



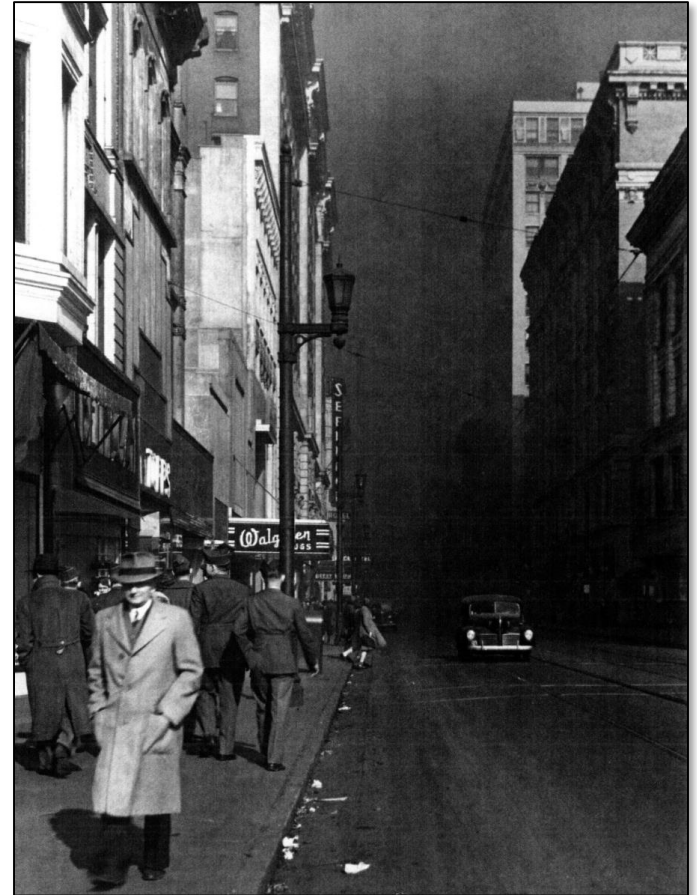
Multi-Pollutant Air Quality Planning: *Louisville's Path*

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Air Pollution Control District
August 27, 2019



Air Quality Planning in Louisville:

- 1945** – Louisville Smoke Commission established
- 1952** – Air Pollution Control District of Jefferson County formed (KRS Chapter 77)
- 1956** – Air pollution control study conducted in Rubbertown to understand pollution
- 1970** – Environmental Protection Agency (EPA) established



Fourth Street 1943

West Louisville Air Toxics Study (WLATS)

- 1-year monitoring study
(April 2000 to April 2001)
- Study conducted and consultant selected by the West Jefferson County Community Task Force (WJCCTF) to interpret the data collected
- Monitored for
 - 83 Volatile organic Compounds (VOCs)
 - 63 Semi-VOCs
 - Formaldehyde, HCl, HF
 - 20 metals
- Results found:
 - 17 carcinogens with risk greater than one in a million (1×10^{-6})

Strategic Toxic Air Reduction - STAR

- Provides a framework for determining the environmental acceptability of toxics
- Requires APCD to assess and address other air toxic emissions
- Requires companies to assess and address



Louisville & Air Toxics

1940s

WWII rubber
manufacturing:
“Rubbertown”

2005

Strategic
Toxic Air
Reduction
(STAR)
Program

2016

APCD began
planning for
air toxics
monitoring...

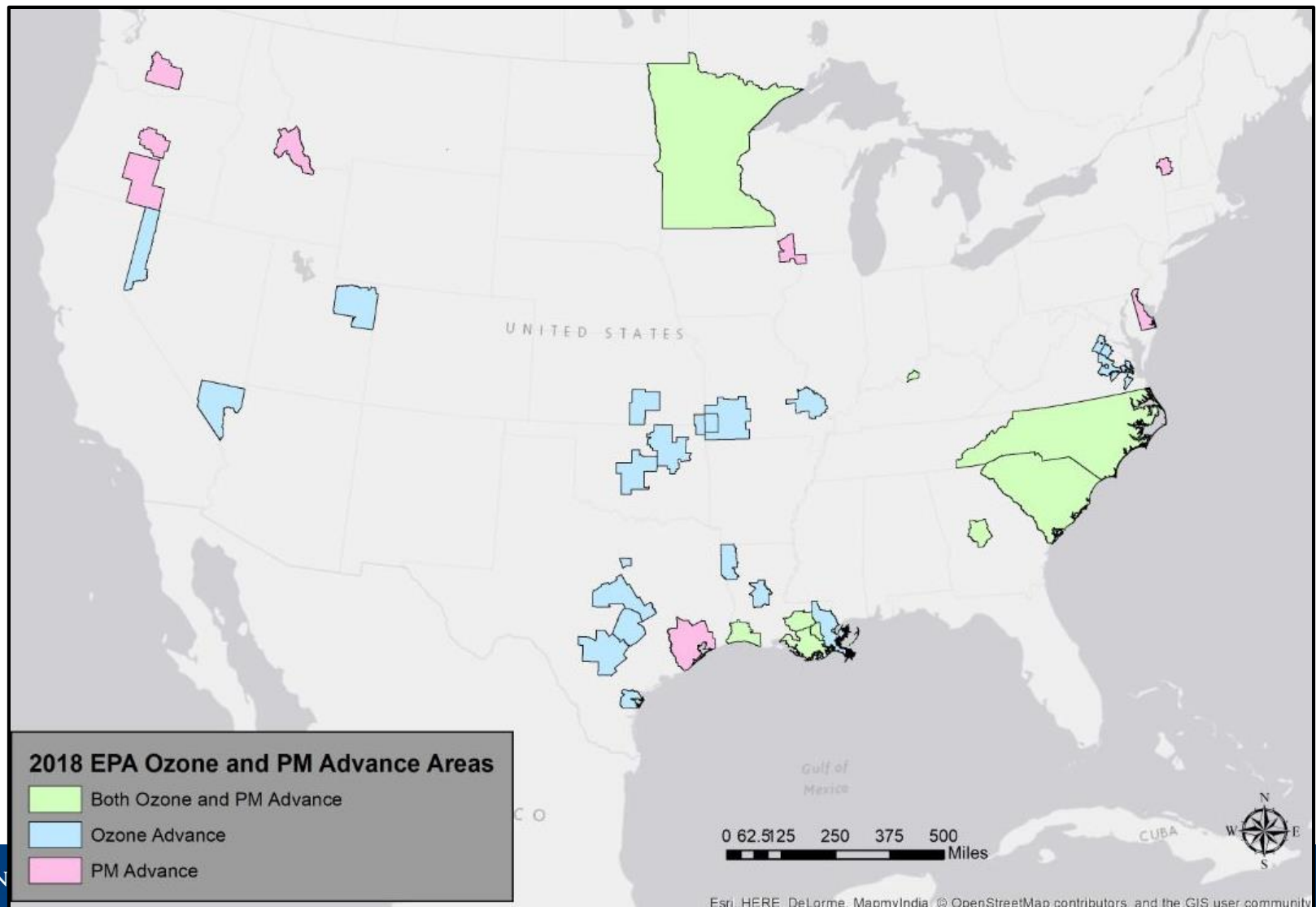
2000-2001

West
Louisville
Air Toxics
Study
(WLATS)

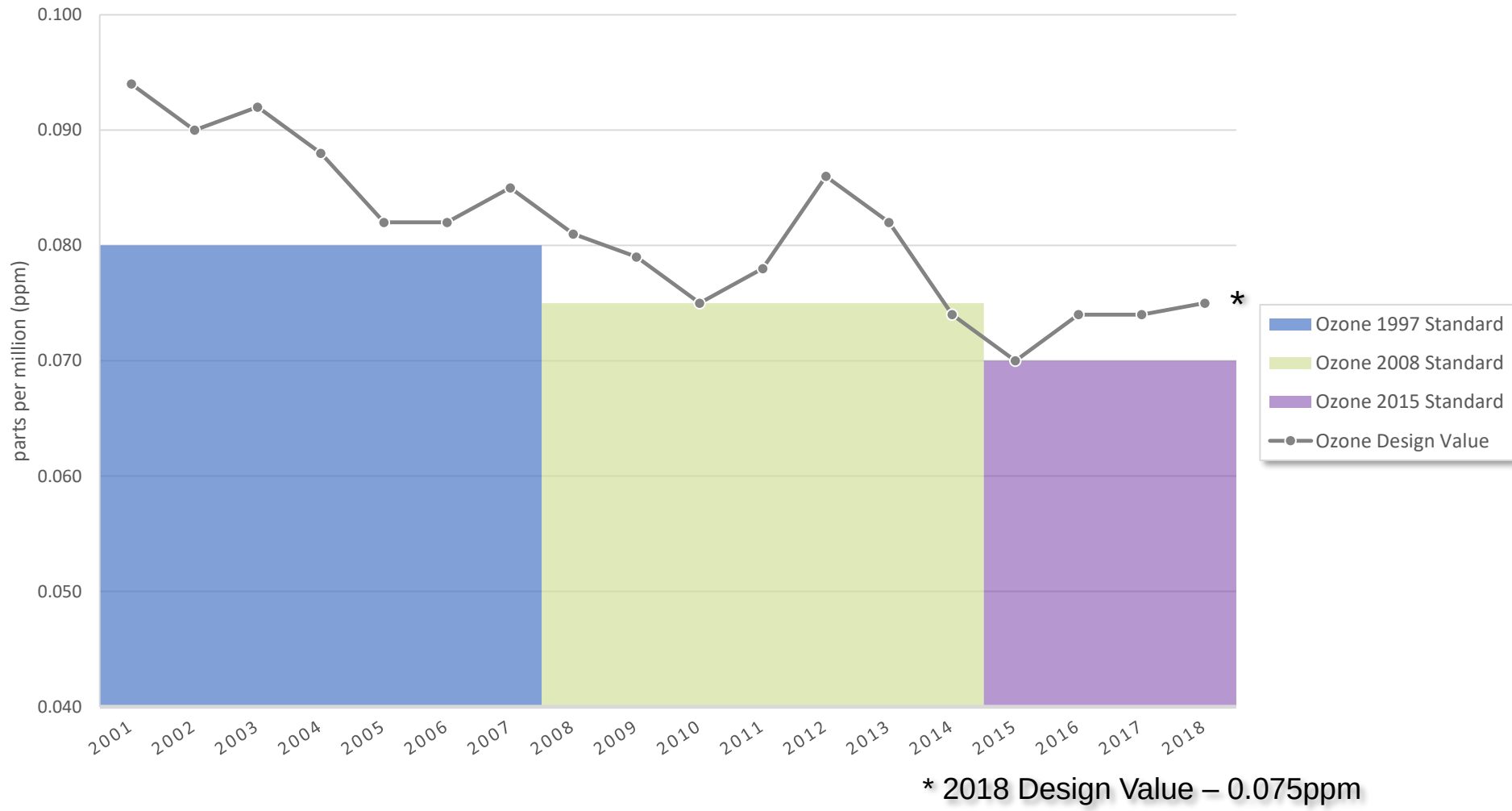
2005-2013

University
of Louisville
& WJCCTF
TO-15 air
toxics
monitoring

EPA Advance Program Status

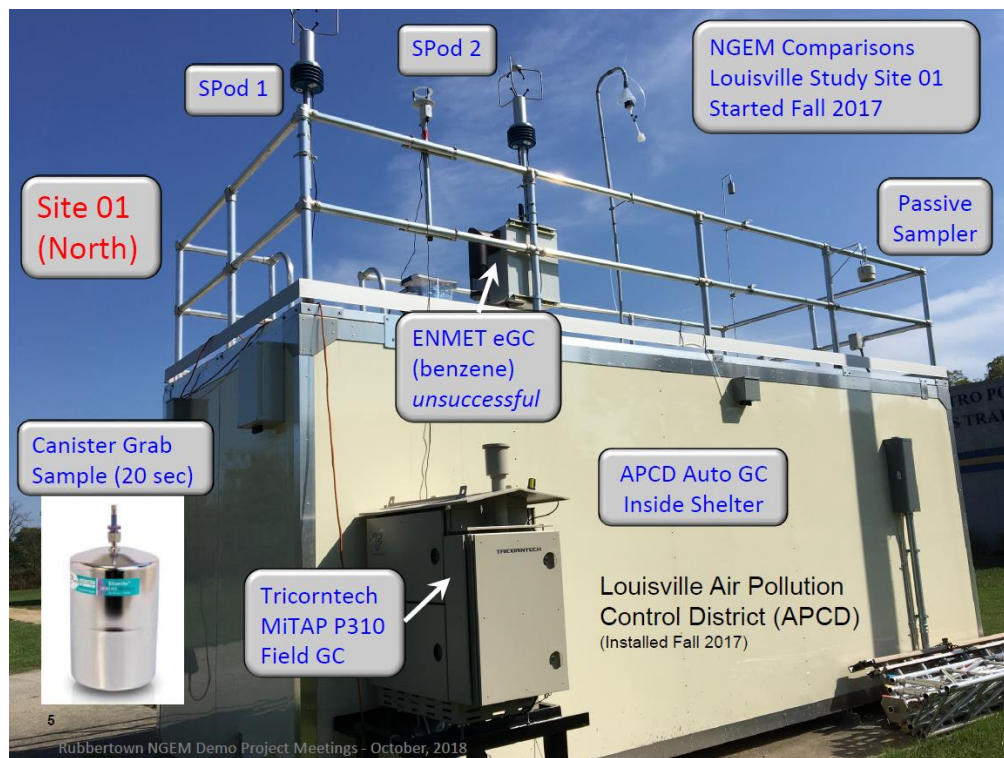


Louisville's Ozone Design Values



RARE Project

- APCD is supporting an EPA research project evaluating Next Generation Emissions Measurement (NGEM) technologies
- What is NGEM?
 - Air quality sensors (mobile and fixed)
 - Lower cost gas chromatographs
 - Passive samplers and canister grab samples
 - New source location modeling



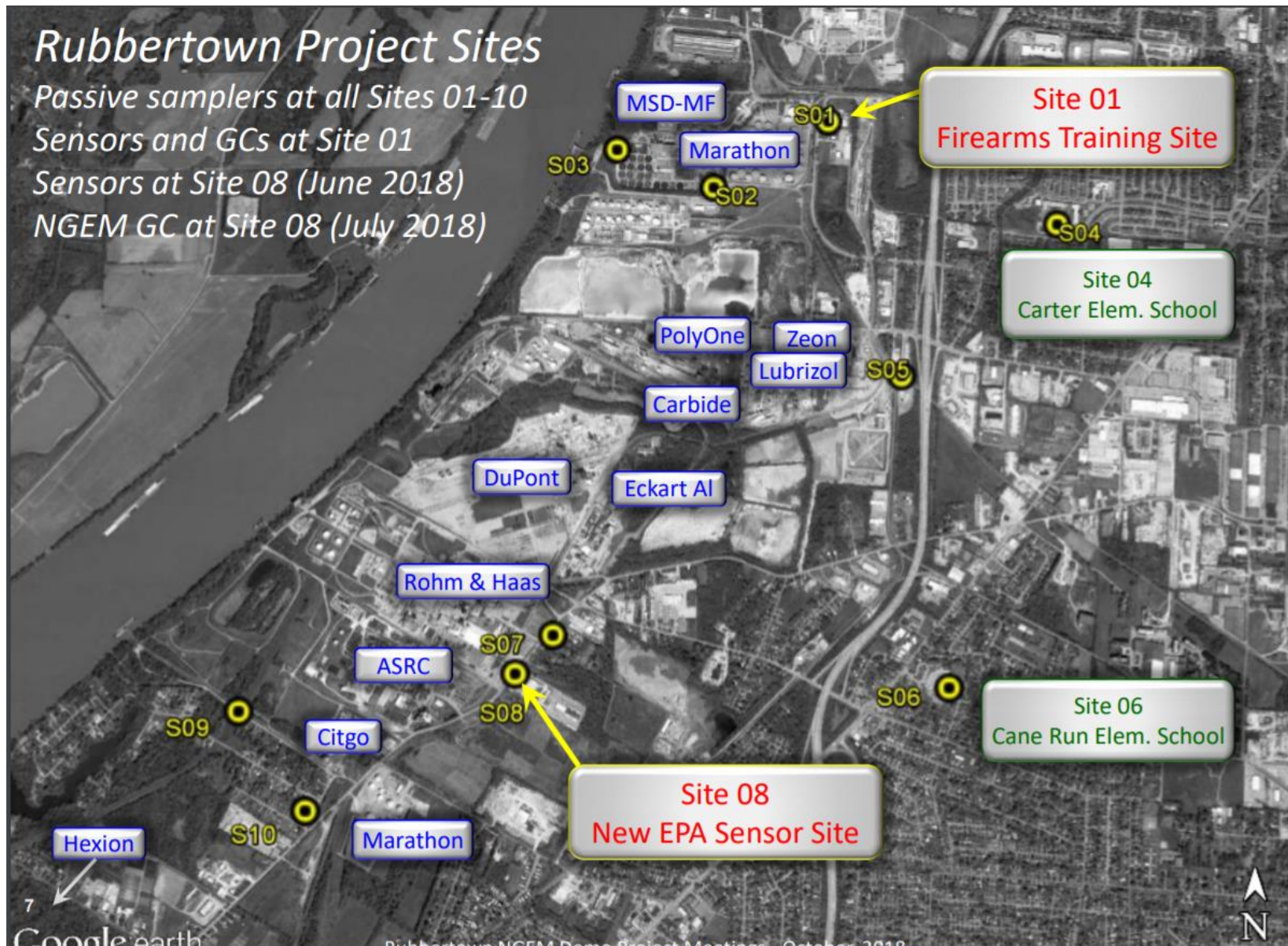
Rubbertown Project Sites

Passive samplers at all Sites 01-10

Sensors and GCs at Site 01

Sensors at Site 08 (June 2018)

NGEM GC at Site 08 (July 2018)



RARE Project

- Air monitoring staff collaborating with researchers to integrate APCD air toxics data into project
- Additional staff support for field activities
- Hosting community meetings and air research forums



Clearing the Air Workshop Series

- EPA RARE team, specifically Region 4's Office of Environmental Justice and Sustainability, provided feedback and engagement expertise during development of the initial Clearing the Air Workshop Series
- Integral in identifying subject matter experts for Technical Workshop

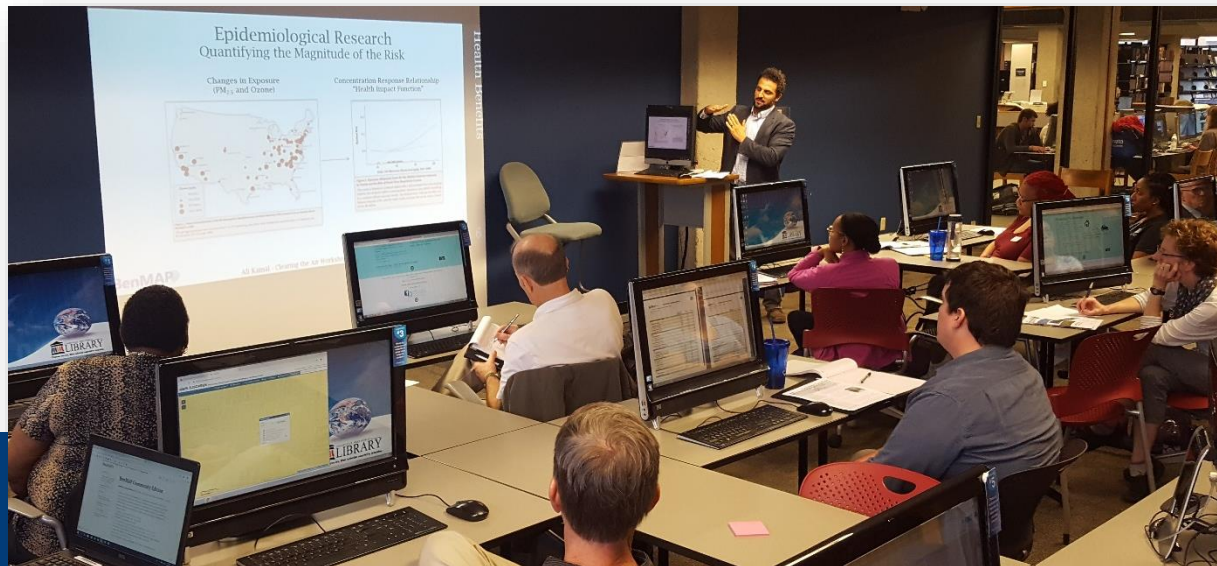


Clearing the Air Technical Workshop

- EPA OAQPS staff came to Louisville to provide training on topics including: Understanding Risk, EJ Screen, Toxics Release Inventory (TRI), & BenMap



AIR POLLUTION
CONTROL DISTRICT



AIR
POLLUTION
CONTROL
DISTRICT



First steps: Information Sharing & Goals

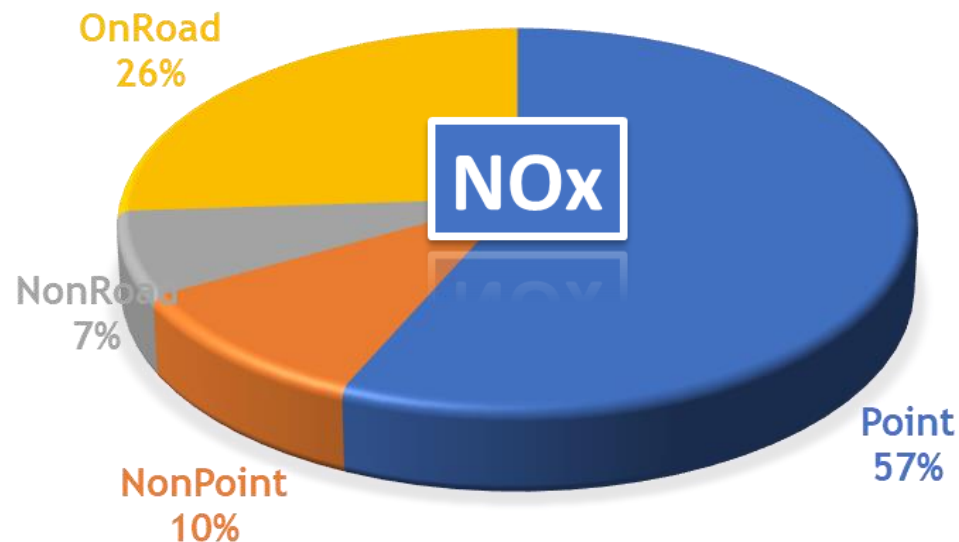
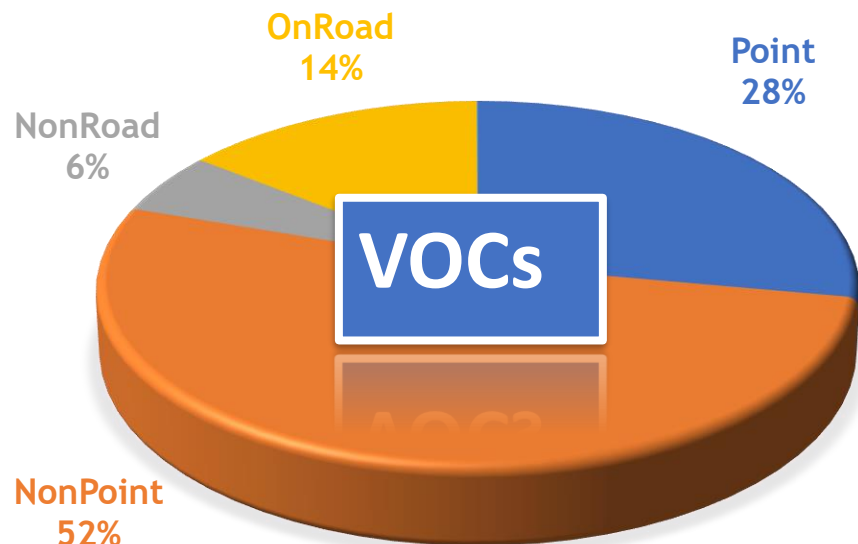
Pollutant	Standard	Averaging Time	Attainment Status
Carbon Monoxide	9 ppm	8-hour	Attainment
	35 ppm	1-hour	Attainment
Lead	0.15 $\mu\text{g}/\text{m}^3$	Rolling 3-month Average	Attainment
Nitrogen Dioxide	53 ppb	Annual Average	Attainment
	100 ppb	1-hour	Attainment
Particulate Matter (PM10)	150 $\mu\text{g}/\text{m}^3$	24-hour	Attainment
Particulate Matter (PM2.5)	12.0 $\mu\text{g}/\text{m}^3$	Annual Average	Attainment
	35 $\mu\text{g}/\text{m}^3$	24-hour	Attainment
Ozone	0.070 ppm	8-hour	Nonattainment
Sulfur Dioxide	75 ppb	1-hour	Partial County Nonattainment

Ozone Formation Study

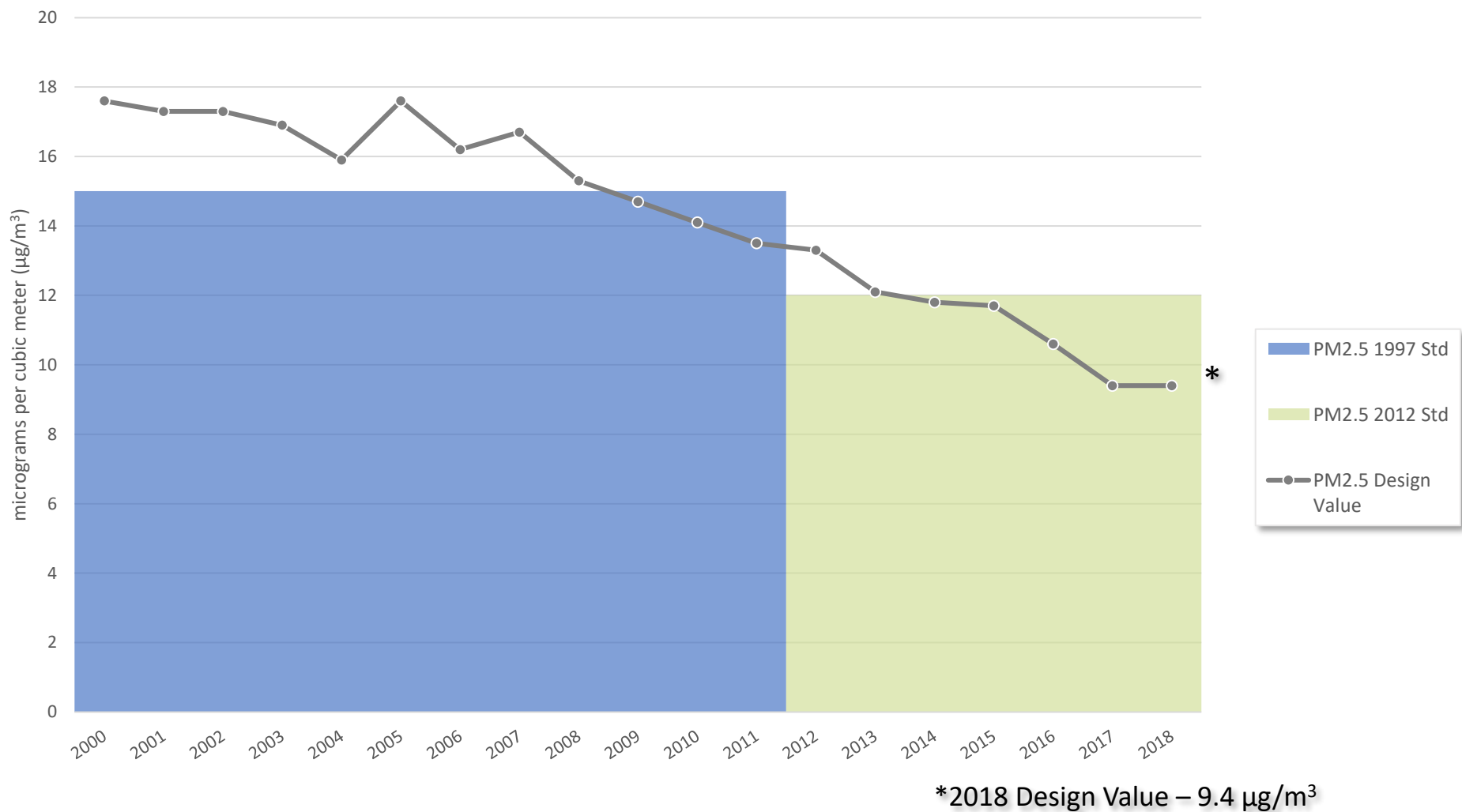
Goal	Outcomes
Refine understanding for the regional drivers of ozone formation to make strategic policy decisions	- Comprehensive inventory of compounds contributing to the formation of ozone - Improved understanding of local ozone sensitivity to NOx/VOC reductions - Scale of relative reactivities of VOCs in the ambient air of Jefferson County



Emissions Inventory Data



Louisville's Fine Particulate History



Louisville's SO₂ History



*2018 Design Value – 18 ppb

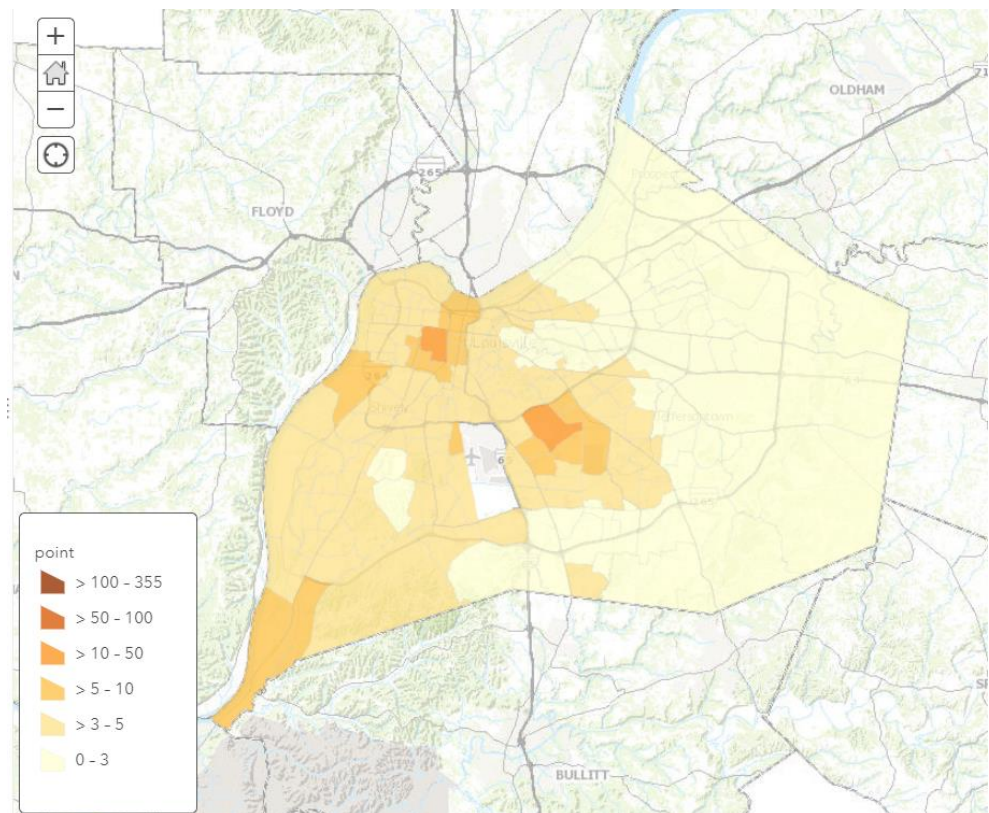
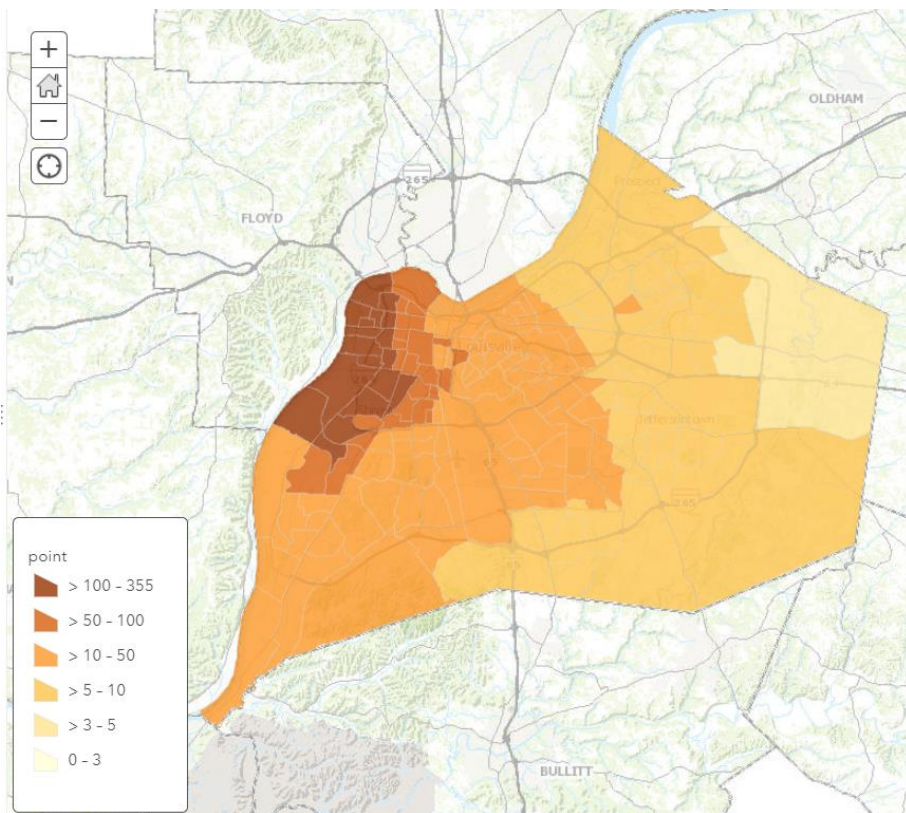
Total Air Toxics 2005 - 2017

Jefferson County, KY Sources	2005 Total Air Releases in Pounds	2017 Total Air Releases in Pounds	% Change
Electric Generating Utilities (EGUs)	4,703,167	851,342	-82% Decrease
Non-EGUs	3,443,604	1,309,085	-62% Decrease
Total	8,146,770	2,160,427	-73% Decrease

Source: [EPA Toxics Release Inventory](#)

Progress to Date

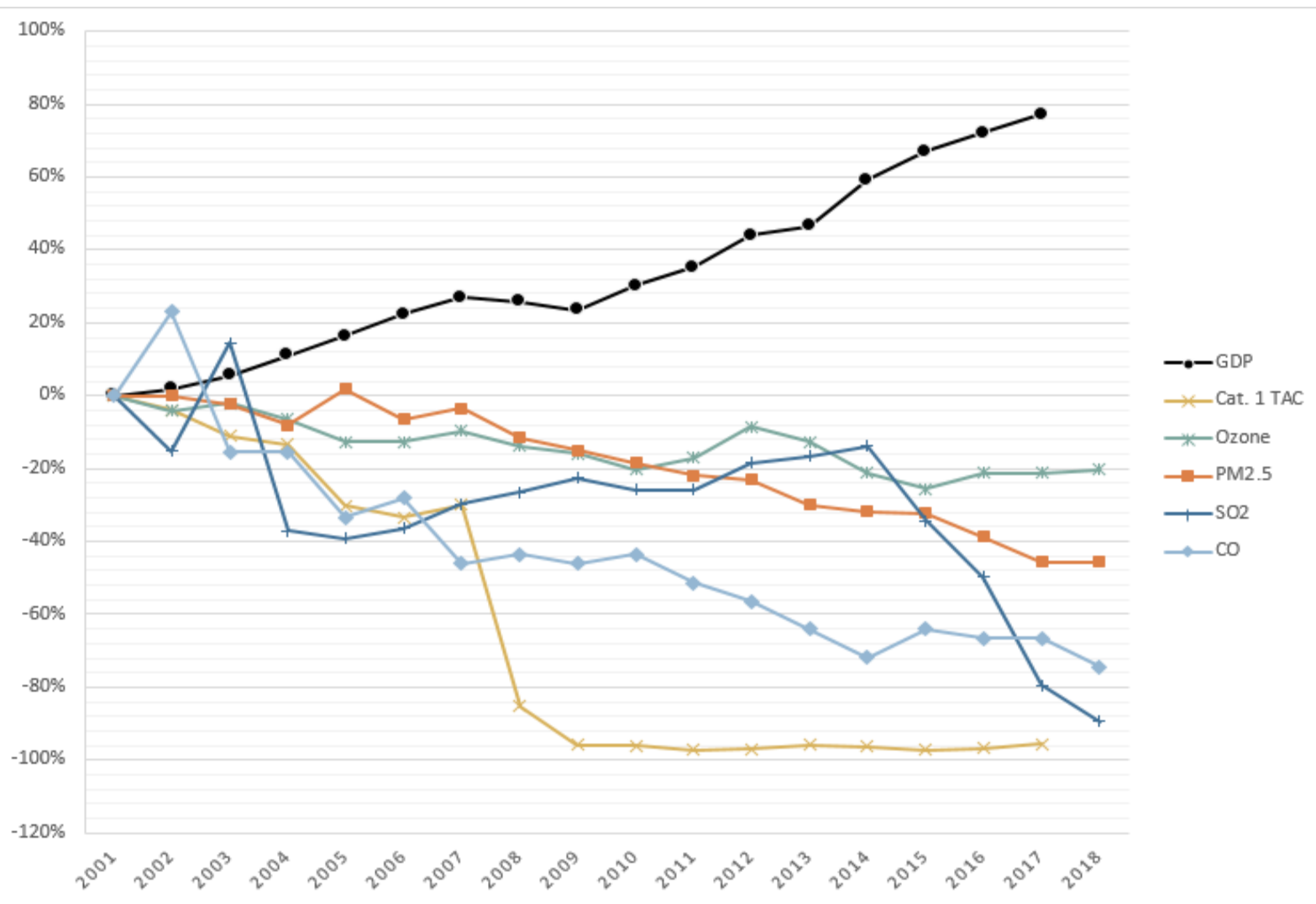
2005 v 2014 National Air Toxics Assessment – Point Sources



Multi-Pollutant Risk-Based AQ Management Strategy

Goal(s)	Outcomes
• Evaluate and prioritize control strategies to reduce ozone and come into attainment with NAAQS • Assess co-benefits of ozone reduction strategies to air toxics and fine particulate emissions • Use BenMAP to quantify the anticipated health benefits of air quality improvements • Build institutional capacity among APCD and the Louisville Metro Department of Public Health and Wellness to perform air quality modelling and health benefit analysis projects	• Prioritized emission reduction strategies • Quantified health outcome improvements and associated benefits • Shared knowledge base with community health partners • Stakeholder input

Heading in the right direction...



Questions?



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