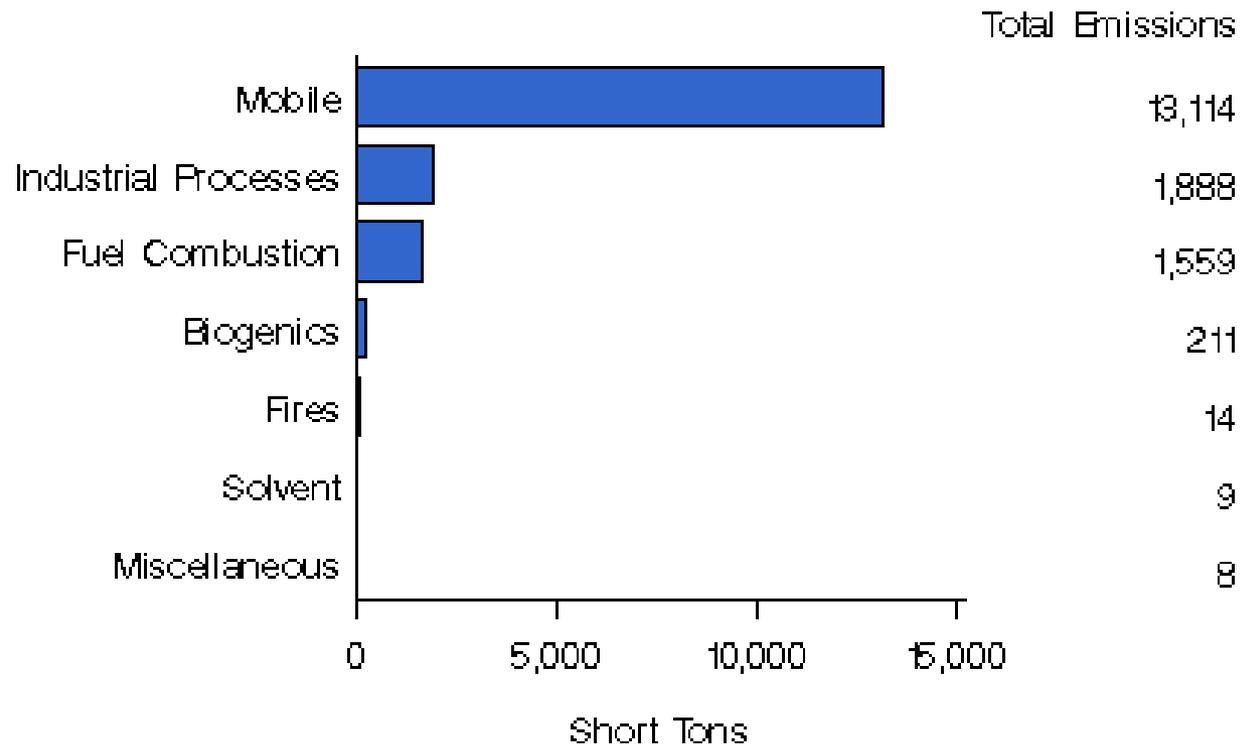


Links

|  |                 |  |                      |
|--|-----------------|--|----------------------|
|  | Biogenics       |  | Fires                |
|  | Fuel Combustion |  | Industrial Processes |
|  | Miscellaneous   |  | Mobile               |

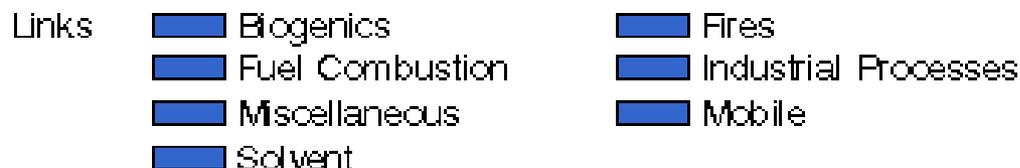
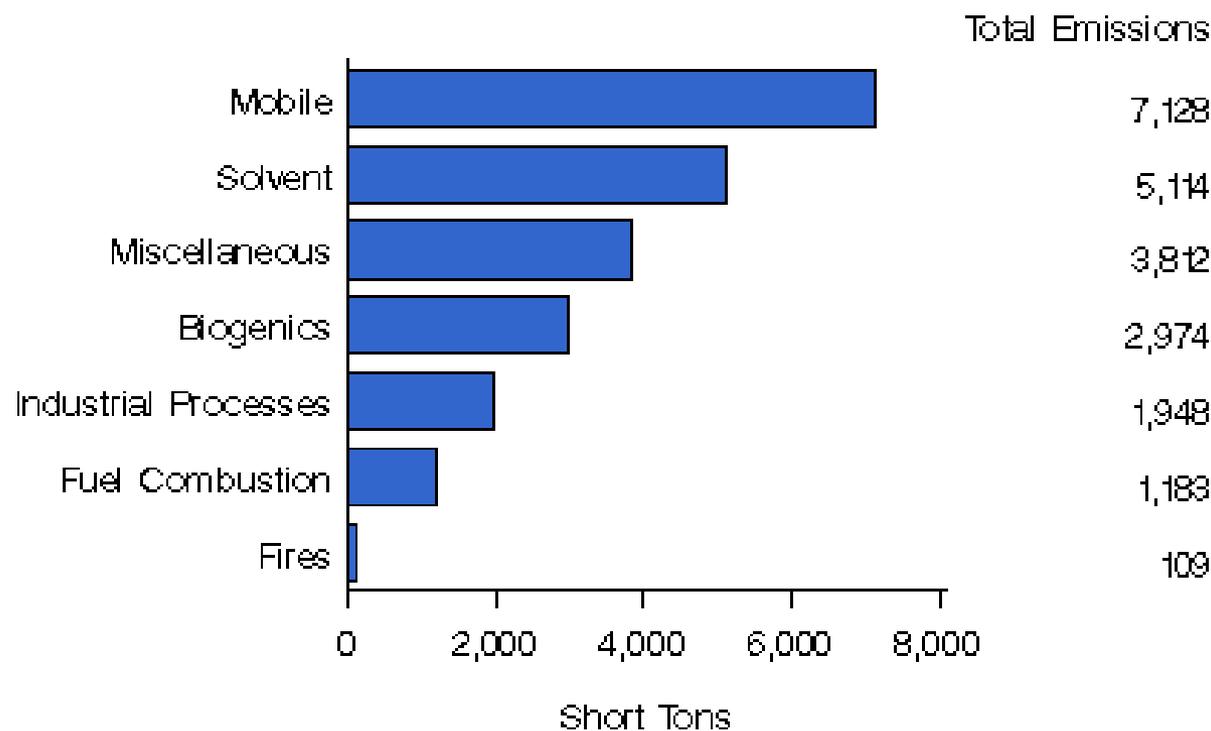


## Nitrogen Oxides Emissions by Source Sector in Johnson County, Kansas (NEI 2011 v1 GPR)



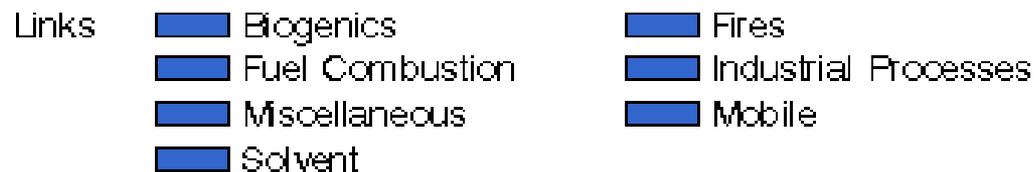
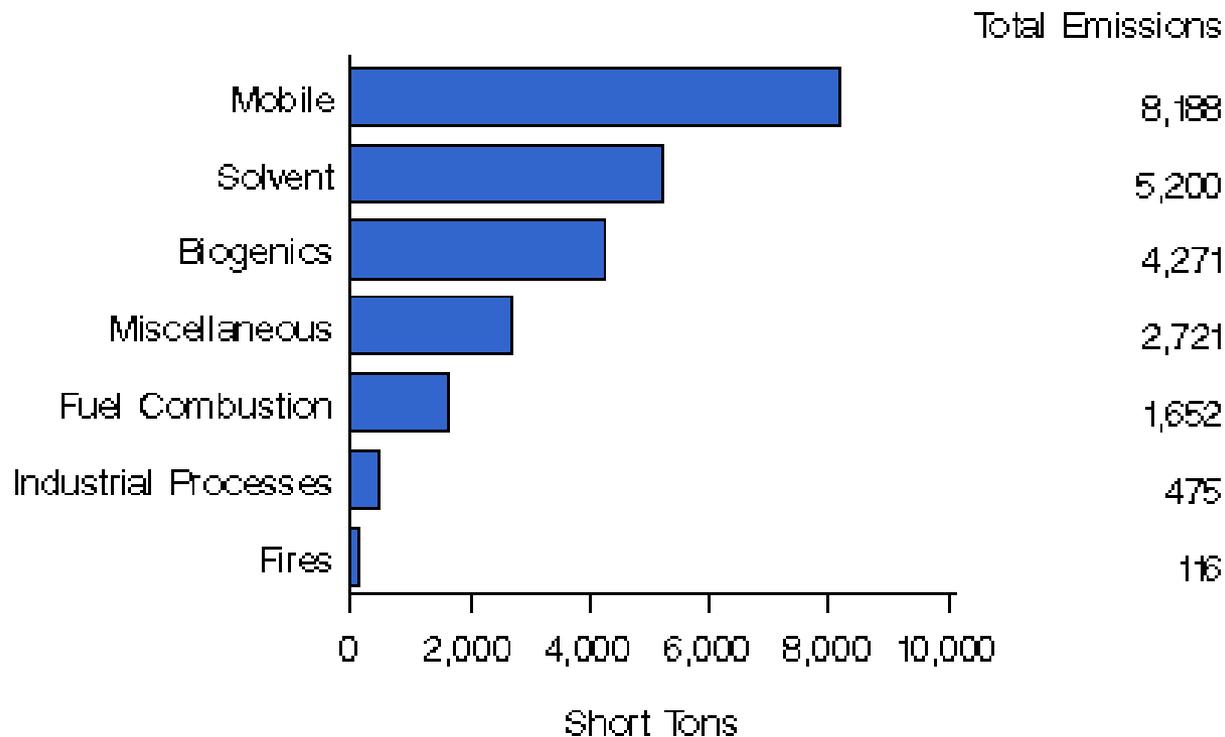


## Volatile Organic Compounds Emissions by Source Sector in Johnson County, Kansas (NEI 2011 v1 GPR)





## Volatile Organic Compounds Emissions by Source Sector in Jackson County, Missouri (NEI 2011 v1 GPR)





- Nonattainment for 1-hour standard in 1970s
  - First SIP approved in 1979
- Early 1980s – attainment
- Mid 1980s – violations
- Late 1980s – attainment
- 1992 – Maintenance Plan approved, redesignated to attainment



- Mid 1990s – more violations
  - Contingency measures triggered, but allowed to amend providing same emissions reduction
- States asked MARC Air Quality Forum to help review new control measures
  - Ozone subcommittee formed
  - Evaluated RFG, Low RVP Fuel, Stage II Vapor Recovery, 14 different I/M Programs, etc.



- Low RVP Fuel required beginning in 1997
  - 6/1 – 9/15 each year
- What else made it in?
  - VOC reductions for stationary sources
  - Increased monitoring
  - Reduced transit fares on ozone alert days
  - Clean Cities Coalition
  - Traffic signal synchronization
  - Land use planning



- 1999 – LRTP disapproved by EPA based on lack of formal commitment from states to reduce emissions
  - FHWA stopped approving new projects, set date to begin withholding funding
  - Submitting opt-in letters for RFG program brought plan back into conformity
  - EPA conditionally approved maintenance plan based on one of three conditions – RFG, Stage II Vapor Recovery or a state fuel regulation



- 1999 – Kansas City Fuel Summit Held
  - Discussed options with providers
  - During this time, EPA taken to court at RFG opt-in disallowed
- 2000 – 7.0 RVP and Cold Solvent Cleaning Rules adopted
- 2005 – KCMA designated as attainment for new 8-hour standard
  - Contingency plan acts as guidance through 2014
  - Required due to previous 1-hour nonattainment



- 2005 – CAAP adopted, submitted to EPA
  - 12 member Air Quality Working Group
    - 4 government, 4 industry, 4 community
- 2007 – Violations trigger contingency measures
  - Heavy Duty Diesel Idling Rule
    - Limits amount of idling time at warehousing and pick-up/drop-off facilities, including buses



# 2015 Standard Revision

- US EPA has reconsidered the 2008 Standard and proposed a range of 65-70ppb
- Response to concerns that 75ppb does not adequately protect public health
- EPA has reviewed original studies, public comments and CASAC recommendations





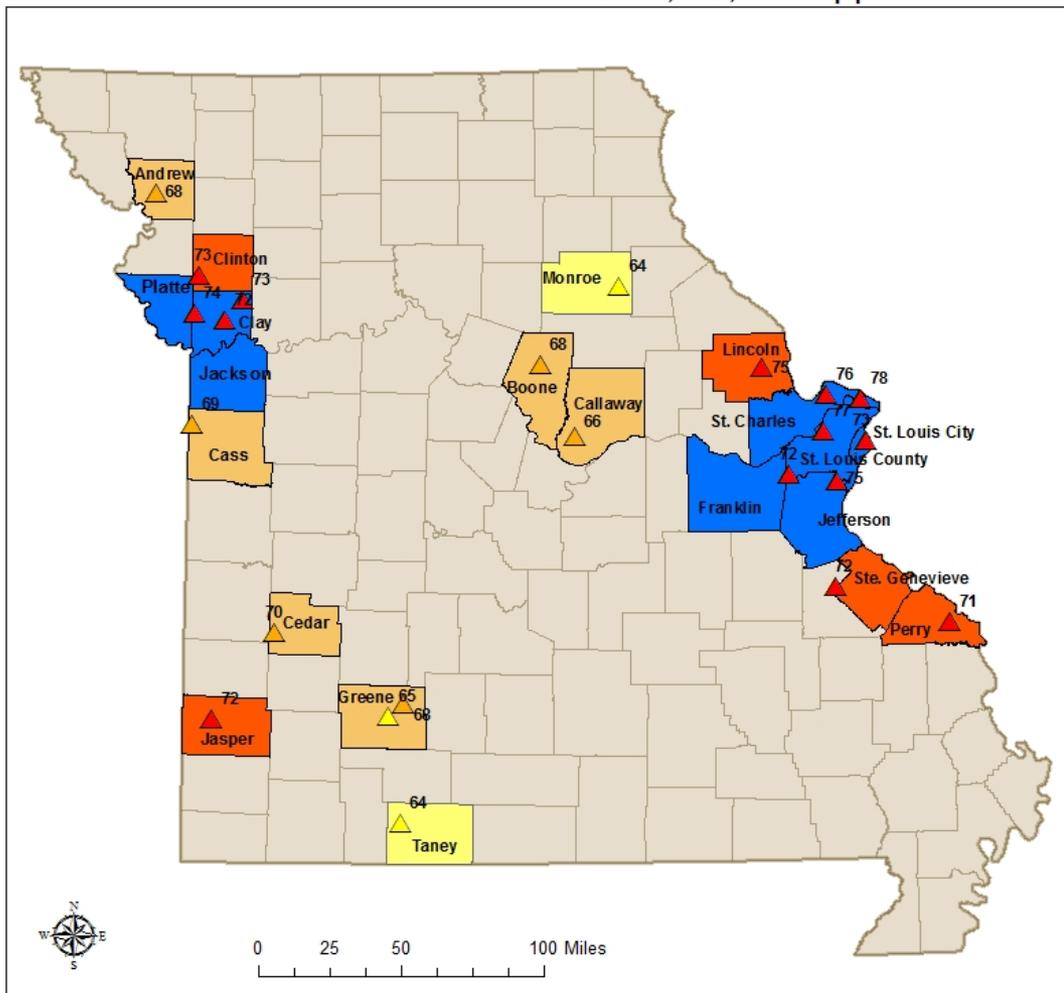
# How low can it go?

- EPA Staff and the Clean Air Scientific Advisory Committee (CASAC) recommendations in 2008 were 60-70ppb
- Reconsideration does not require changes, but changes are anticipated
- Could change our air quality boundary significantly



# Potential Impact of 2015 Ozone NAAQS on Missouri Counties

Possible Levels Evaluated: 60, 65, & 70 ppb



*This map is for reference only - Recommendations and designations based on 2014 – 2016 data: Unknown impact*

23 Ozone Monitors  
 All greater than 60 ppb  
 20 greater than 65 ppb  
 14 greater than 70 ppb

Based on 2012-2014 Monitored Designated Values (not yet quality assured data)

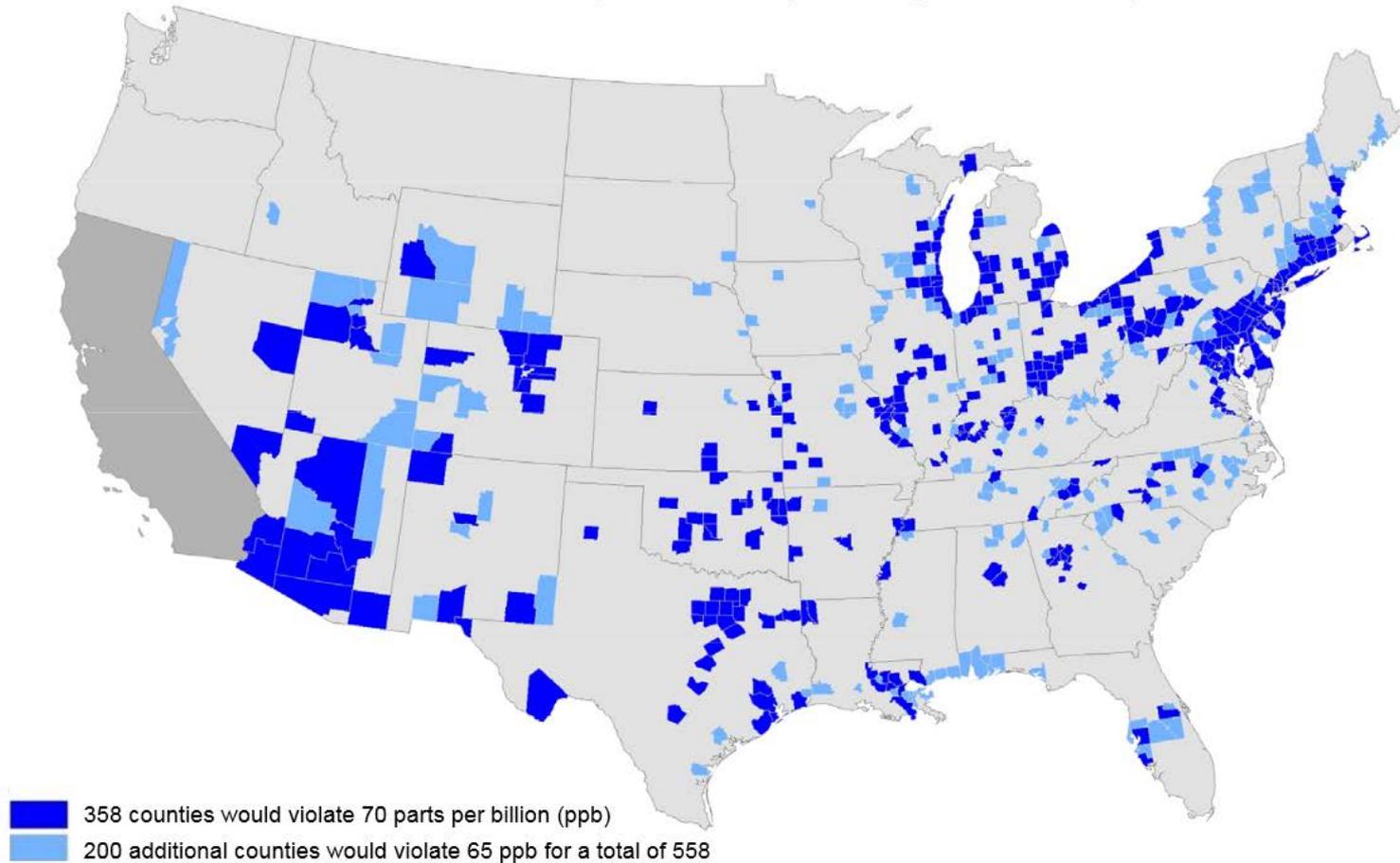
### Legend

- ▲ Monitors with 12-14 DV > 70 ppb
- ▲ Monitors with 12-14 DV > 65 ppb
- ▲ Monitors with 12-14 DV > 60 ppb
- Kansas City Ozone Maintenance Area
- St. Louis Ozone Nonattainment Area
- County with Monitored 12-14 DV > 70 ppb
- County with Monitored 12-14 DV > 65 ppb
- County with Monitored 12-14 DV > 60 ppb

Based on 2012-2014 preliminary data



## Counties Where Measured Ozone is Above Proposed Range of Standards (65 – 70 parts per billion)



Based on 2011 – 2013 monitoring data



# Regulatory Impact Analysis

- The RIA estimates by year 2025...

| Setting the Ozone Standard to... | Will Reap \$X in Monetized Benefits Annually* |
|----------------------------------|---|
| 70ppb                            | \$6.4-\$13 billion                            |
| 65ppb                            | \$19-\$38 billion                             |

\*Reflects the monetized benefits of fewer restricted activity days, reduced hospital visits, school absences and premature death.





# Regulatory Impact Analysis

- The RIA also estimates...

| Setting the Ozone Standard to... | Will Cost \$X Annually* |
|----------------------------------|-------------------------|
| 70ppb                            | \$3.9 billion           |
| 65ppb                            | \$15 billion            |



# Anticipated Timeline

| Milestone   | Date              |
|---|-------------------|
| Proposed rule for revised standard  | November 25, 2014 |
| Final rule for revised standard   | October 1, 2015   |
| States/tribal designation recommendations to EPA  | October 2016      |
| EPA notifies states/tribes concerning modifications to recommendations (120 day letter) | July 2017         |
| Effective date of designations  | October 2017      |
| State Implementation Plans (SIPs) due   | October 2020      |





# How are we preparing?

- Clean Air Action Plan
- Workplace Partnership
- Long Range Transportation Plan





# Clean Air Action Plan

- Developed in 2004, updated in 2011
- Comprehensive voluntary plan for reducing emissions before EPA requires it
- Targets both stationary and mobile sources
- Short-, intermediate- and long-term measures
- Four categories of strategies: power plants, diesel engines, public education, and sustainability





# Clean Air Action Plan

- Power Plant Emissions Reduction
  - KCP&L's La Cygne, Iatan and Sibley plants all received SCRs and/or Low NOx Burners
- Diesel Emissions Reduction
  - On-Road Retrofits and Replacements
  - Construction Equipment Replacements
  - Locomotive Retrofits
  - Idle Reduction Policies and Programs





# Clean Air Action Plan

- Public Education
  - Media, Outreach, Engagement
- Sustainability
  - Complete Streets
  - Energy Efficiency
  - Native Landscaping and Green Infrastructure
  - Improved Building Codes





# Workplace Partnership

- Over 170 area businesses and local governments listed as participants
- Promotes voluntary actions by employees and ozone awareness
- Support materials and opportunities for employees to participate in challenges
- Recognition in print and radio advertising





# Sustainability

- Adopt land use policies to protect air quality – Smart Growth, transit supportive development, Creating Quality Places
- Increase tree planting, green space preservation – Mitigate urban heat island effect, add value and improve aesthetics of built environment
- Smart Moves – will help reduce dependence on single occupant vehicles



## In conclusion...

- Kansas City's ozone woes are real and imminent
- Voluntary action now could lead to less regulatory action in the future
- The CAAP is the region's cohesive plan for voluntary emission reduction action
- Involvement in the process means your voice is heard





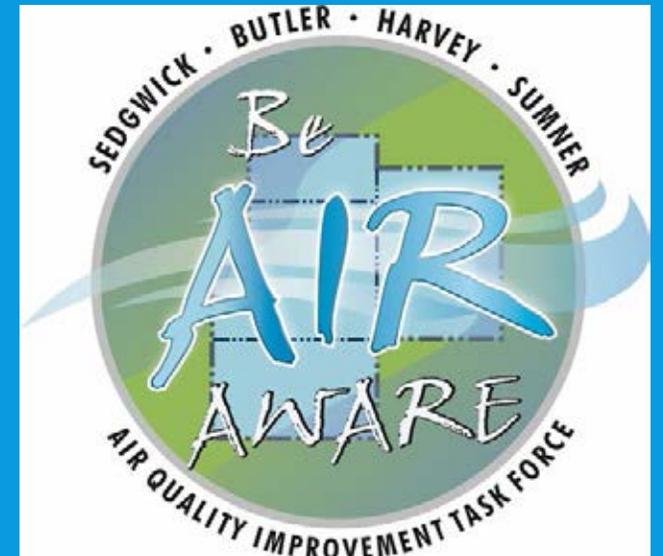
MID-AMERICA REGIONAL COUNCIL  
AIR QUALITY PROGRAM

Thank you!  
[agraor@marc.org](mailto:agraor@marc.org)  
816.474.4240

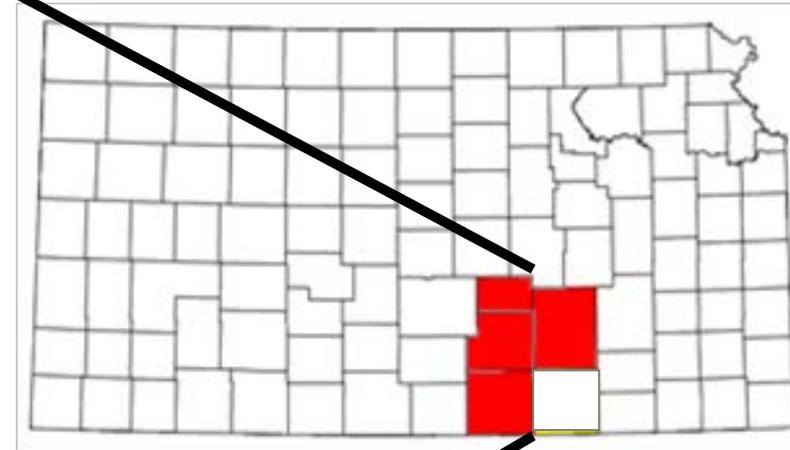
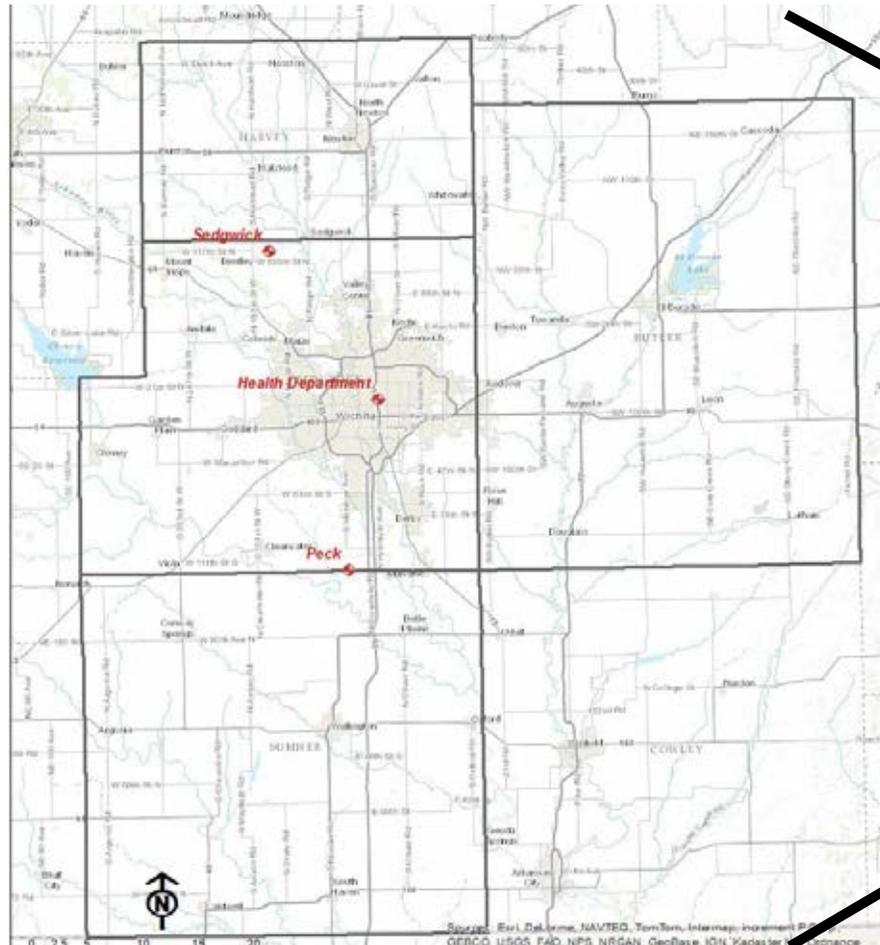
# Voluntary Measures to Reduce Ozone Emission

Kansas Environmental Conference

August 19, 2015

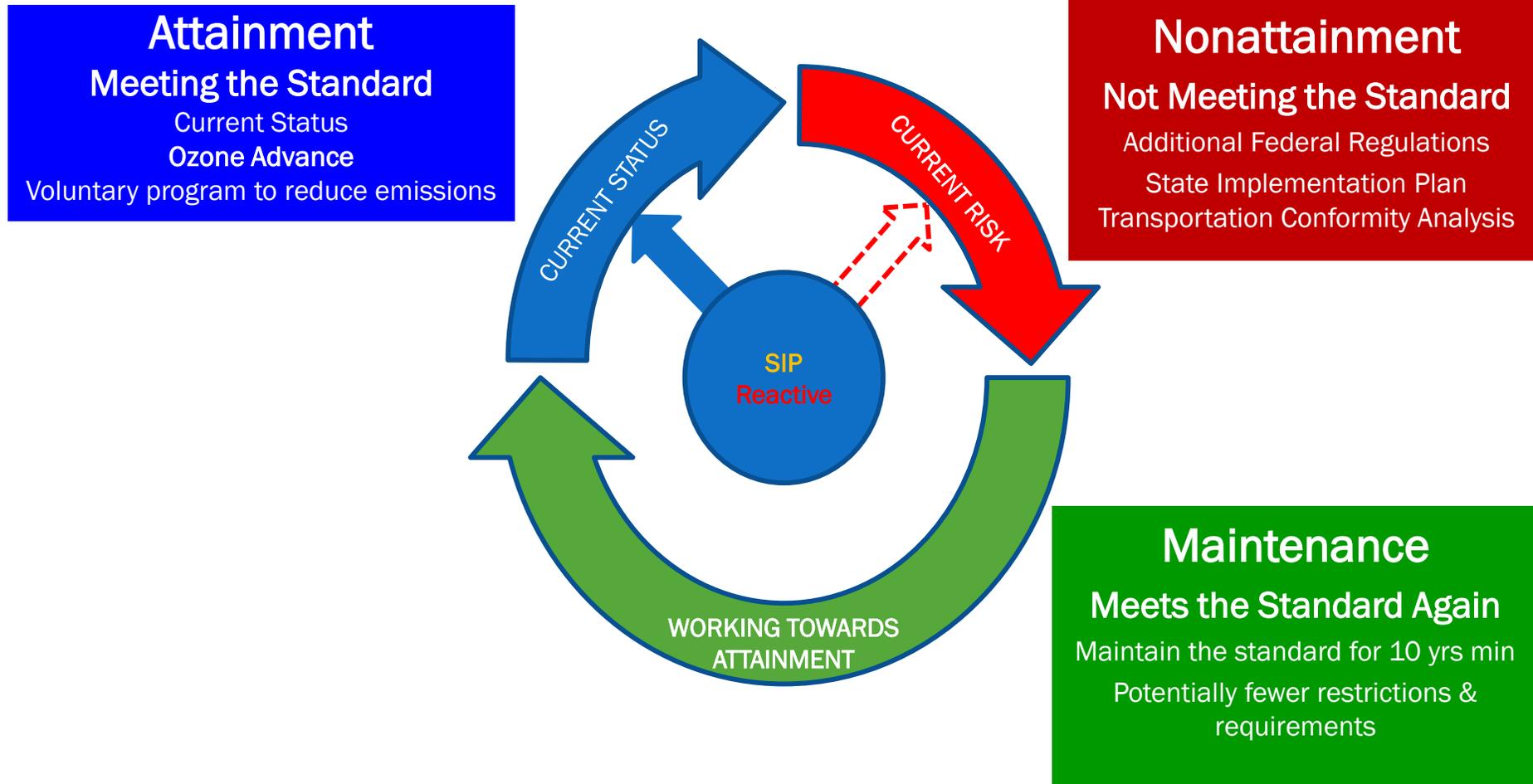


# Monitor Locations & Area of Concern

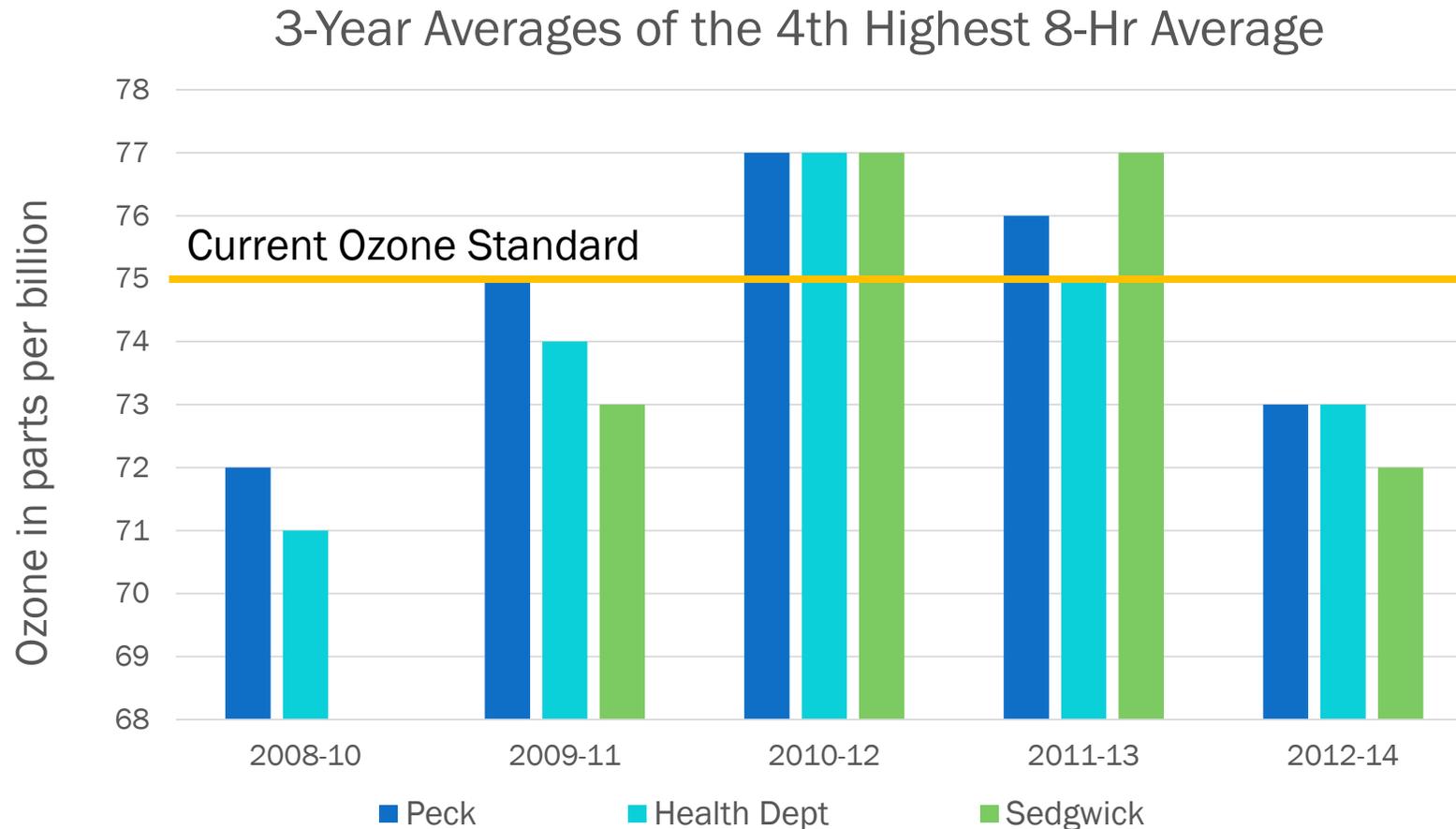


Wichita Metropolitan  
Statistical Area (MSA)  
Sedgwick, Butler, Harvey  
& Sumner Counties

# Ozone Attainment Classifications



# Ozone Design Values



# New Standard Timeline

- ∞ Recommendation: 65–70 ppb
- ∞ New standards finalized – Oct 2015
- ∞ Designations (nonattainment areas) likely to be based on 3-year time band 2014-2016



# Impact of Non-Attainment

## BUSINESS & INDUSTRY

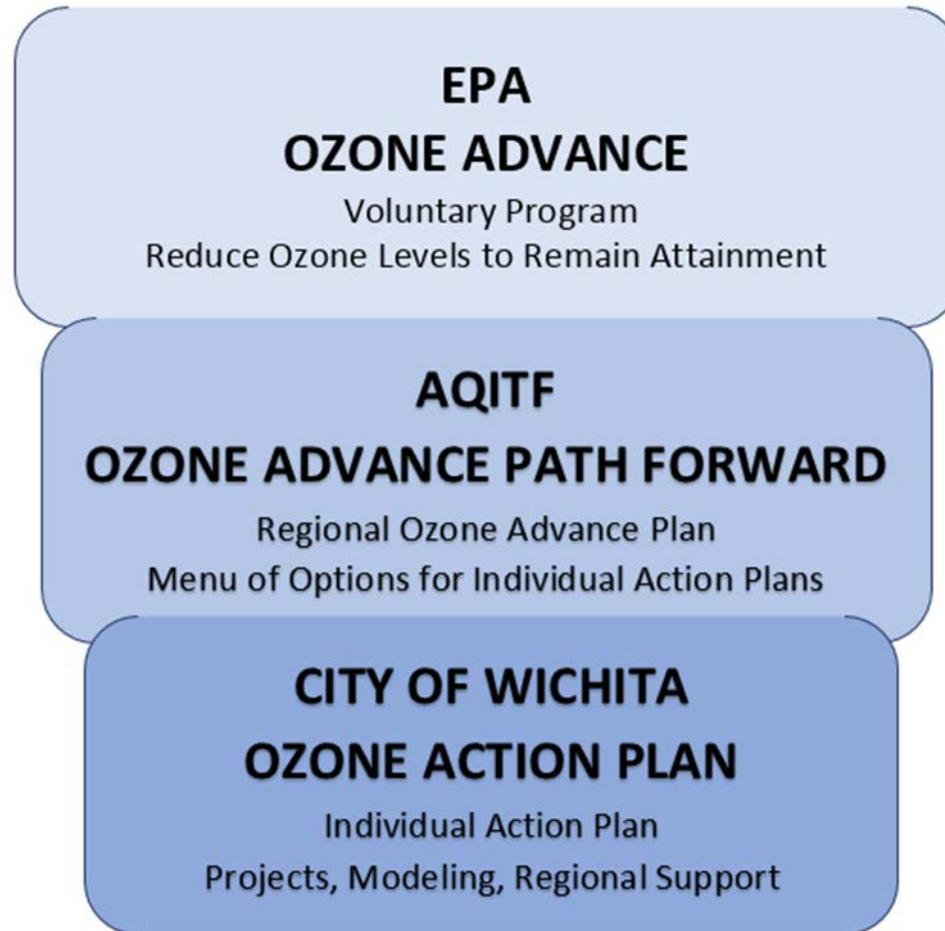
- ⌘ More Federal Regulation
- ⌘ More Stringent Permitting Requirements for Industry
- ⌘ Increased Costs for Businesses
- ⌘ Loss of New Business
- ⌘ Road Funding Impacts

## CITIZENS & VISITORS

- ⌘ New Fuel Blend Requirement
- ⌘ Higher Fuel Costs
- ⌘ Higher Energy Costs
- ⌘ Health Care Costs for Some Individuals
- ⌘ Decreased Quality of Life

**Cost estimates range in the tens of millions of dollars annually and are ongoing for at least 10 years.**

# Ozone Advance Program



# Ozone Advance Path Forward

## Executive Summary

1. Introduction
  - 1.1 Background
2. Air Quality in the Wichita MSA
  - 2.1 Current Ozone Status
  - 2.2 Sources of Ozone Precursors
3. Ozone Advance Project Update
  - 3.1 Outreach and Education Projects
  - 3.2 On-Road Projects
  - 3.3 Air Pollution Control Technologies
  - 3.4 Open Burn Projects
  - 3.5 Energy Conservation Projects



# Ozone Action Plan

## What we want:

### Planning

- ☞ Goal Oriented
- ☞ Clear Objectives
- ☞ Strategic Selection of Projects
- ☞ Measurable Outcomes

### Implementation

- ☞ Clearly Meets Goals
- ☞ Identifiable Project Objectives
- ☞ Performance Based
- ☞ Reportable Outcomes

# Ozone Advance Path Forward

## Example

| Strategy   | Impact   | Performance Measure   | Target Date | Lead Agency | Current Status   |
|--|--|---|-------------|-------------|--|
| <b>Fleet Improvements</b> – Fleet updates of newer, hybrid or alternative fuel vehicles increase fuel efficiency and decrease ozone forming emissions. | Fleet improvements reduce fuel costs, fuel usage, and emissions that form ozone. | <ul style="list-style-type: none"><li>• Gallons of fuel saved</li><li>• Dollars saved on fuel costs</li><li>• Tons of NOx saved</li><li>• Tons of VOC saved</li></ul> | 2014        | COW, Fleet  | <u>City of Wichita Improvements</u><br>13 light duty hybrids:<br>Fuel reduction - 1,045 g/yr<br>Fuel savings - \$3,135/yr<br>Estimated NOx saved – 80.23 lbs/yr<br>Estimated VOC saved – 53.77lbs/yr<br>21 heavy duty hybrids:<br>Fuel reduction - 1,382g/yr<br>Fuel savings - \$4,491.50/yr |

# Getting the Word Out

## Ozone Summit

- ∞ First in Wichita MSA
- ∞ Key Issues and Relevant Topics
- ∞ Target audiences
  - Elected officials
  - Industry Decision Makers

# Ozone Summit – March 5, 2015

- Held at Botanica Wichita
- 4:30-7:00 pm to accommodate participants' day jobs
- Attended by ~80 industry and government leaders from the Wichita MSA (4 counties)
- Goal was to educate stakeholders (decision makers) about possible nonattainment



# Ozone Summit – March 5, 2015



Featured opening remarks by City of Wichita, Butler County, and Air Quality Improvement Task Force rep. Closing remarks by Westar.



Mike Alesandrini, Keynote speaker from St. Louis, MO

# Ozone Summit – March 5, 2015



Professional facilitator from WSU (Suzanne Hawley, PhD) led group discussions about the benefits, barriers, and strategies for joining a regional nonattainment effort



# Ozone Workshops – April & May 2015

## Spring Ozone Workshops

Learn more about current ozone issues in South Central Kansas and how your organization can take manageable steps that will help our region stay in compliance with ozone standards.



### Workshop #1

**Local Governments & Nonprofits**

Tuesday, April 21, 2015

1:30pm - 4:00pm

Sedgwick County Extension Office

7001 W 21st St N, Wichita

Meadowlark Room



### Workshop #2

**Business & Industry**

Wed, May 27, 2015

1:30pm - 4:00pm

Sedgwick County Extension Office

7001 W 21st St N, Wichita

Sunflower Room



**Register Today!**

**[www.aqtaskforce.wordpress.com](http://www.aqtaskforce.wordpress.com)**

- Workshop feedback indicated desire for more background information
- City goal to collect Ozone Action Plans from local government and industry
- Workshops were conservatively advertised and were attended by 5-10 participants each

# Example: Wichita Ozone Action Plan Projects

- Ozone Alerts
- Free Fares
- No Idling Policies
- Wichita Master Bicycle Master Plan
- Transit Alternative Fuel Study
- Vanpool Study
- Clean Air Car Clinics
- Open Burning Education & Restrictions



- Elevated Railroad Bridges
- Intelligent Transportation System (ITS)
- Diesel Fleet Improvements

# Ozone Alerts

- Goal–Avoid High Ozone Days
- Proactive vs Reactive
- 24hr Advance Notice
- Operational Adjustments

## Today's Forecast



On **Good Ozone Days** ozone levels are forecasted to be below the standard.

Apply **normal** City operations.

**No health impacts** expected.

## Tomorrow's Forecast



On **Ozone Alert Days** ozone levels are forecasted to be above the standard.

**Make adjustments** to City operations to reduce emissions of **NO<sub>x</sub>** and VOCs that cause ozone. See "Ozone Alert Actions" below for more details.

**Health impacts** may be observed for active children and adults, as well as people with respiratory diseases like asthma and bronchitis. Limits to outdoor exposure are recommended.

**Sign up for Ozone Alert Emails**  
at [www.wichita.gov/ozone](http://www.wichita.gov/ozone)

# Ozone Alert Response @ the Workplace



*When the Next Day is forecasted to be an Ozone Alert Day*

- Postpone Mowing & Small Engine Use
- Postpone Painting & Solvent Use
- Reschedule Nonessential Driving
- Refuel Before 10AM or after 6PM
- **Promote Free Fares** and Carpooling
- No Idling Policy (Reminders)

For more ideas about your own Ozone Alert Response Plan visit

[www.aqtaskforce.wordpress.com](http://www.aqtaskforce.wordpress.com)

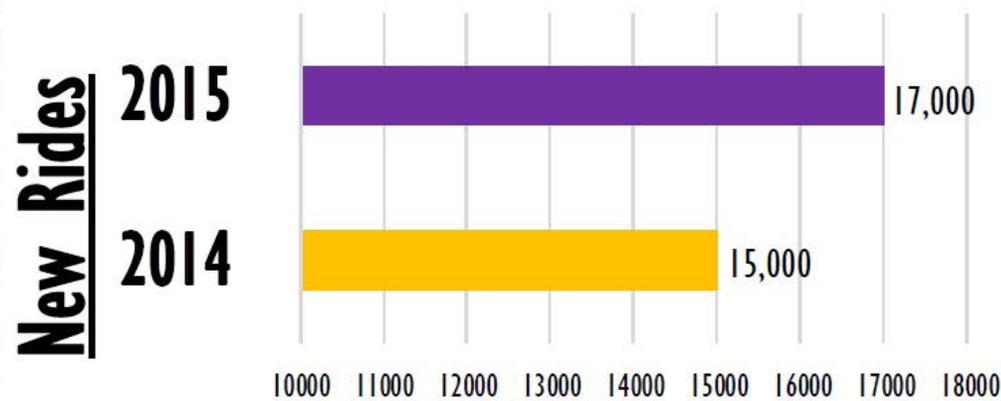
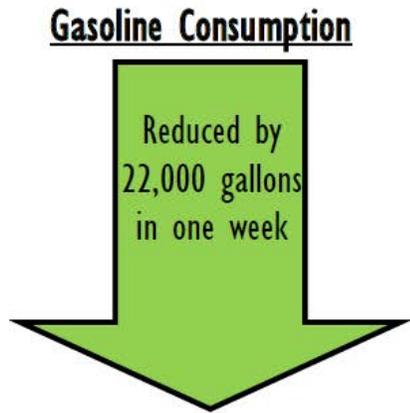
# Ozone Alert Response – Community

*When the Next Day is forecasted to be an Ozone Alert Day*

- ✓ Postpone fueling
- ✓ Reschedule errands
- ✓ Postpone lawn work
- ✓ Avoid using paints, varnishes and solvents
- ✓ Carpool, ride the bus, bicycle or walk
- ✓ Free Fares



# Free Fares Week and Free Fares on Ozone Alert Days



- June 15-20, 2015 (2<sup>nd</sup> year)
- Ridership during Free Fares Week was 73% higher than average

**Auto Miles Reduced**

2014: 303,760

2015: 434,800

- 
- 650 pounds of nitrogen oxide were avoided due to fewer vehicles on the roadways

- Gas, mileage, and NOx savings calculated by Transit

# Clean Air Car Clinic



- Voluntary vehicle emissions testing
- Gas cap testing
- Often in conjunction with other environmental friendly events (River Trash Roundup; Household Hazardous Waste Collection Day etc.)

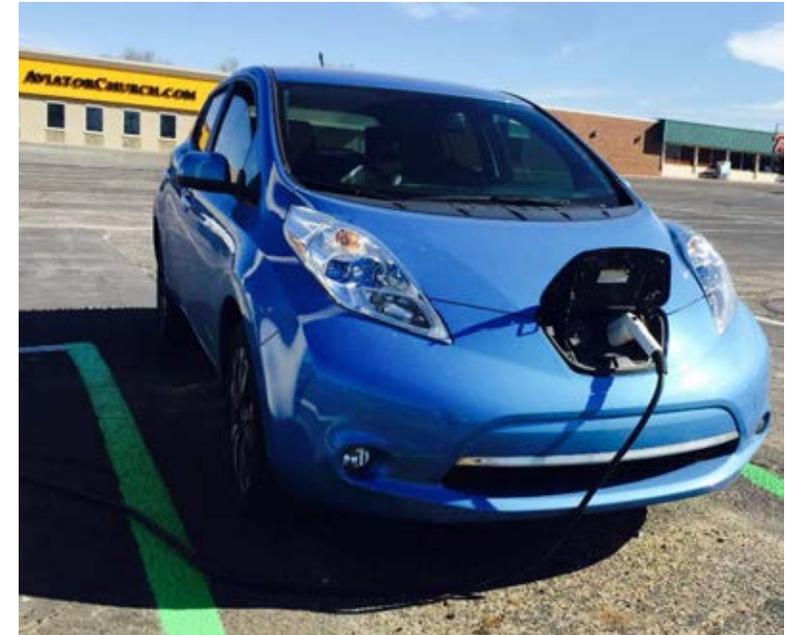
# Example: City of Wichita Future Projects

- Ozone Modeling
- Master Pedestrian Plan
- Fleet Improvements
- Vanpool Program
- Workplace Program
- Model Contracts



# Other Projects Included in the Path Forward

- ☞ Workplace Programs
- ☞ Model Contracts
- ☞ Fleet Improvements
- ☞ Road Improvements
- ☞ Transit Improvements
- ☞ Alternative Fuels Infrastructure
- ☞ Energy Efficiency Programs/Projects
- ☞ Travel System Management
- ☞ Ozone Forecast Modeling Technology
- ☞ Emission Source Modeling



Derby's vehicle charging station –  
economic development project

# Ozone Action Plan: Ideas for Your Workplace

## *Formalize an Ozone Action Plan*

- No Idling Policy
- No Mowing on Ozone Alert Day Policy
- Incentives to Walk, Bike or Carpool
- Refueling Policy or Practice
- Increase Biking, Walking and Transit
- Approve Telecommutes
- Energy Reduction Plans
- Fleet Improvements
- Others?
- Report to AQITF



For tools and templates for  
Ozone Action Plans visit  
[www.aqtaskforce.wordpress.com](http://www.aqtaskforce.wordpress.com)

# Join the AQITF

**AQITF meets every second Wednesday most months**

**1:30 – 3:00**

**Environmental Health Bldg  
1900 E. 9<sup>th</sup> St., Wichita**



**Email: [aqtaskforce@gmail.com](mailto:aqtaskforce@gmail.com)**

**to receive meeting notices**

# Questions or Comments

