MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

2016 Air Quality Report

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Air Quality Analysis Section Chief

Air Pollution Control Program

MACC Meeting, March 31, 2016

Jefferson City, MO

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Presentation Overview

- Emissions Inventory and Trends
- Ambient Air Monitoring and Trends
- Website Resources

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Point Source Emissions Reporting

10 CSR 10-6.110 (By Permit Type)

- Part 70- Full Emissions Report- Annually

  (potential to emit (PTE) >100 tons per year (tpy) of any criteria pollutants, or 10/25 tpy of HAPs)

- Intermediate- Full- every three years, otherwise reduced* reporting

  (PTE > 100 tpy but accepted an emission limit of less than 100 tpy)

- Small sources-Basic & no operating permit (NOP) - Full once, reduced* subsequently

Basic: PTE greater than de minimis levels but less than 100 tpy.

NOP DeMPAL: Construction Permit limits actual emissions to be below de minimis levels.

de minimis Levels: PM_{10} = 15 tons, $PM_{2.5}$ 10 tons, S0x, N0x, VOC = 40 tons, CO = 100 tons, Lead = 0.6 tons, HAPs = 10 tons each/25 tons combined)

*Full EIQ is required if 5 tons/year change in emissions or if there is a construction permit action.

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How many point source facilities?

Permit Type	Type of 2014 EIQ (as of mail-out)		Total Number
	Full	Reduced	
Part 70	269	0	269
Intermediate	216	0	216
Basic	219	750	969
No Operating Permit*	162	618	780
All permit types	**866**	**1368**	**2,234**

*Construction permit limits emissions below De Minimis permit applicability limits. (NOP_DeMPAL)

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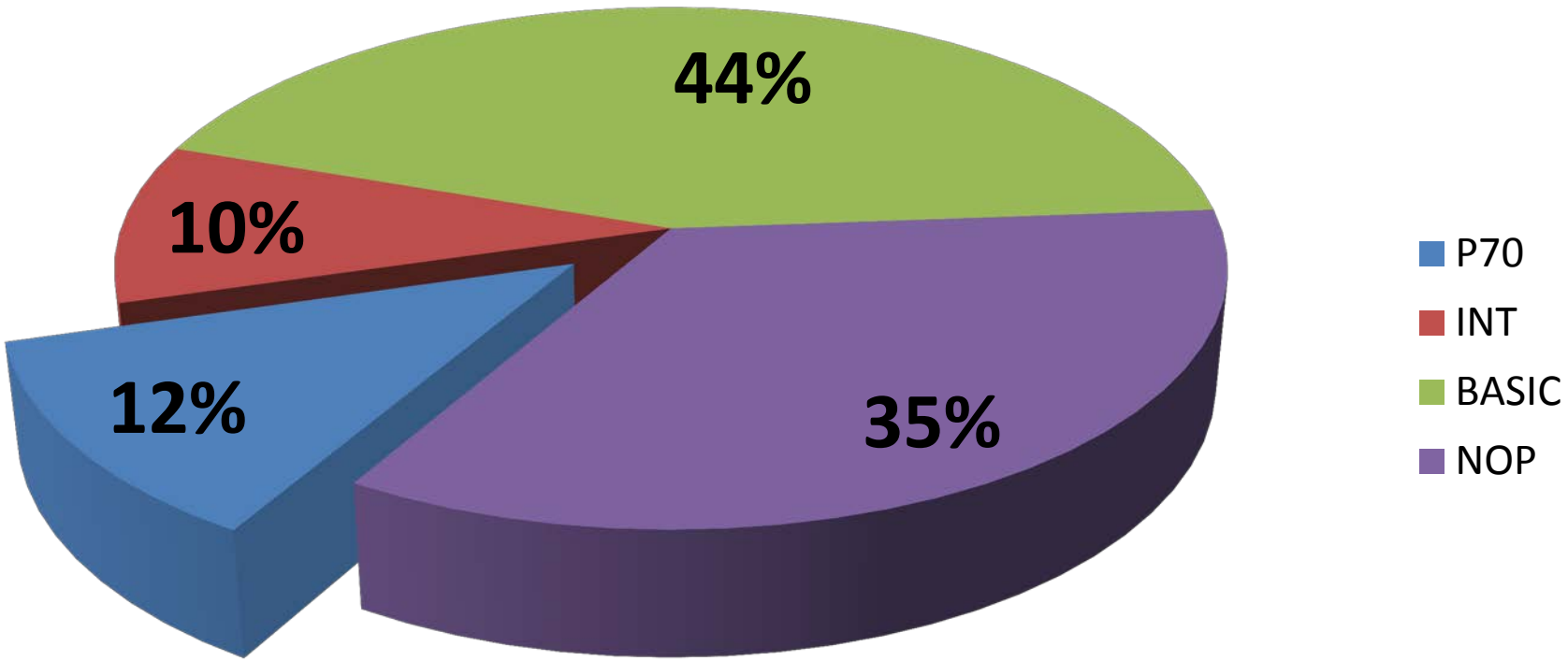
Permit Type as a Percent of Total Facilities
2014 Emissions Year



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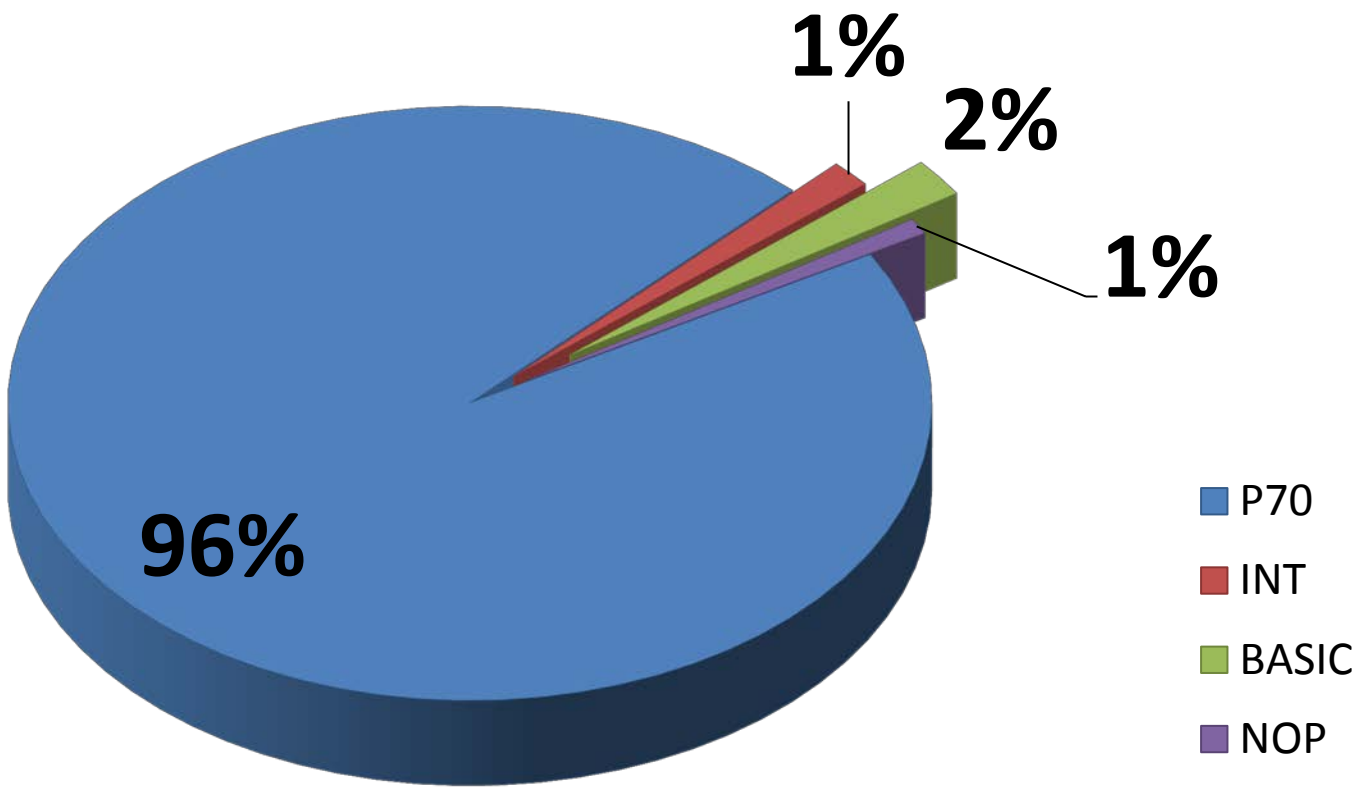
Percent of Total Point Source Emissions by Permit Type
2014 Emissions Year



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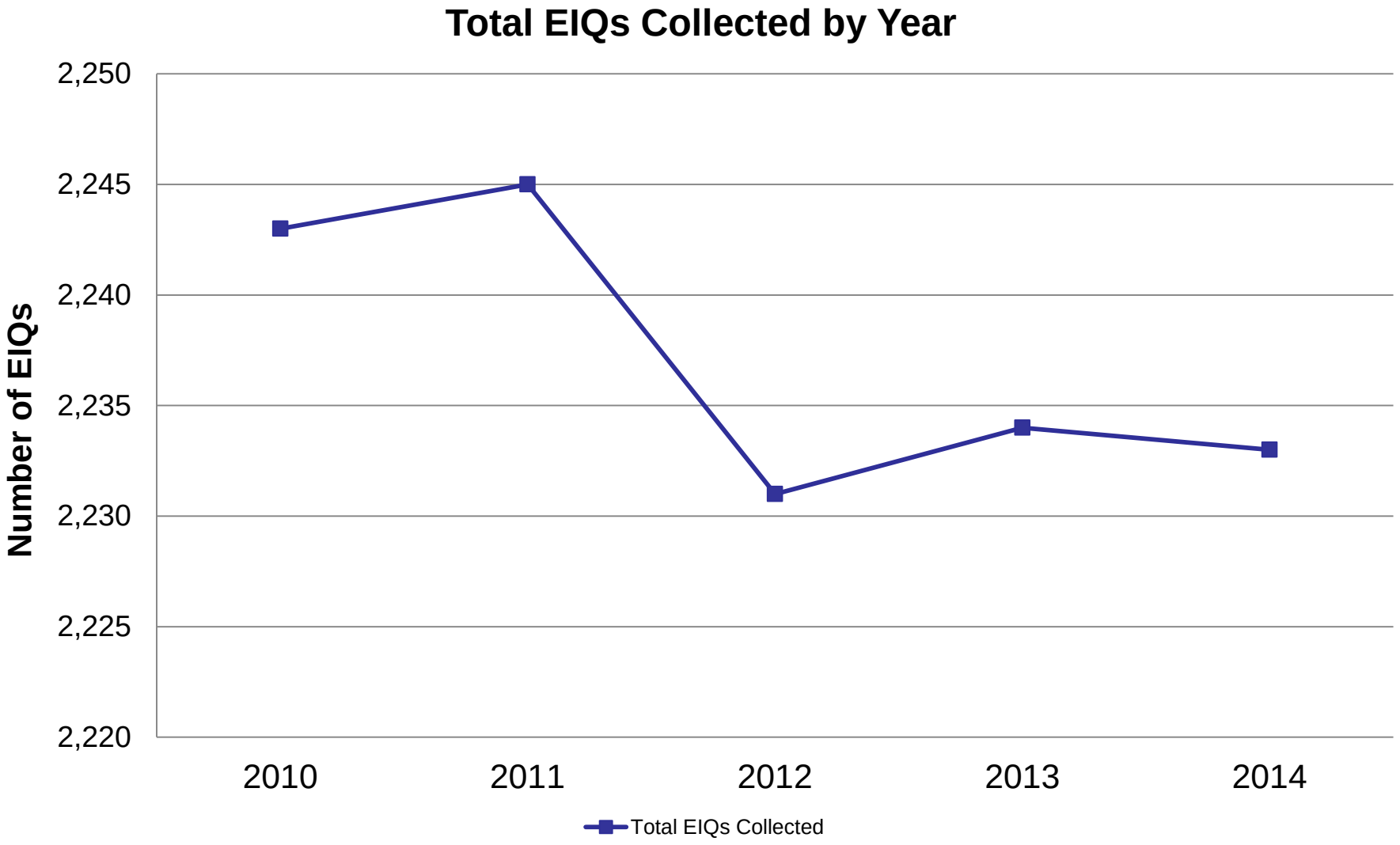

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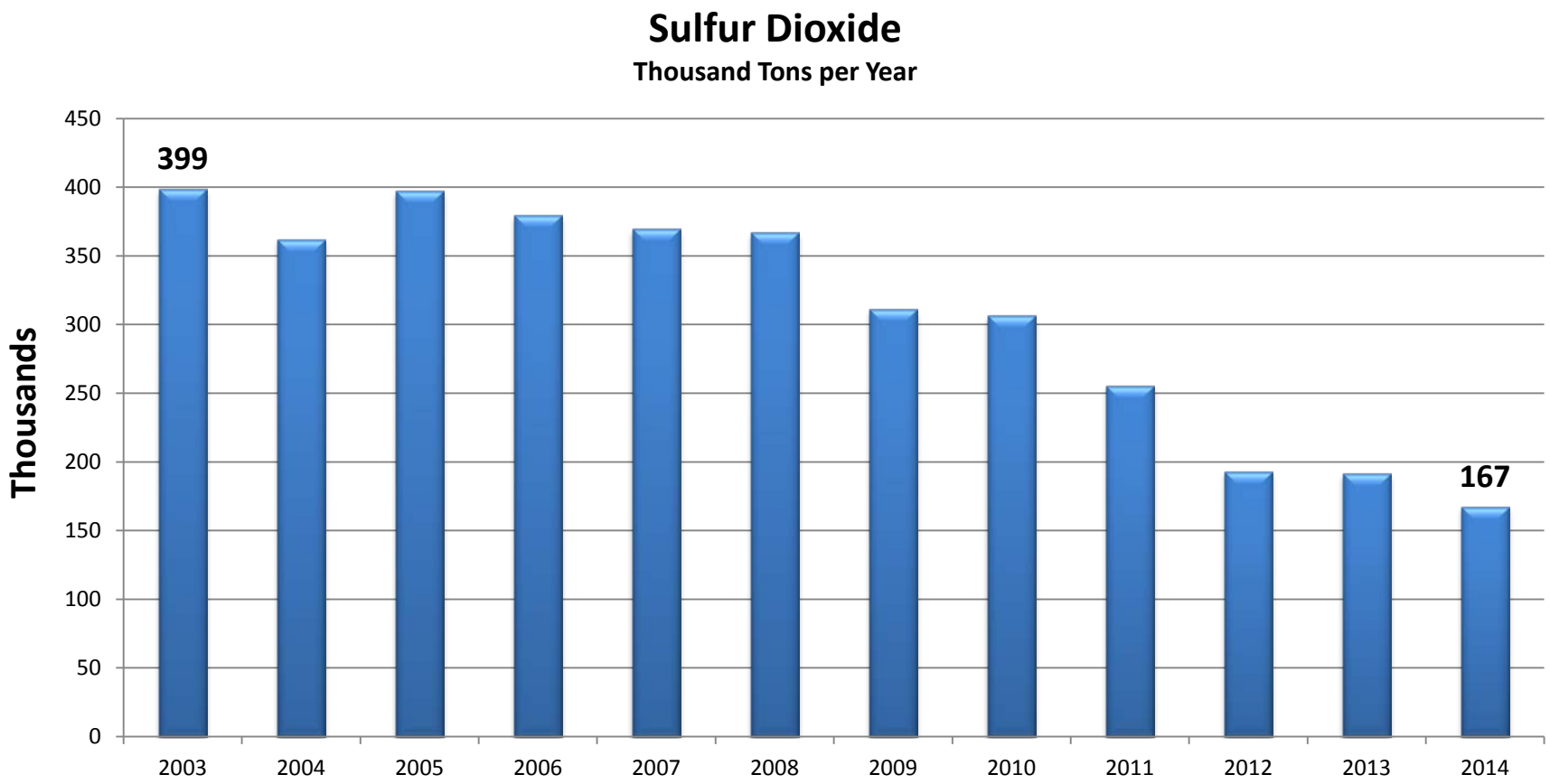
Sulfur Dioxide (SO_2) Point Source Emissions



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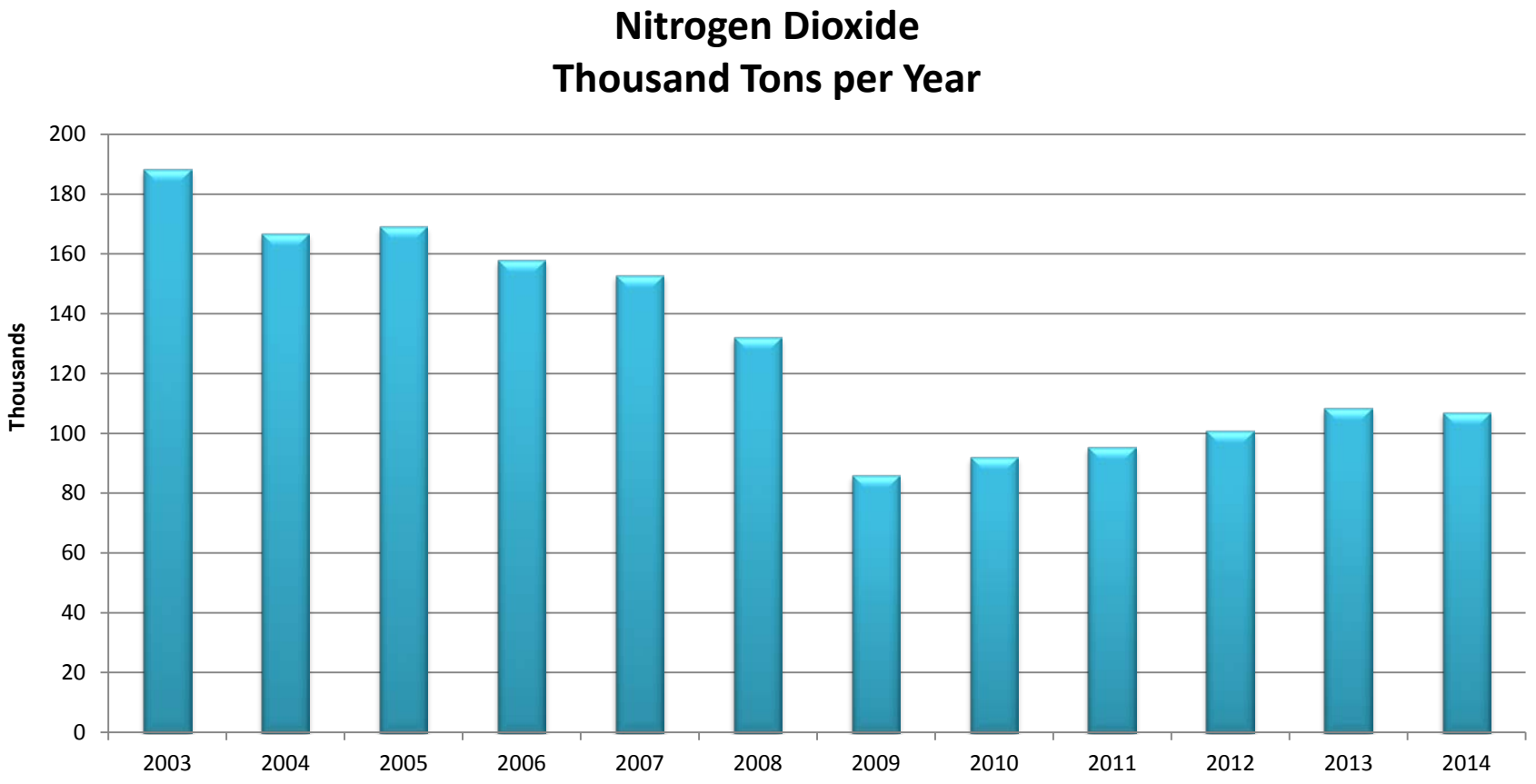
Nitrogen Dioxide (NO_2) Emissions



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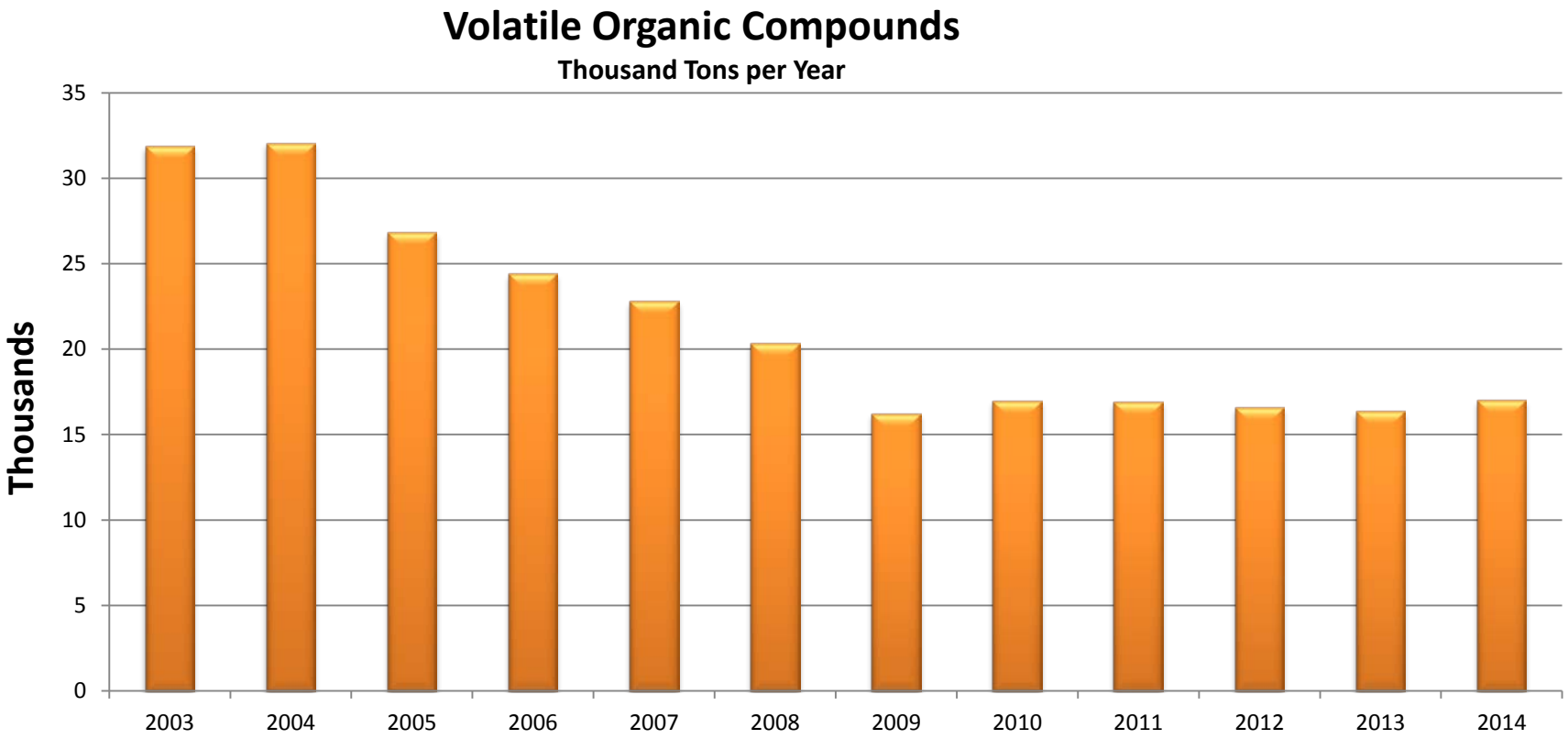
Volatile Organic Compounds (VOC)



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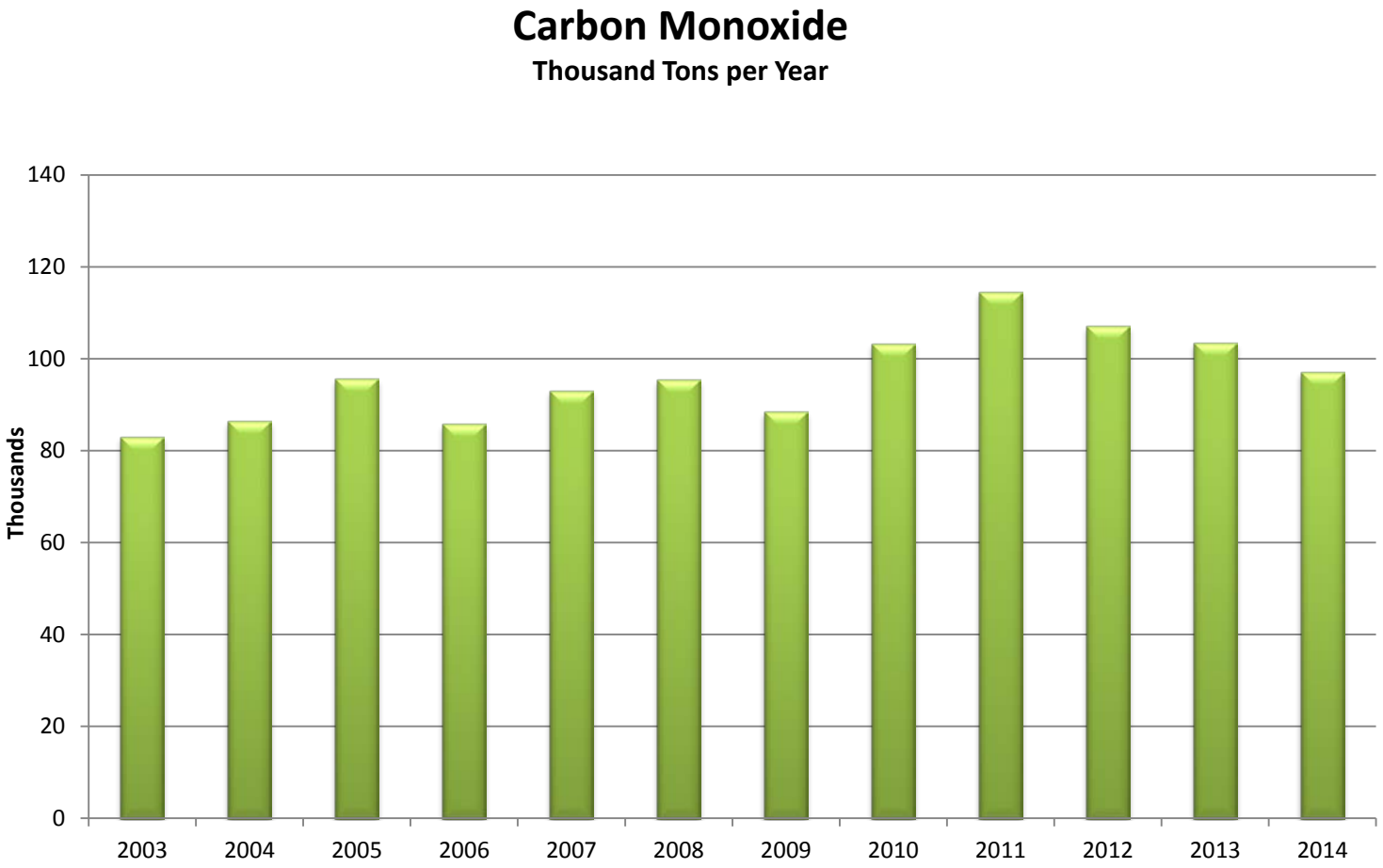
Carbon Monoxide (CO) Emissions



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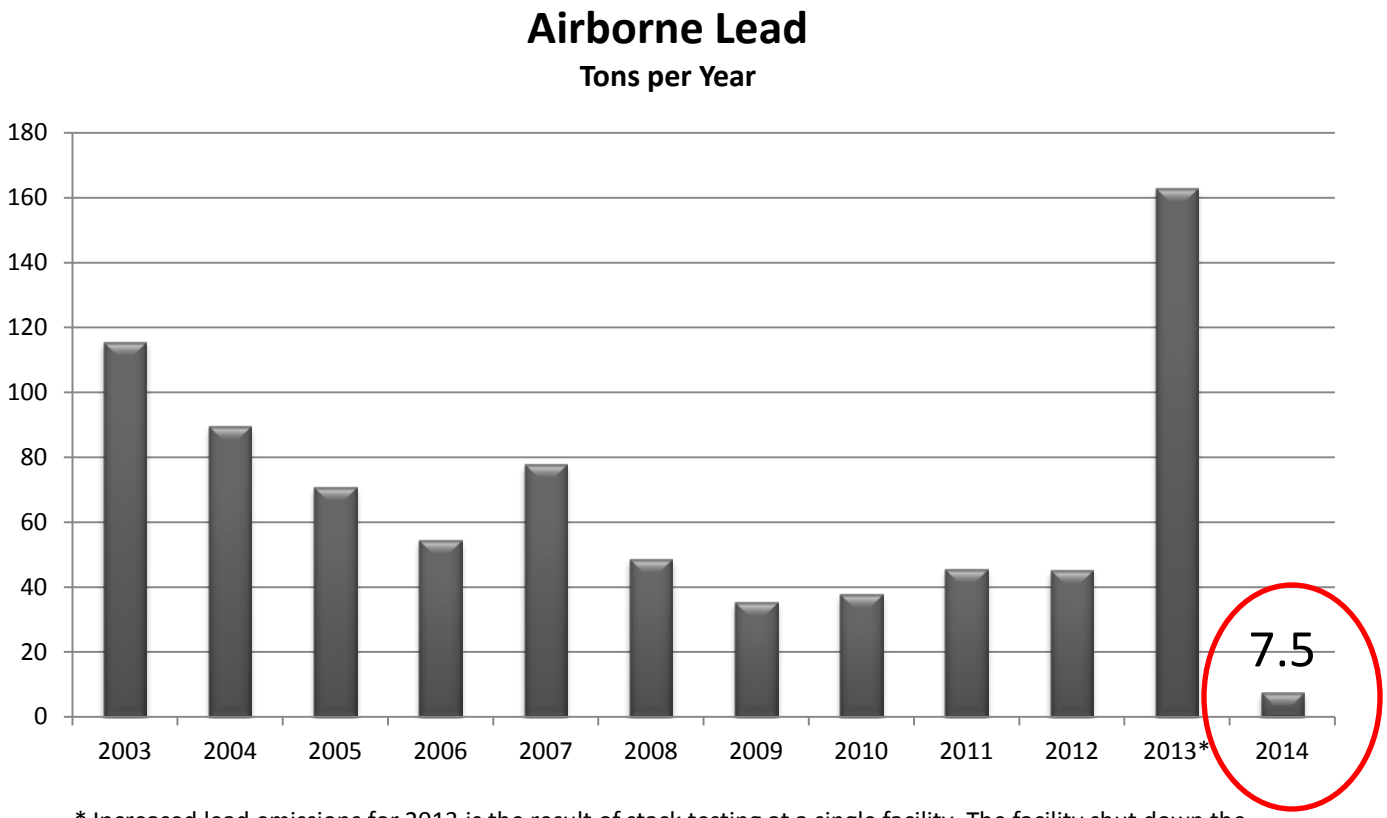
Airborne Lead (Pb) Emissions



* Increased lead emissions for 2013 is the result of stack testing at a single facility. The facility shut down the processes that release emissions through the tested stacks at the end of the 2013 emission year, and the increased emissions are likely the result of the shut down activities.

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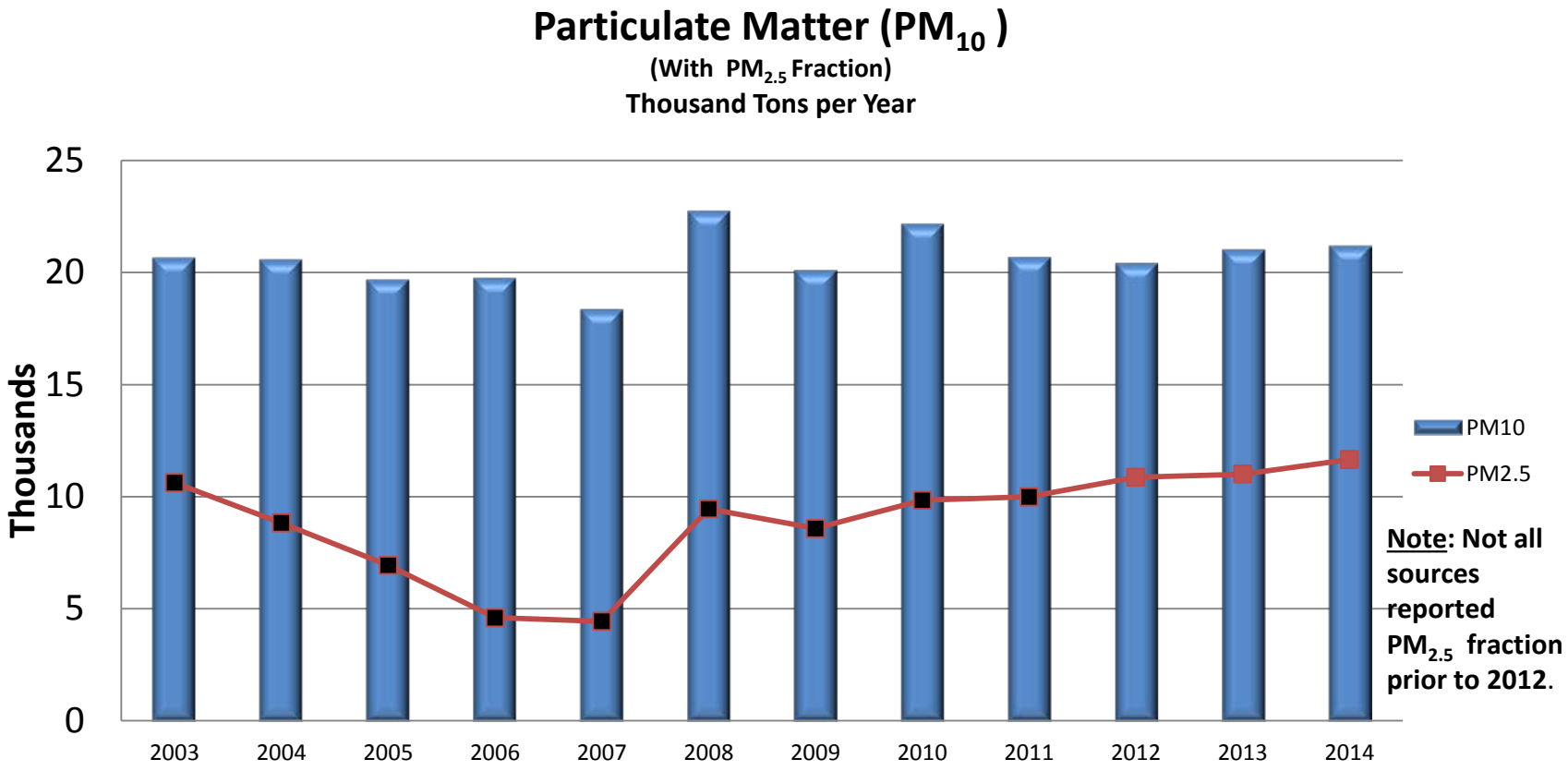
Particulate Matter (PM_{10})



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Ambient Air Monitoring

- Clean Air Act, Title III, Sec. 319, Air Quality Monitoring

- Specific ambient air monitoring related rules are cited in 40 CFR Parts 50, 53, 58, and now 51 Subpart BB (SO_2 DRR). State rules address only standards and methods 10 CSR 10-6.010 (standards) and 10-6.040 (methods)
- Purpose

➢ Utilizes uniform monitoring criteria. (**Objective**!)

➢ Provides air quality monitoring stations in urban and other areas.

➢ Provides daily analysis and reporting of air quality.

➢ Provides for record keeping, analysis and reporting of air monitoring data for periodic reporting to the public by the EPA Administrator.

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Ambient Air Monitoring Trends

- Area wide criteria pollutant monitoring long term trends are decreasing.
- Revisions to the SO_2, NO_2, Lead, and Ozone NAAQS and revised monitoring network requirements has ‘lowered the bar’ for some areas.
- Some single source and area specific NAAQS violations are being addressed.

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NAAQS Being Met

- **NO_2**: No Missouri sites violate the 2010 1-hour (100 ppb) standard or annual standard (53 ppb).
  –Near roadway NO_2 sites –three sites deployed by 2015. No issues yet…

- **$PM_{2.5}$**: No Missouri sites violate the 1997 annual standard, 2006 24-hour $PM_{2.5}$ standard, or the 2012 Annual (12 µg/m^3) and 24-hour (35 µg/m^3) standard.
  – Near roadway $PM_{2.5}$ sites- two monitors deployed in 2013. No issues yet…

- **CO**: No Missouri sites violate the 1-hour (35 ppm) or 8-hour (9 ppm) standard.
  – Near roadway CO sites- two monitors deployed in 2013. No issues yet…

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NAAQS Being Met (or no new violations)

- **PM_{10}**: 24-hour std. 150 µg/m^3 –Monitoring Compliance at all PM_{10} Sites.
- **Lead**: 0.15 µg/m^3 2010 std. -No new violations since August 2014. Monitoring continues to collect ‘36 months of clean data’.
- **Ozone** (2008- 75 ppb std.)- Monitoring Compliance statewide (2013-2015).

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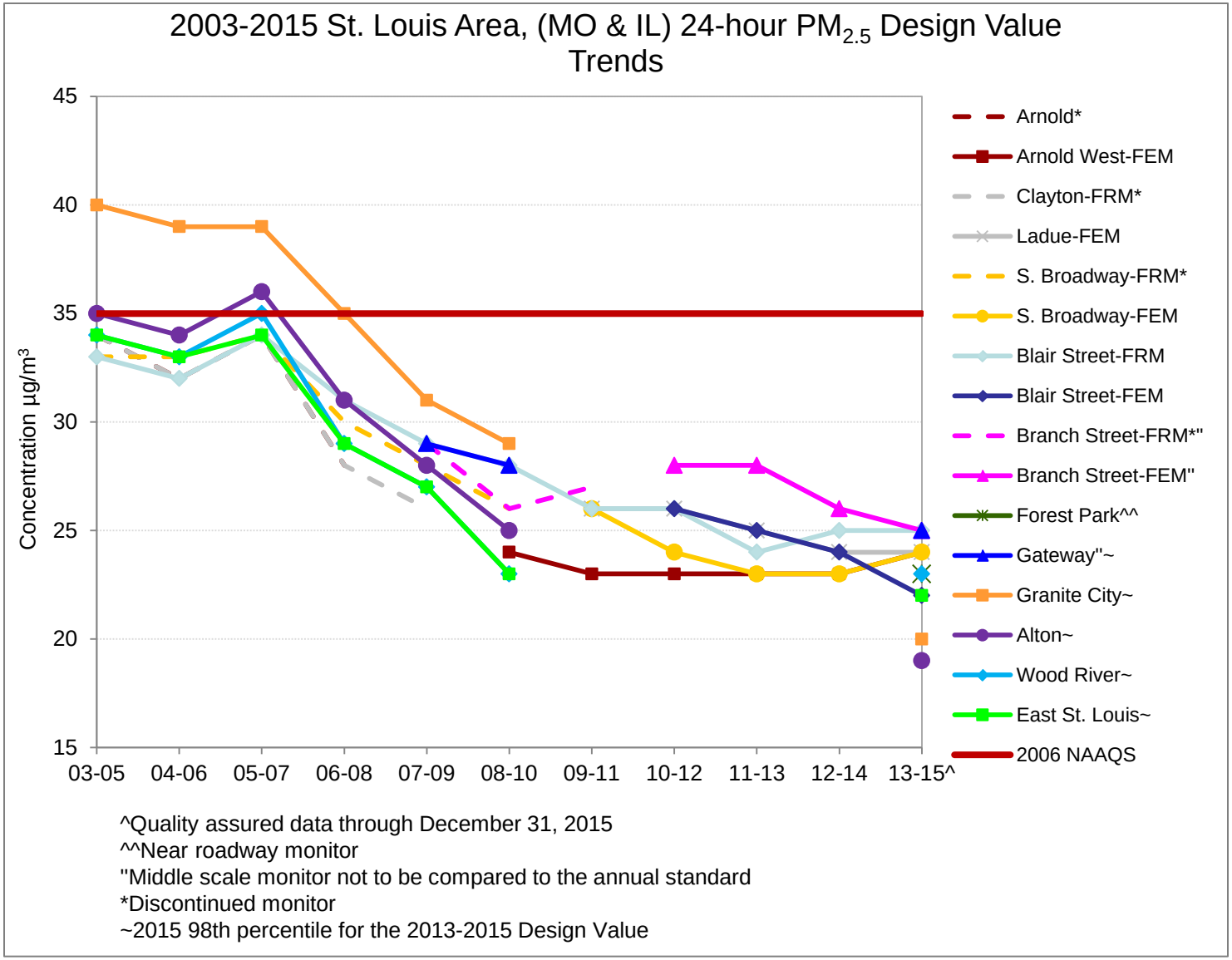
$PM_{2.5}$ 24-hour Average Ambient Air Monitoring Trends

- MO Sites in Compliance
- Illinois Sites Monitoring for compliance (2015-2017)



*Data Source: Environmental Protection Agency Air Quality System (**EPA** AQS), AMP480 Report and AMP450 Report*

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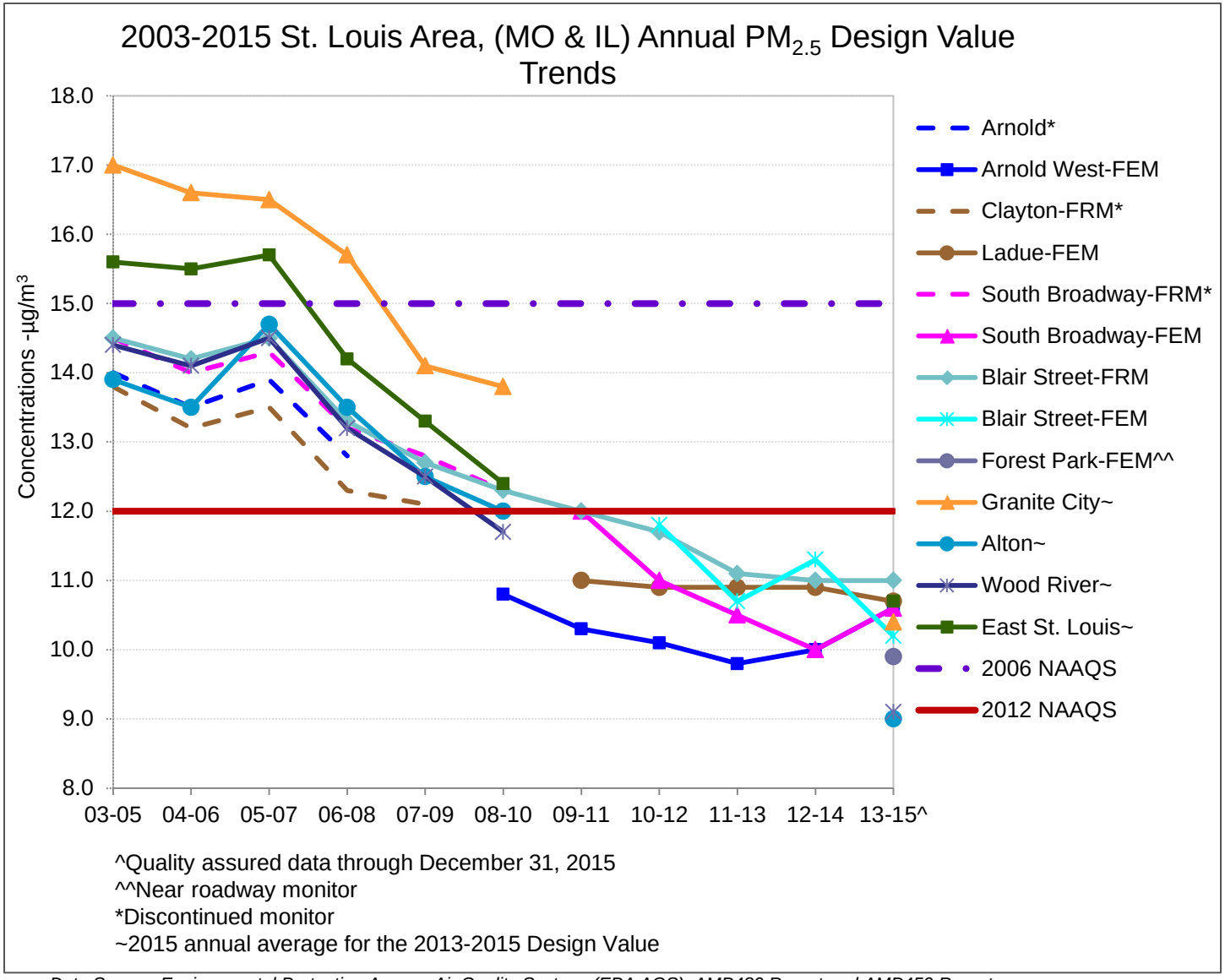
$PM_{2.5}$ Annual Average Ambient Air Monitoring Trends

- MO Sites in Compliance
- Illinois Sites Monitoring for compliance (2015-2017)



Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP480 Report and AMP450 Report

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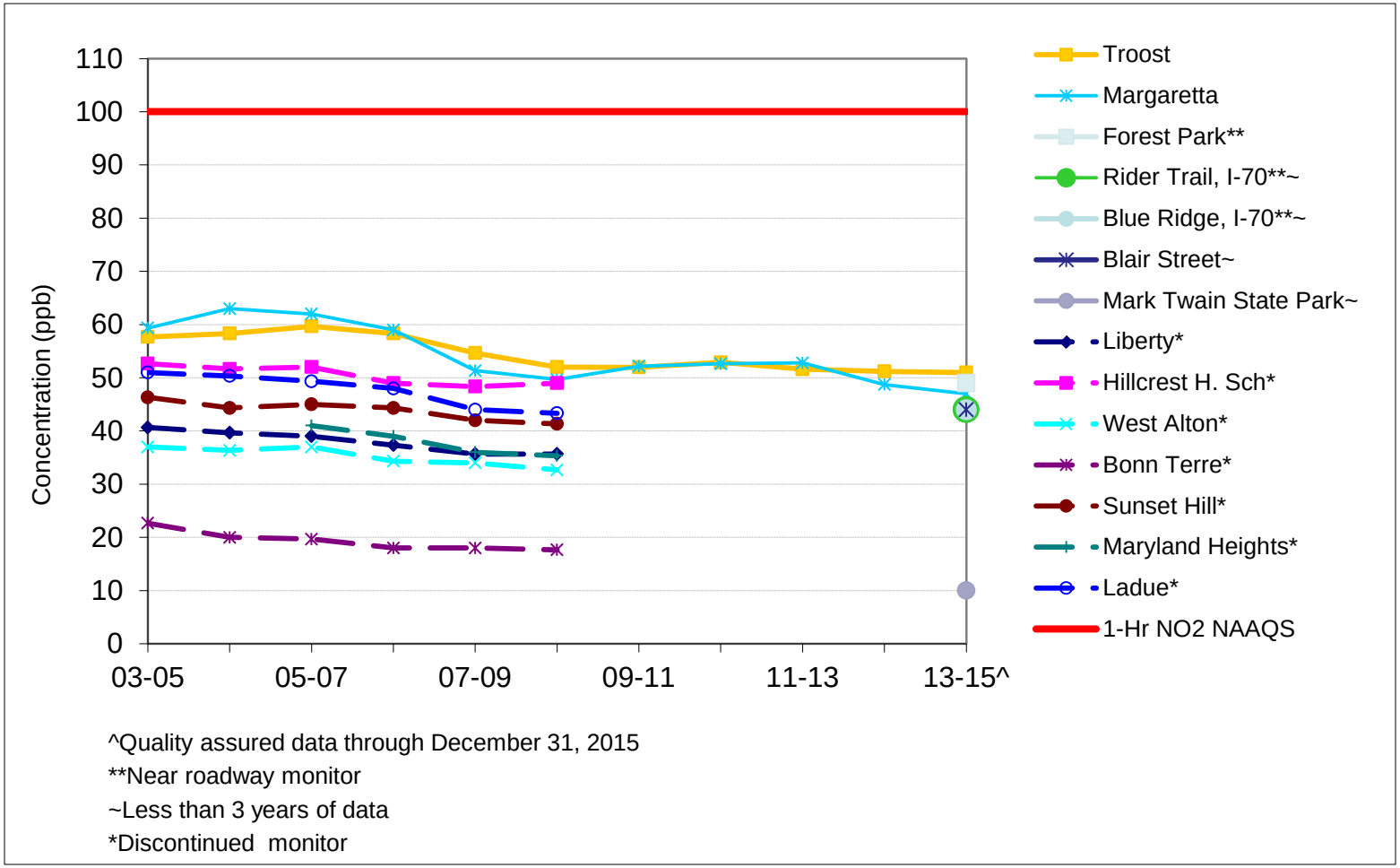
NO_2

Missouri 3-year Average of the 98th Percentile of the Daily 1-hr Maximum NO_2 Concentrations

(1-hr NAAQS = 100ppb)



^Quality assured data through December 31, 2015

**Near roadway monitor

~Less than 3 years of data

*Discontinued monitor

Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP480 Report

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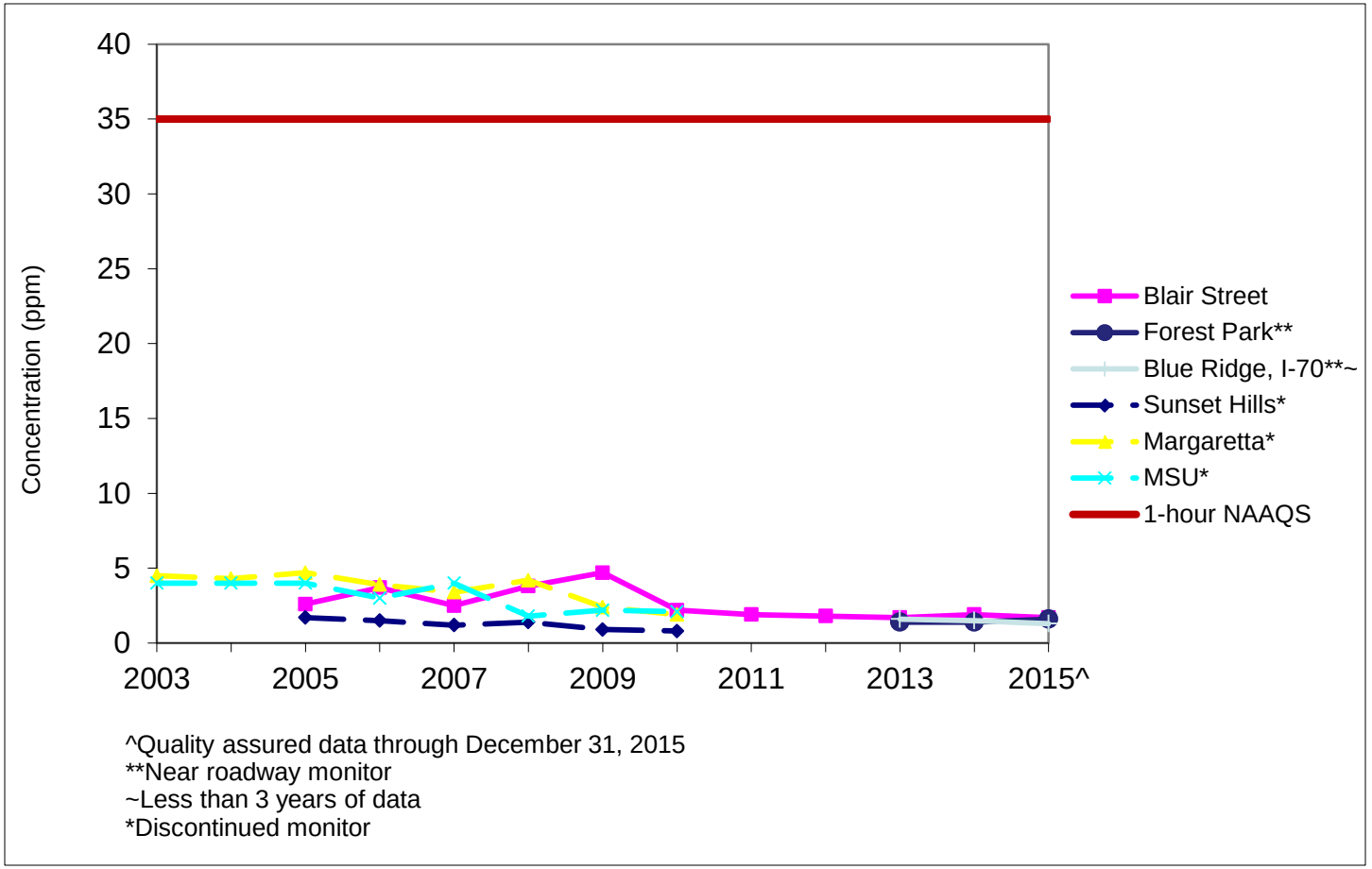
CO

Missouri 1-Hour 2nd Maximum Annual Averages of the Carbon Monoxide (CO) Concentrations

(1-hr NAAQS = 35 Parts Per Million (ppm))



^Quality assured data through December 31, 2015
**Near roadway monitor
~Less than 3 years of data
*Discontinued monitor

Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP450 Report

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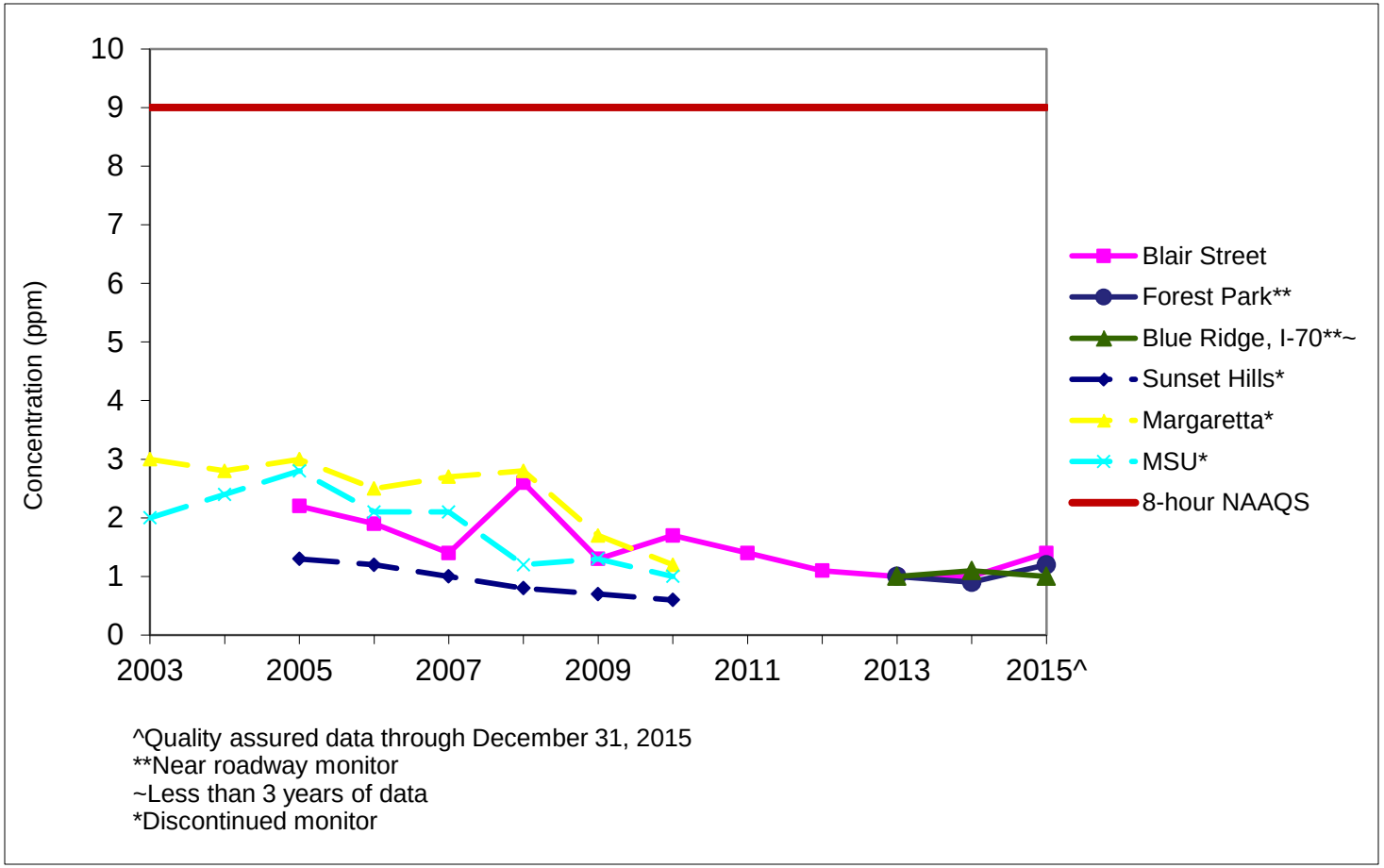
CO

Missouri 8-Hour 2nd Maximum Annual Averages of the Carbon Monoxide (CO) Concentrations

(8-hr NAAQS = 9 Parts Per Million (ppm))



^Quality assured data through December 31, 2015
**Near roadway monitor
~Less than 3 years of data
*Discontinued monitor

Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP450 Report

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Opportunities for Improvement

- **Ozone**: One MO site in the St. Louis area, violates the 2015 standard of 70 ppb based on 2013-2015 data.
  – Monitoring period over which EPA may designate areas determines path forward.

- **SO_2**: One monitor: Jackson (partial), violates the 2010, 1-hr standard.
  – *Attainment Demonstration has been developed and submitted to EPA.*
  (No new exceedances since November 2015!)

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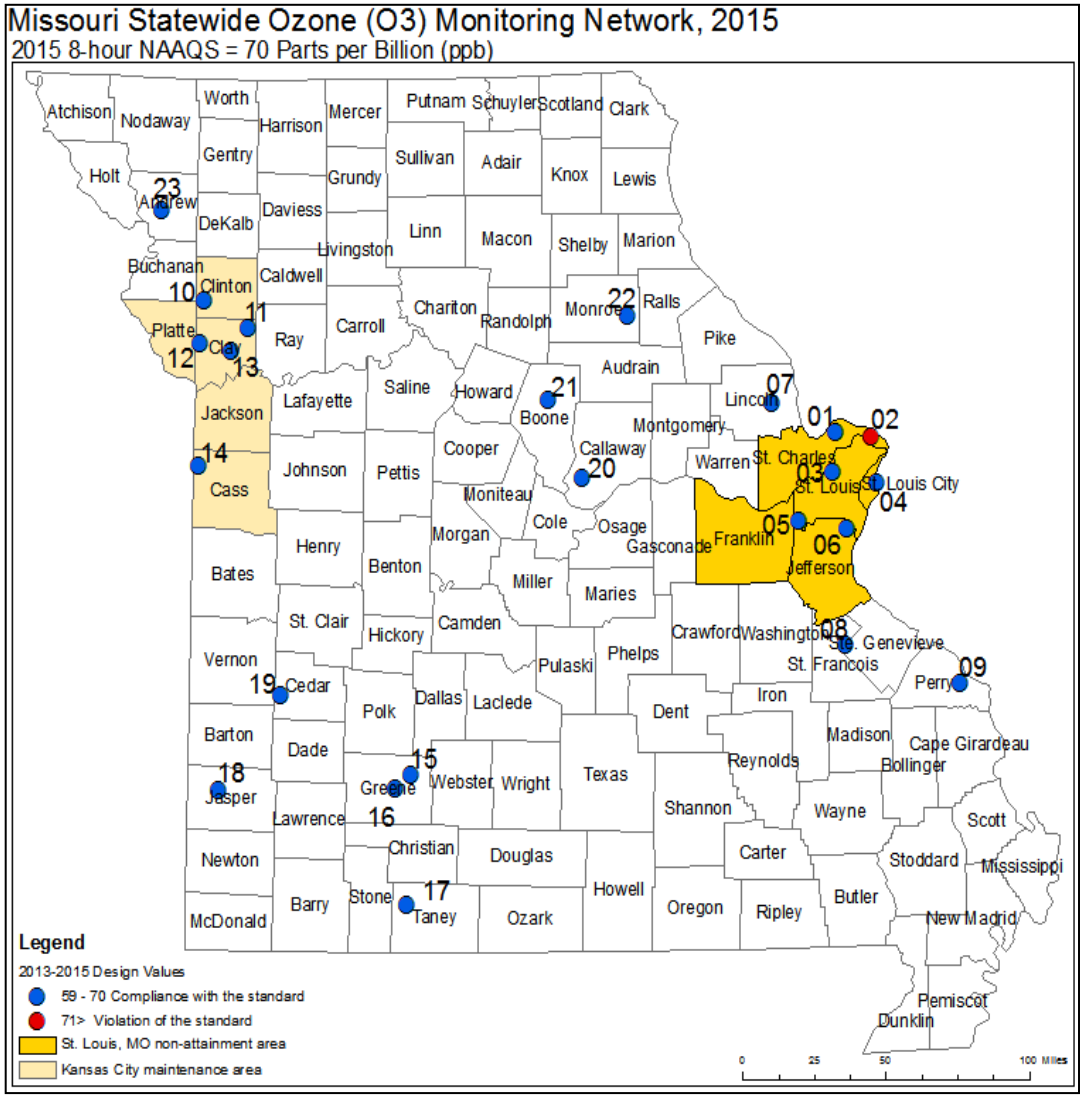
Ozone Monitoring Network



(2013-2015 Design Values (ppb))

St. Louis Area, MO
- 01 Orchard Farm (69)
- 02 West Alton **(71)**
- 03 Maryland Heights (70)
- 04 Blair Street** (65)
- 05 Pacific (65)
- 06 Arnold West (70)
- 07 Foley (68)

Ste. Genevieve Area
- 08 Bonne Terre (65)

Southeast Area
- 09 Farrar (66)

Kansas City Area, MO
- 10 Trimble (67)
- 11 Watkins Mill (66)
- 12 Rocky Creek (68)
- 13 Liberty (64)
- 14 Richards Gebaur-South (64)

Springfield Area, MO
- 15 Fellows Lake (61)
- 16 Hillcrest High School (61)

Outstate Area, MO
- 17 Branson (59)
- 18 Alba (65)
- 19 El Dorado Springs (63)
- 20 New Bloomfield (63)
- 21 Finger Lakes (63)
- 22 Mark Twain State Park**
- 23 Savanah (64)

All data quality assured through 12/31/2015
**Year round ozone monitoring
Red & Bold: Violation of the standard
Ozone Season: April 1st to October 31st

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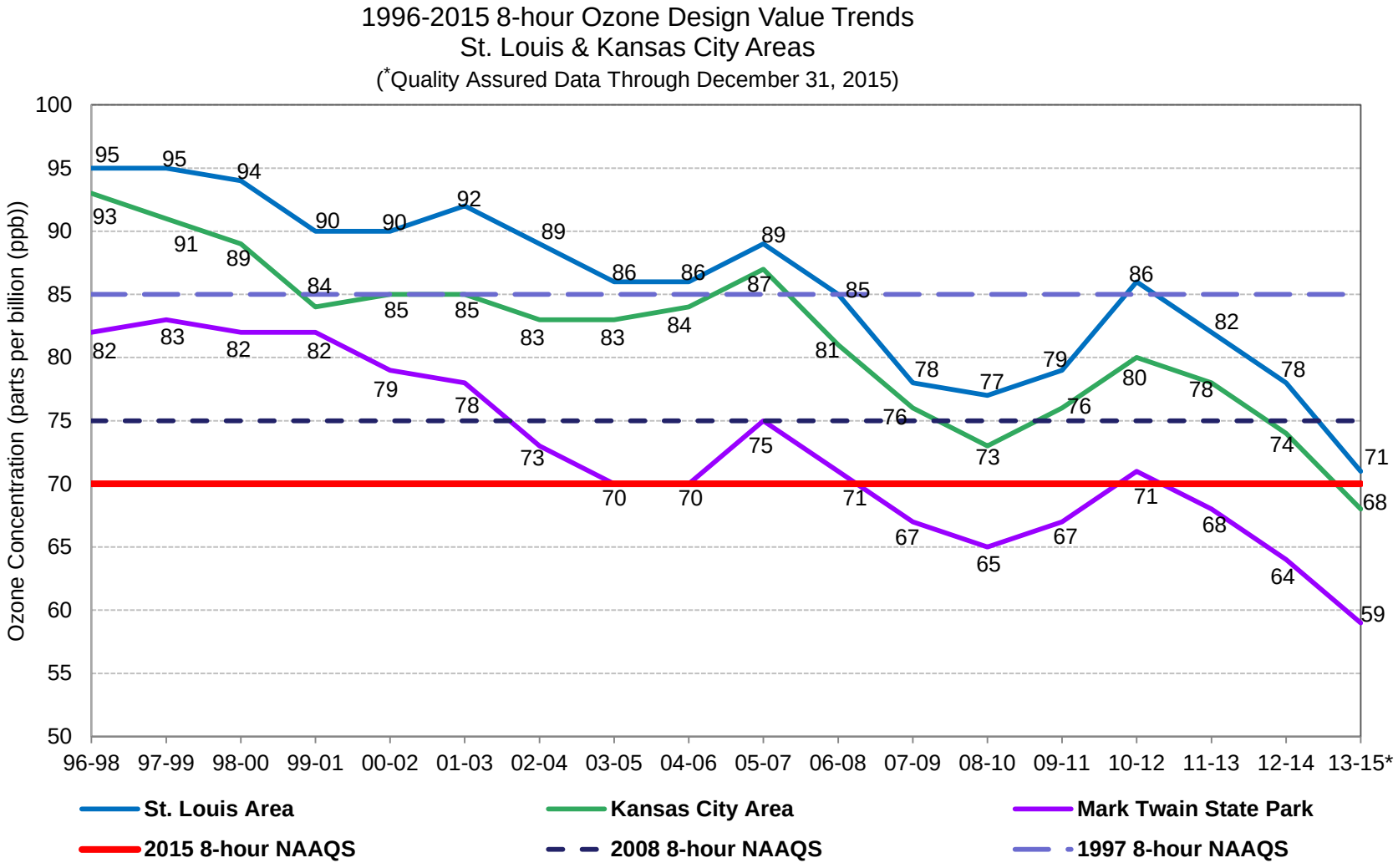
Ozone (O_3) Ambient Air Monitoring



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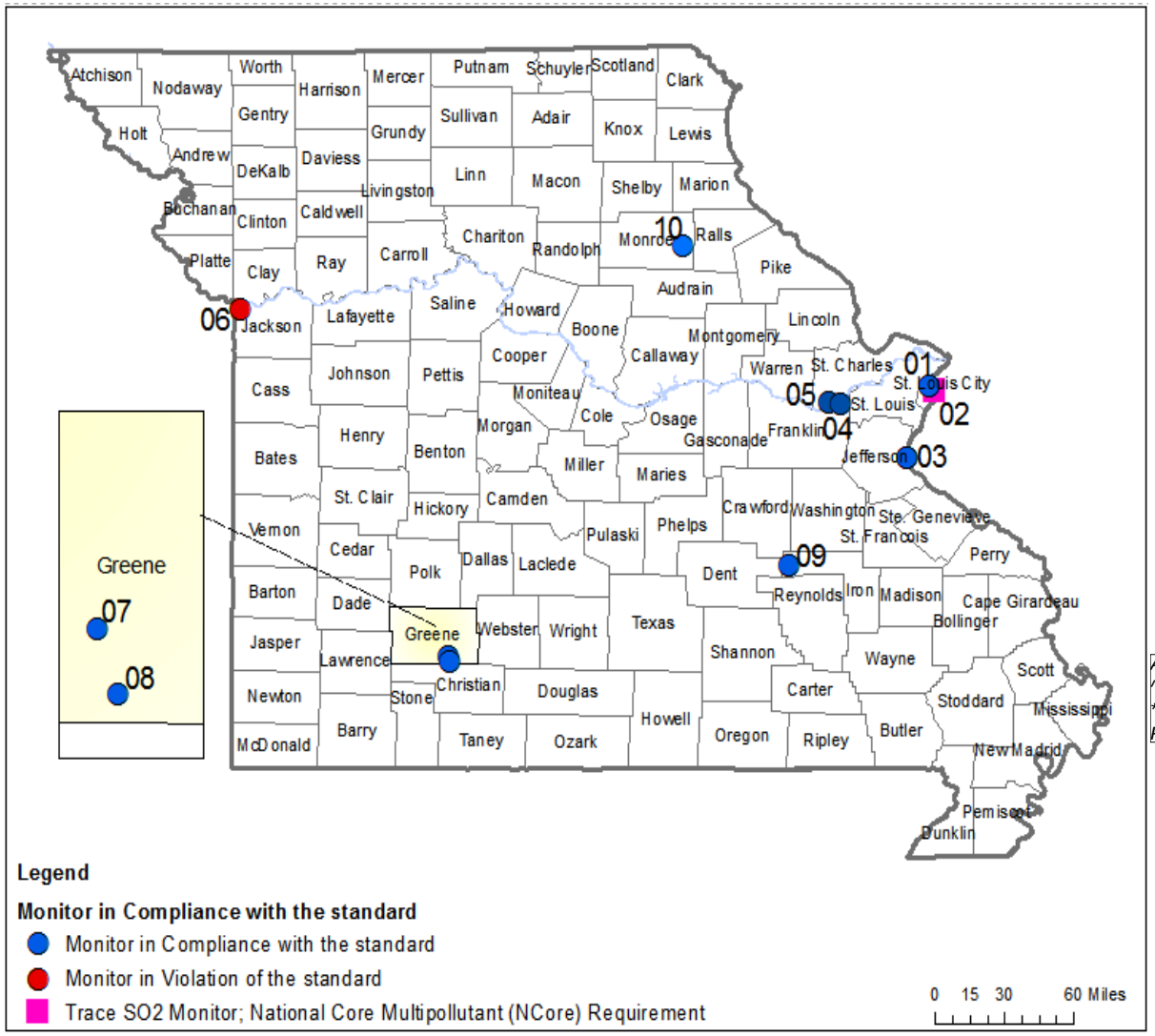
SO_2 Monitoring Network



(2013-2015 Design Values (ppb))

St. Louis Area, MO
- 01 Margaretta (19)
- 02 Blair Street (36)
- 03 Herculaneum, Mott Street (66)
- 04 Valley^ (34**)
- 05 Northwest^ 28**)

Kansas City Area, MO
- 06 Troost **(141)**

Springfield Area, MO
- 07 South Charleston (26)
- 08 James River-South^ (25)

Outstate Area, MO
- 09 Buick NE (60)
- 10 Mark Twain State Park (8)

All data quality assured through Dec .31st, 2015
^Industry Monitor
***2015 99th Percentile. Monitoring began April 2015*
Red & Bold: Violation of the standard

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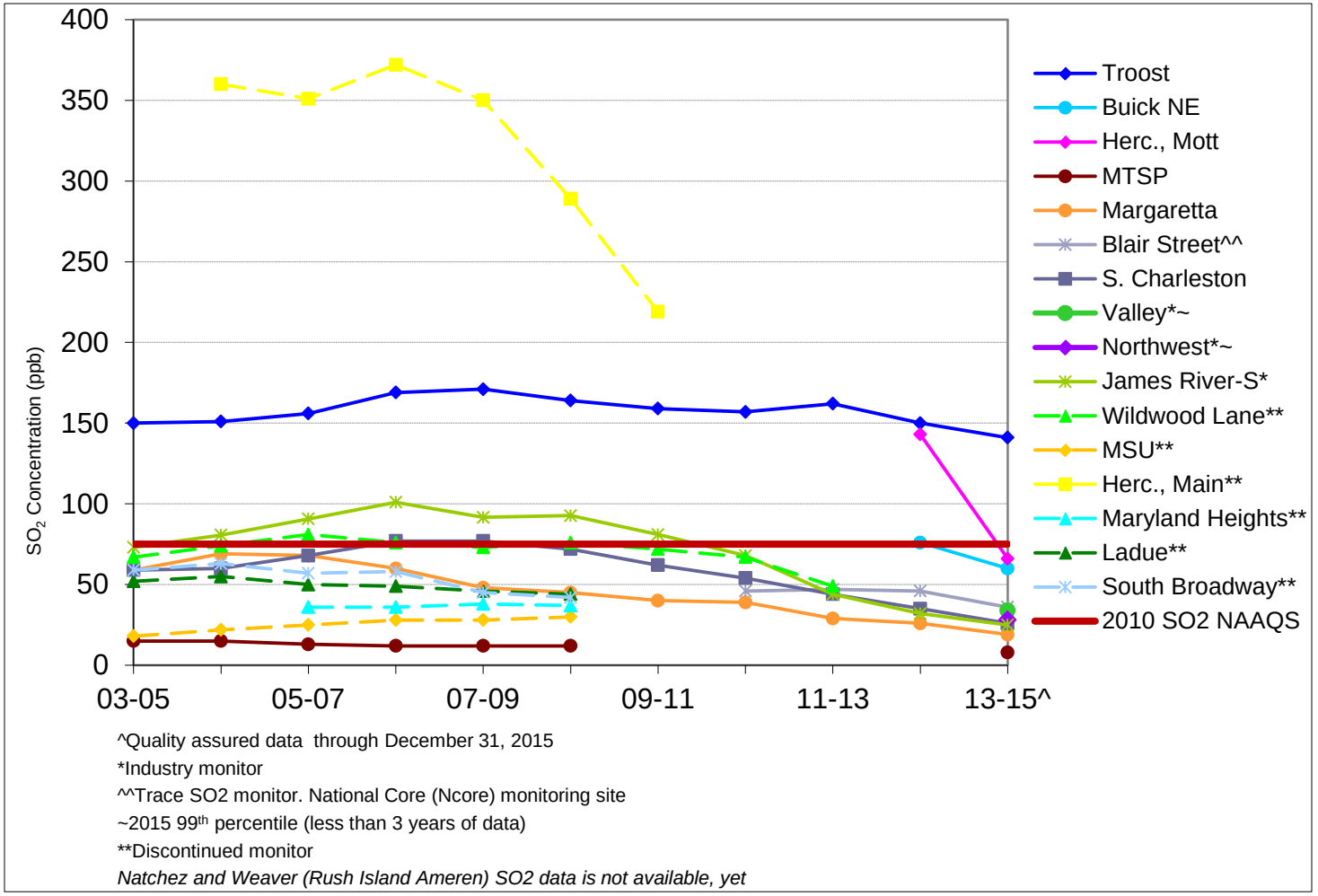
SO_2

Missouri 3-Year Average of the 99th Percentile Daily 1-hour Maximum Sulfur Dioxide (SO_2) Concentration Trends

(1-hr NAAQS = 75 Parts Per Billion (ppb))



^Quality assured data through December 31, 2015

*Industry monitor

^^Trace SO2 monitor. National Core (Ncore) monitoring site

~2015 99th percentile (less than 3 years of data)

**Discontinued monitor

Natchez and Weaver (Rush Island Ameren) SO2 data is not available, yet

Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP480 Report

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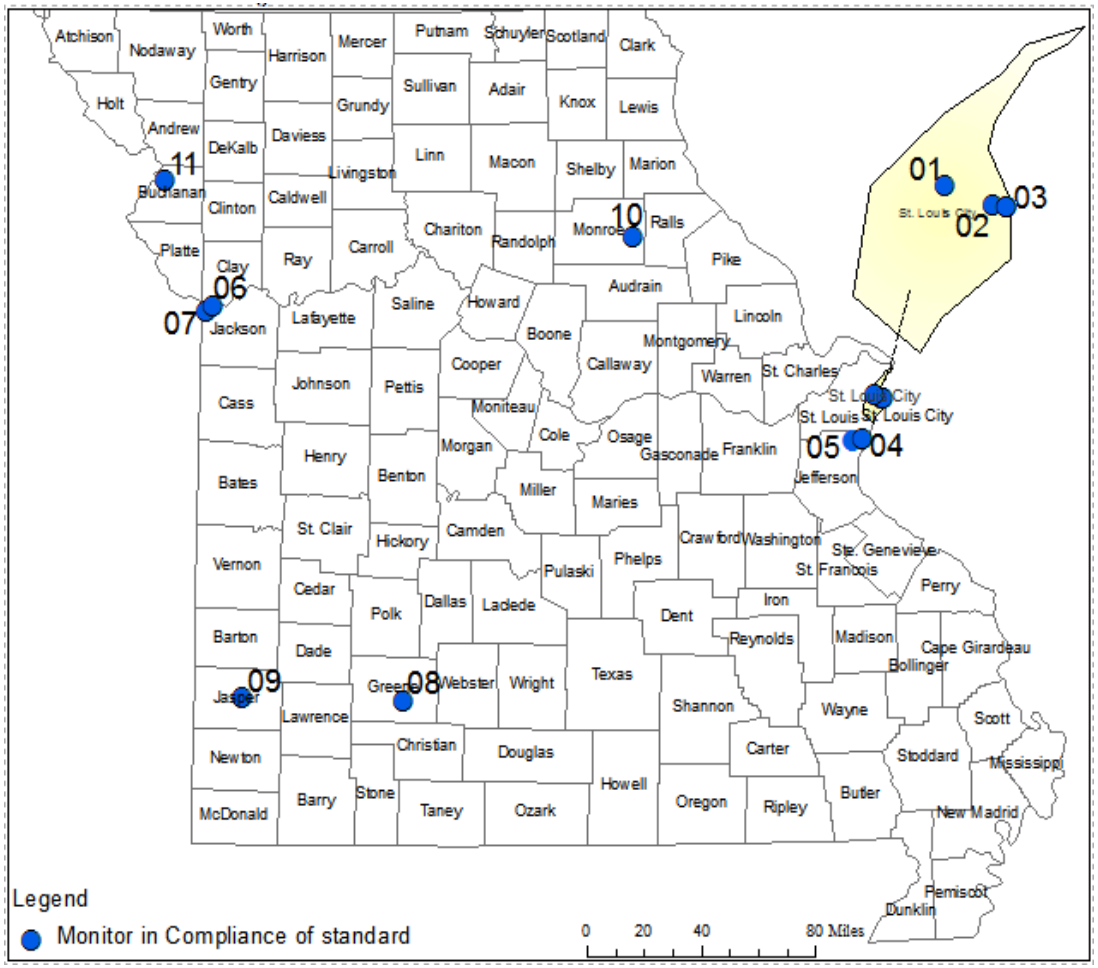
PM_{10} Monitoring Network



2013-2015 # of Expected Exceedances*

St. Louis Area, MO
- 01 Margaretta** (0.0)
- 02 Blair Street (0.0)
- 03 Branch Street ** (1.0)
- 04 Oakville**~ (0.0)
- 05 Arnold West **^^ (0.0)

Kansas City, MO
- 06 Front Street ** (0.0)
- 07 Troost (0.0)

Springfield Area, MO
- 08 Hillcrest High School**^ (0.0)

Outstate Area
- 09 Carthage** (0.3)
- 10 Mark Twain State Park** (0.0)
- 11 St. Joseph Pump Station (0.0)

**Quality assured data through December 31st, 2015*
^Relocated from MSU, April 2015 (year-to-date exceedance)
***Continuous monitor*
~Discontinued
^^Began monitoring Oct. 2015 (year-to-date exceedance)

The 24-hour standard is attained when the expected number of exceedances is less than or equal to one (1) when averaged over three (3) calendar years.

Data Source: Environmental Protection Agency Air Quality System (EPA AQS), AMP480 Report, 03/01/2016

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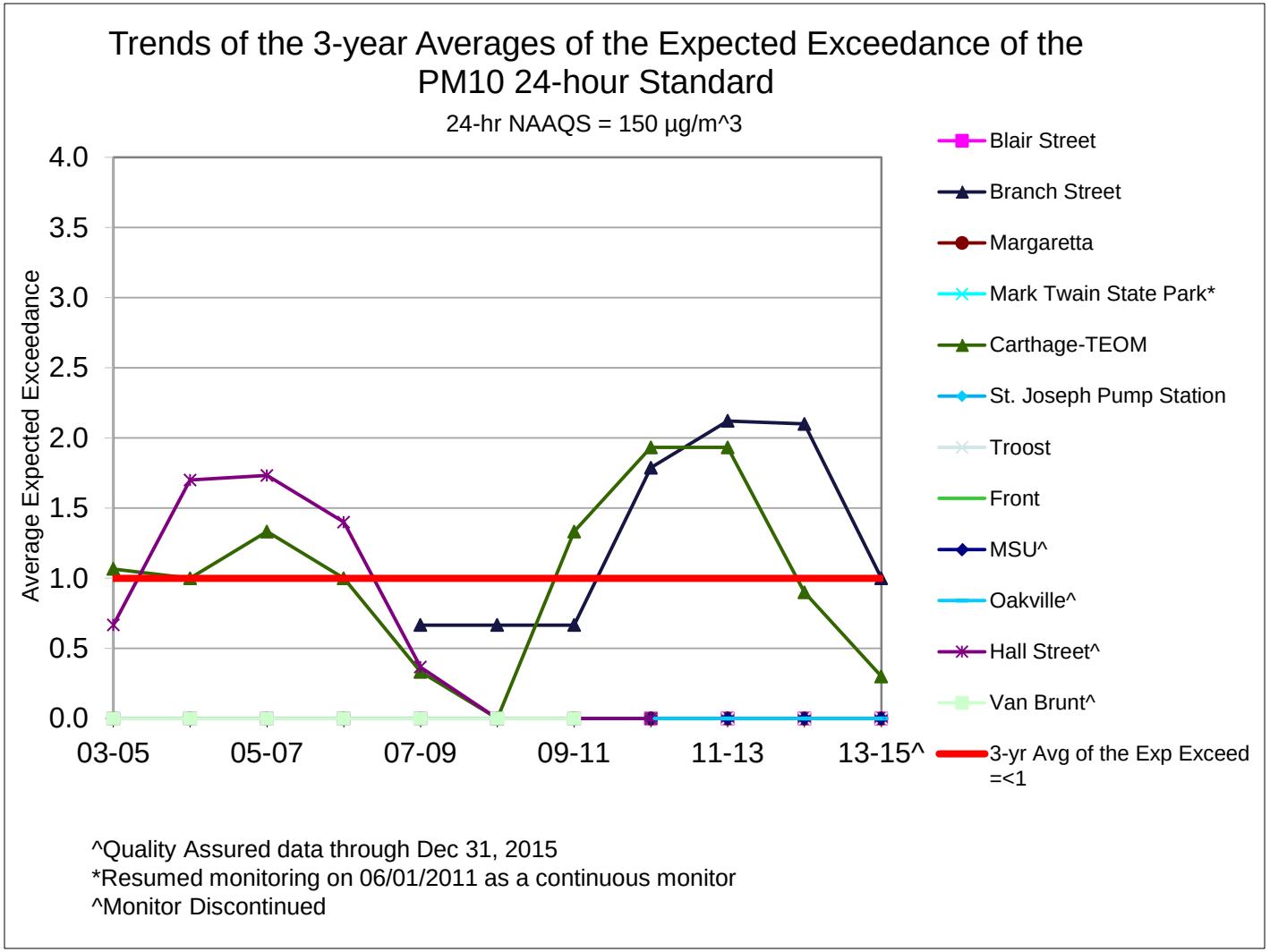
PM_{10}



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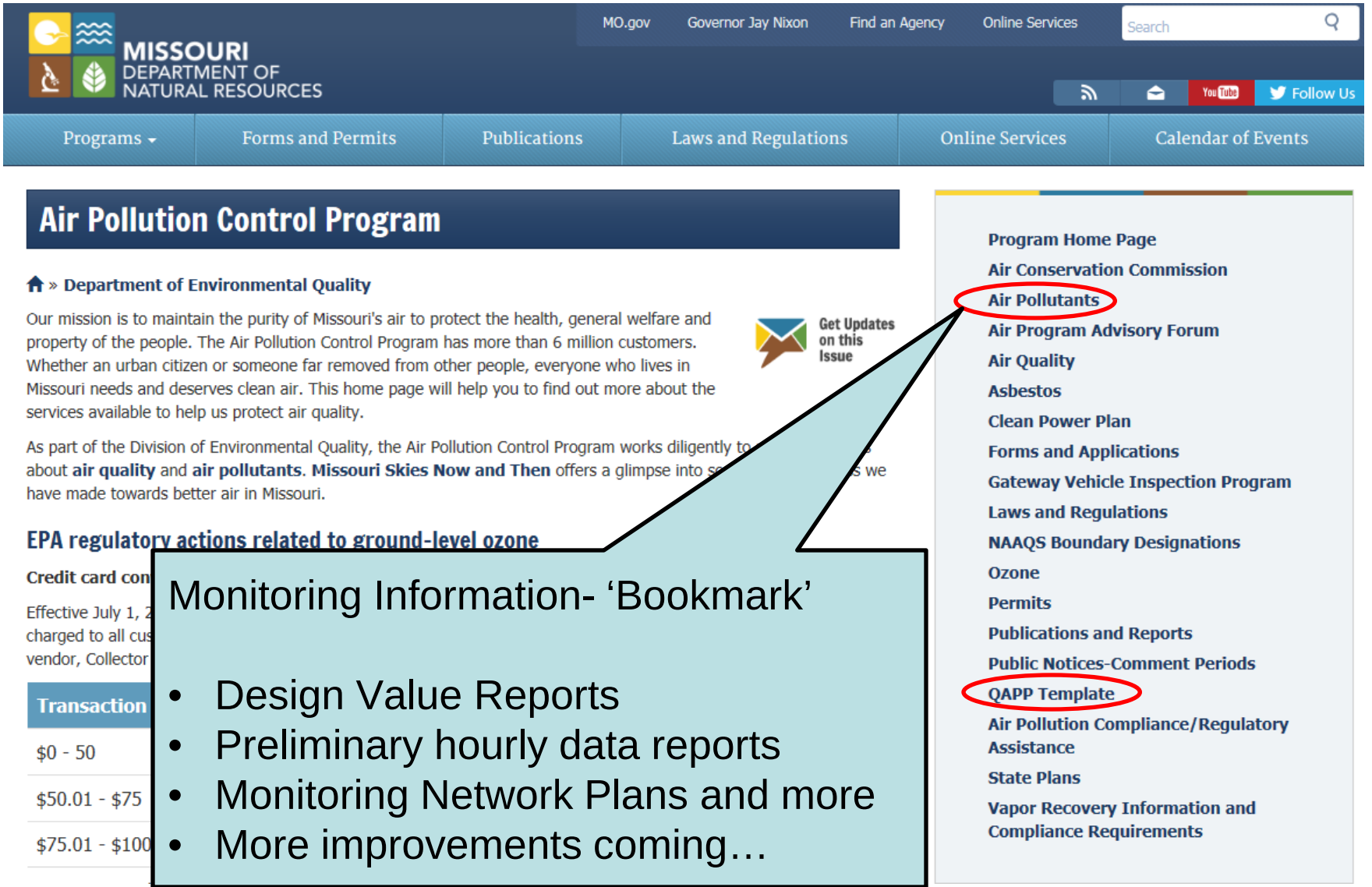
Website Resources



Monitoring Information- ‘Bookmark’

- Design Value Reports
- Preliminary hourly data reports
- Monitoring Network Plans and more
- More improvements coming…

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Division of Environmental Quality Director: Leanne Tippett Mosby

Date: March 31, 2016

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.