MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

2015 Ozone Standard Proposed Boundary Recommendation

Air Pollution Control Program

August 2016

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Overview

- Monitoring Data
- Five-Factor Analysis
- Recommendation

Monitoring Data

- EPA Designation Guidance Memo states that nonattainment areas will be based on violating monitors and areas that contribute to the violation

Statewide Ozone Monitoring Network

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Monitoring Data

- Using latest quality assured data for 2013-2015 ozone seasons
- Only monitor with design value in excess of 70 ppb is West Alton, north of St. Louis

Monitor Name	2013-2015 Design Value (ppb)
Arnold West	70
Blair Street	65
Bonne Terre	65
Farrar	66
Foley	68
Maryland Heights	70
Orchard Farm	69
Pacific	65
West Alton	71

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Monitoring Data

Monitor Area	Monitor Name	2013-2015 DV
Joplin	Alba	65
Branson	Branson	60
Southwest MO	El Dorado Springs	63
Springfield	Fellows Lake	61
	Hillcrest High School	61

Monitor Area	Monitor Name	2013-2015 DV
Columbia	Finger Lakes	63
Jefferson City	New Bloomfield	63
St. Joseph	Savannah	64
Rural site	Mark Twain	59
Kansas City	Liberty	64
	Richards Gebaur	64
	Rocky Creek	68
	Trimble	67
	Watkins Mill	66

Figure 3. St. Louis MSA and Current Nonattainment Area's 2015 Ozone Monitoring Sites and their 2013-2015 Design Values

- Site Name (13-15 DV in ppb)

Missouri Monitors

1 - Arnold West (70)
2 - Foley (68)
3 - Farrar (66)
4 - West Alton (71)
5 - Orchard Farm (69)
6 - Bonne Terre (65)
7 - Pacific (65)
8 - Maryland Heights (70)
9 - Blair Street (65)

Illinois Monitors

10 - Jerseyville (66)
11 - Nilwood (64)
12 - Alton (71)
13 - Maryville (69)
14 - Wood River (69)
15 - Houston (67)
16 - East St. Louis (66)

0 10 20 40 Miles

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St. Louis Bi-State Nonattainment Area (2008 Standard)
St. Louis Metropolitan Statistical Area

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Monitoring Data

- With one violating monitor, the recommendation must have at least one recommended nonattainment area boundary
- The area of contribution to the violation is examined in the next step

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Five-Factor Analysis

Contribution is determined based on:

- Air quality data *(one monitor violating)*
- Emissions and emissions-related data *(concentrated emissions in urbanized areas)*
- Meteorological data *(conducive weather, flow pattern)*
- Geography/Topography *(minimal impact)*
- Jurisdictional boundaries *(choosing counties)*

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Five-Factor Analysis: Air Quality Data

- Monitors around the St. Louis area are examined for those with higher design values
- Exceedances at the St. Louis monitors are used to select meteorological days for examination

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Five-Factor Analysis: Emissions Data

- Items Examined:
  - County-total emissions from all sources
  - Point sources mapped by magnitude
  - Vehicle miles travelled by county
  - County population and population growth
  - Commuting data (county of work/residence)
  - Population density and urbanization

Urbanization
Illinois
Missouri
St. Louis
St. Louis
St. Clair
Madison
St. Charles
Jefferson
Monroe
Franklin
Warren
Lincoln
Jersey
Macoupin
Montgomery
Bond
Clinton
Washington
Randolph
Ste. Genevieve
St. Francois
Perry
Jackson
Iron
Dent
Crawford
Gasconade
Osage
Cole
Moniteau
Cooper
Pike
Calhoun
Greene
Scott
Morgan
Sangamon
Christian
Macon
Shelby
Cumberland
Clay
Wayne
Hamilton
Franklin
Jefferson
Marion
Fayette
Effingham
Jasper
Boone
Audrain
Monroe
Adams
Brown
Schuyler
Mason
Cass
Menard
Logan
De Witt
Piatt
Champaign
Douglas
Moultrie
Coles
Knox
Lewis
Shelby
Marion
Maries
Miller
Phelps
Pulaski
Texas
Shannon
Howell
Ozark
Oregon
Ripley
Carter
Reynolds
Iron
Dent
Madison
Wayne
Bollinger
Cape Girardeau
Stoddard
Butler
New Madrid
Mississippi
Scott
Alexander
Pulaski
Massac
Livingston
Ballard
McCracken
Carlisle
Hickman
Graves
Marshall
Calloway
Johnson
Pope
Hardin
Saline
Williamson
Franklin
Perry
Randolph
Jackson
Union
0 30 60 120 Kilometers
Urban Areas
Nonattainment Area
St. Louis MSA
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NOx Point Sources
Missouri
Illinois
Pike
Scott
Morgan
Sangamon
Christian
Greene
Macoupin
Montgomery
Calhoun
Jersey
Lincoln
Fayette
Bond
Madison
St. Charles
Warren
St. Louis
St. Clair
Clinton
Gasconade
Franklin
Jefferson
Monroe
Washington
Randolph
Perry
Crawford
Ste. Genevieve
Jackson
Iron
St. Francois
Dent

VOC Point Sources
Missouri
Pike
Scott
Morgan
Sangamon
Christian
Greene
Macoupin
Montgomery
Calhoun
Jersey
Lincoln
Fayette
Bond
Madison
St. Charles
Warren
St. Louis
St. Clair
Clinton
Franklin
Jefferson
Monroe
Washington
Randolph
Perry
Crawford
Ste. Genevieve
Jackson
Iron
St. Francois

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Five-Factor Analysis: Meteorological Data

- HYSPLIT: Back trajectories that can indicate the path of air over time and geography
  - Paths indicate possible contributing areas

- Surface Weather Maps: Examine the overall wind flow on exceedance days

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Trajectories for West Alton

EPA Ozone Designations Mapping Tool

Surface Weather Map

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Five-Factor Analysis: Geography and Jurisdictions

- Geography: No strong topographical influence in St. Louis area

- Jurisdictions: Counties chosen by existing precedent and regulatory/emissions boundaries

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Recommendation

<u>Nonattainment:</u>

City of St. Louis
St. Louis County
St. Charles County
Franklin County
Jefferson County

<u>Unclassifiable/Attainment:</u>

Each Missouri county not recommended for nonattainment

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0 25 50 100 Miles

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Recommendation Timeline

August 25	• Public Hearing at Missouri Air Conservation Commission meeting
September 1	• Public comment period ends
September 29	• Proposing for Adoption by MACC
By October 1	• Submit recommendation to EPA

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The recommendation public notice webpage:

http://dnr.mo.gov/env/apcp/stateplanrevisions.htm

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Division of Environmental Quality Director: Leanne Tippett Mosby

Date: August 30, 2016

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