



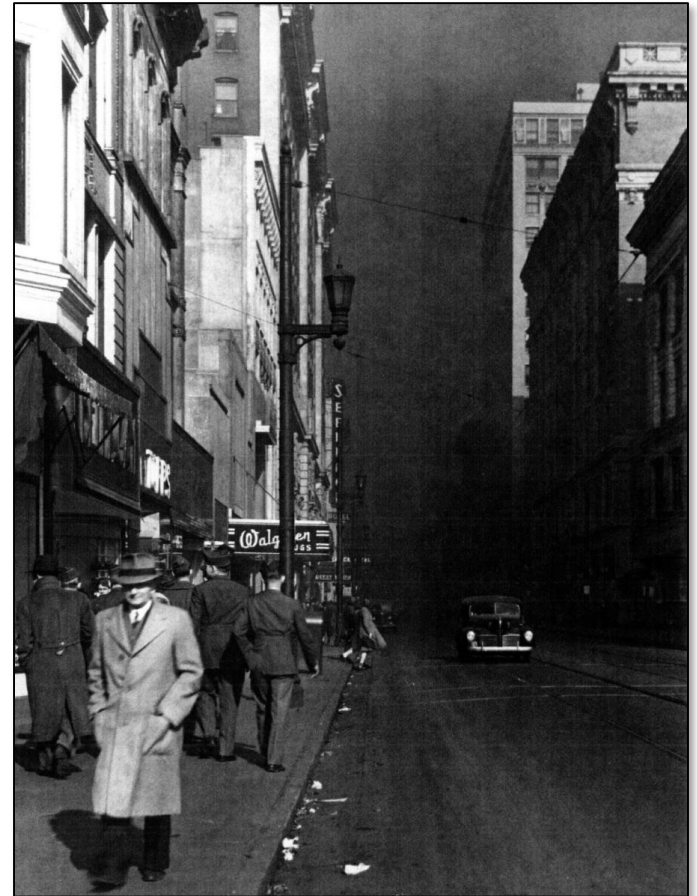
Multi-Pollutant Air Quality Planning: *Louisville's Path*

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Director of Program Planning
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...

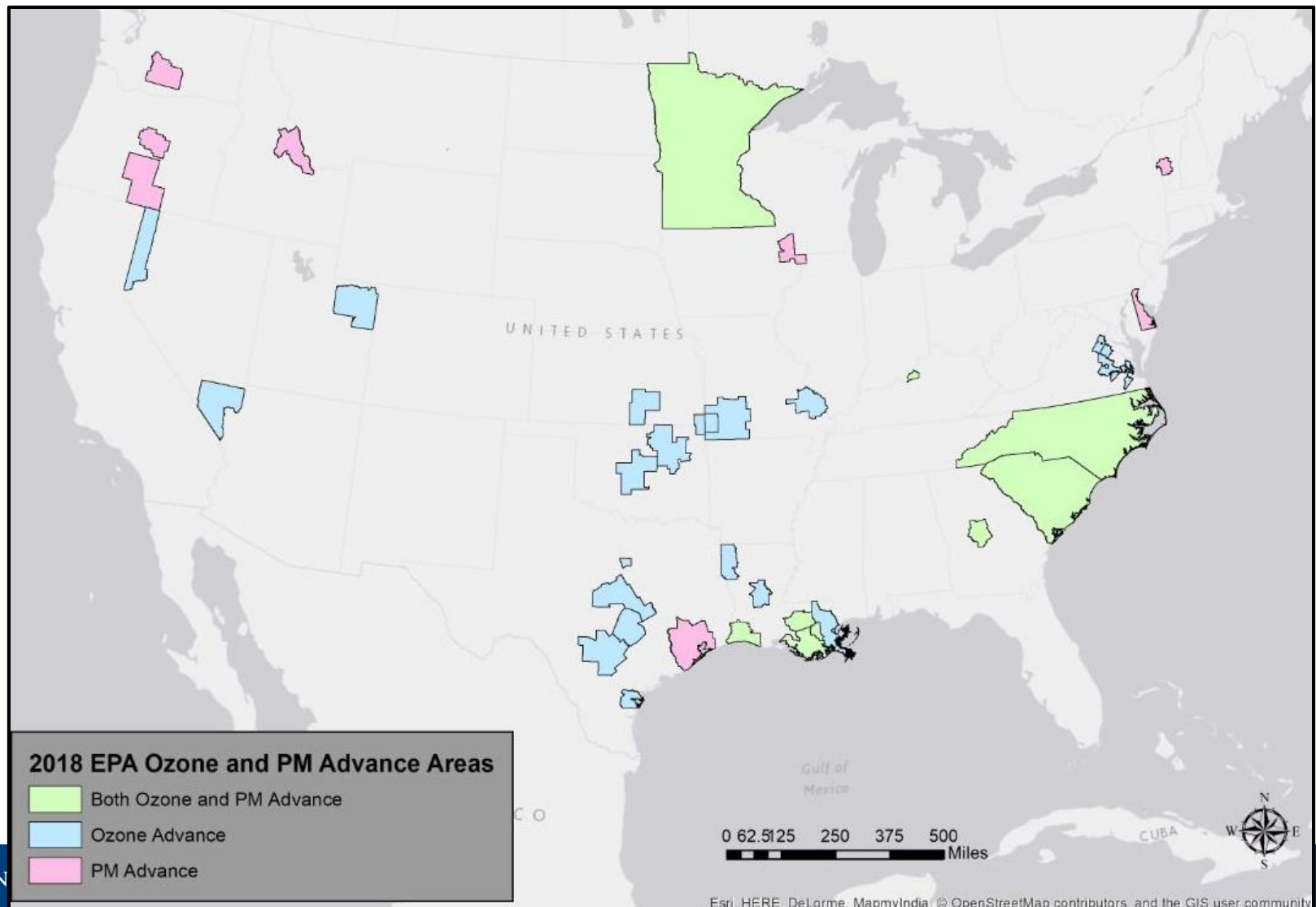
2000-2001

West
Louisville
Air Toxics
Study
(WLATS)

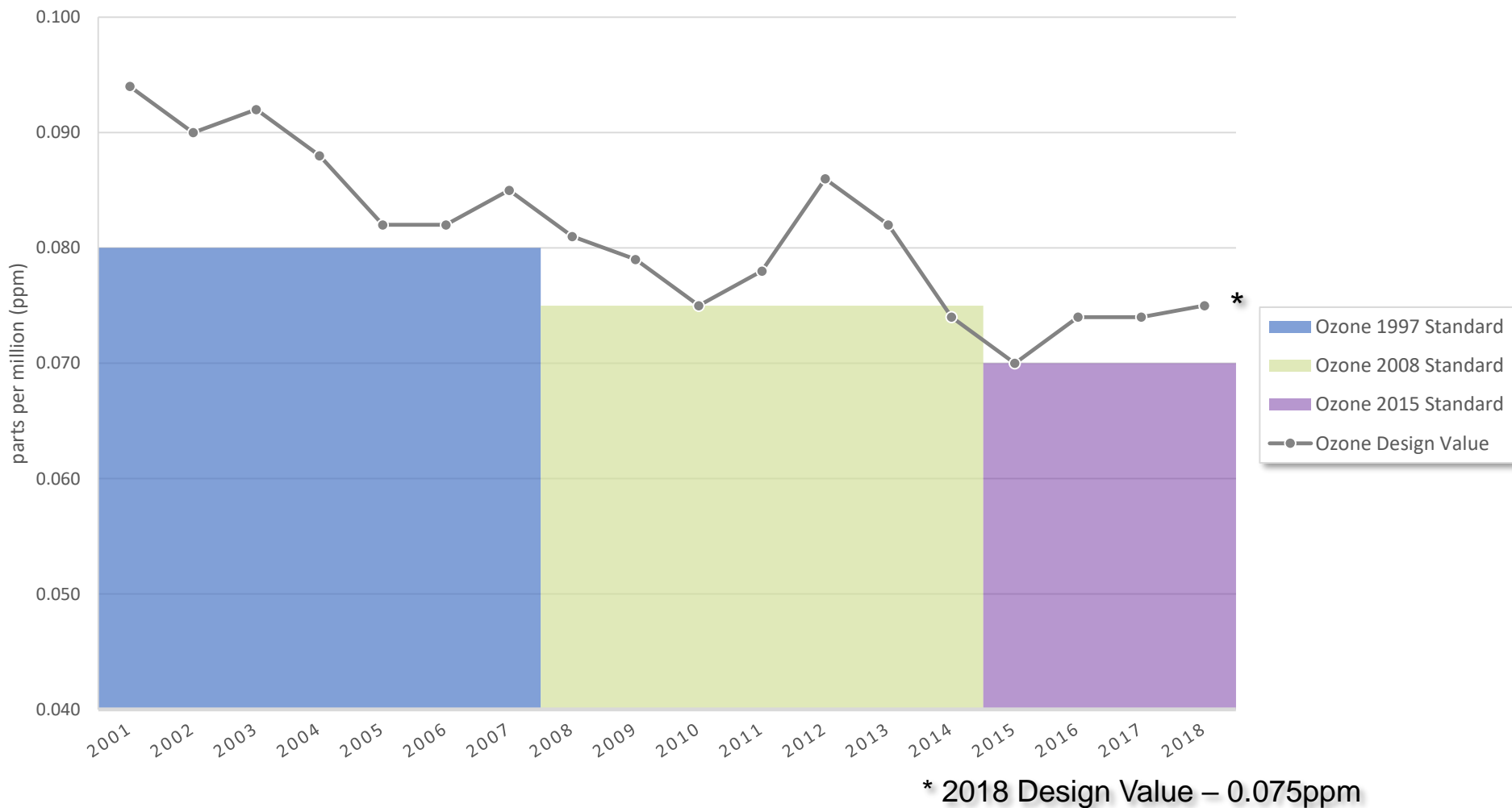
2005-2013

University
of Louisville
& WJCCTF
TO-15 air
toxics
monitoring

EPA Advance Program Status

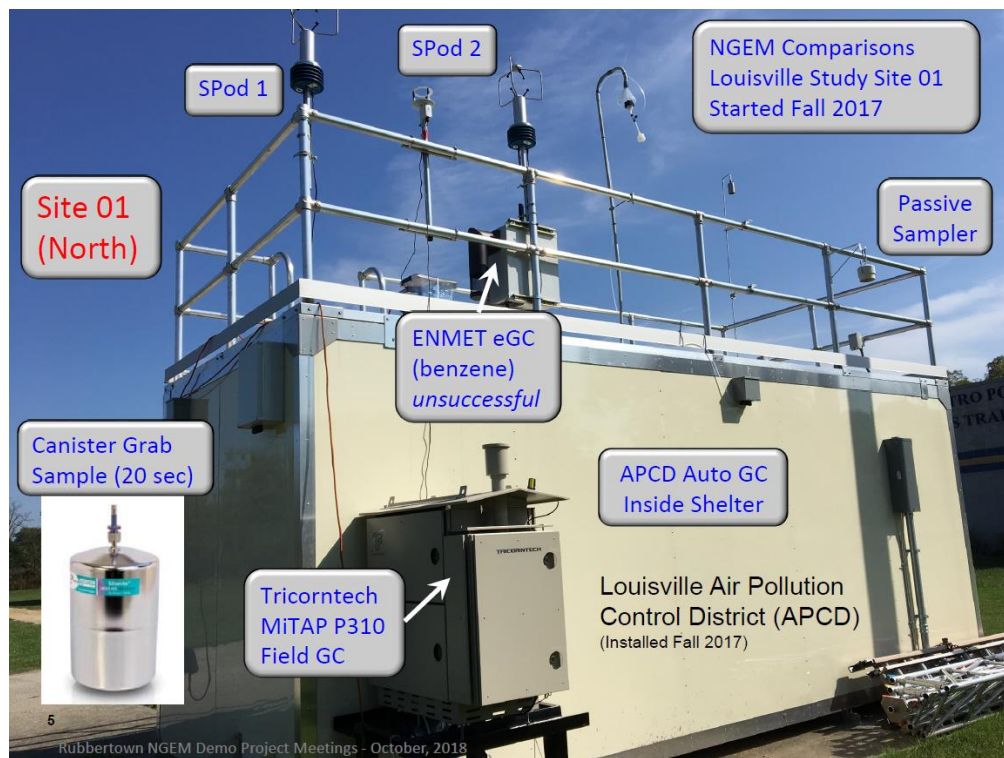


Louisville's Ozone Design Values



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



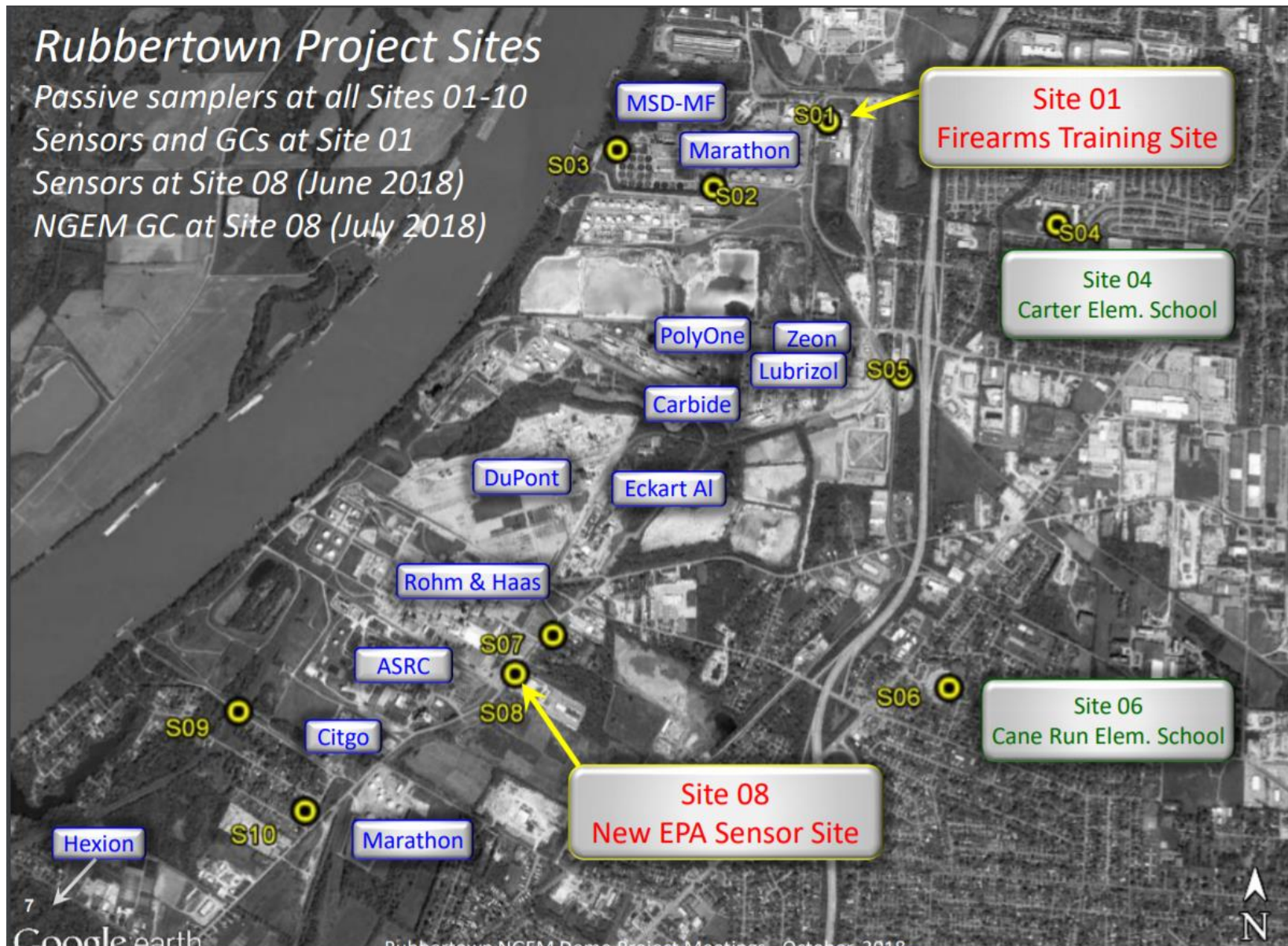
Rubbertown Project Sites

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

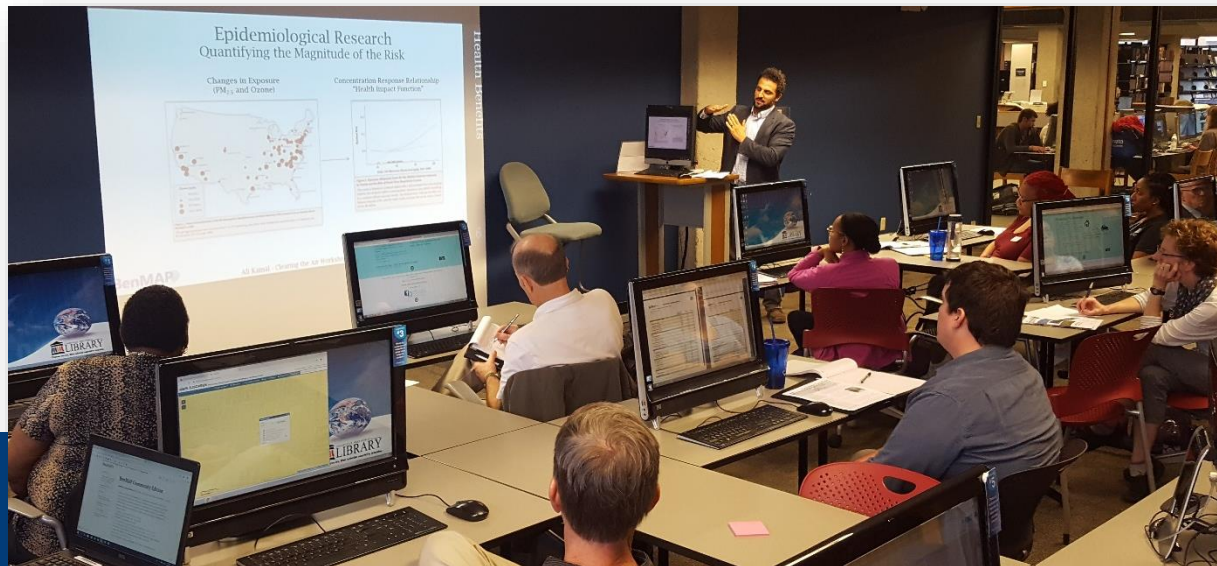


Clearing the Air Technical Workshop

- 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

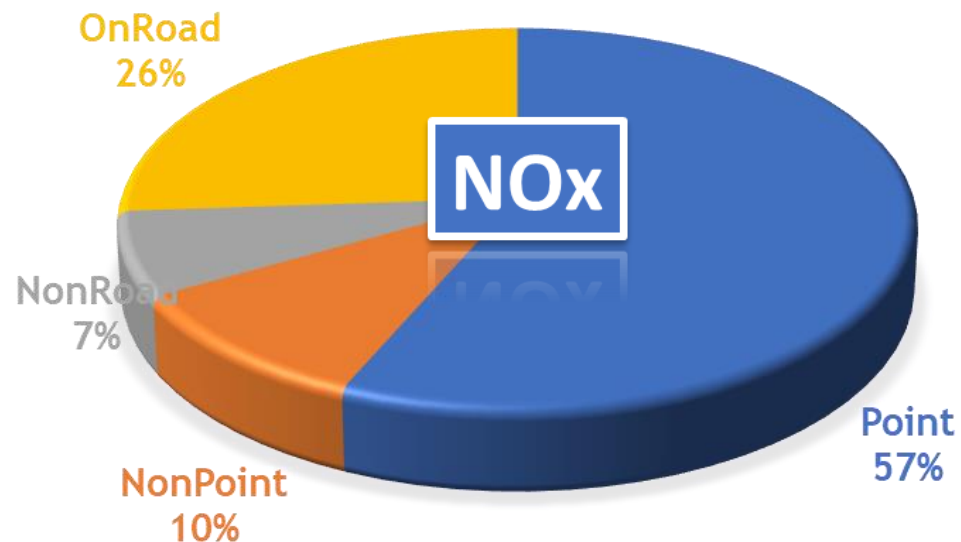
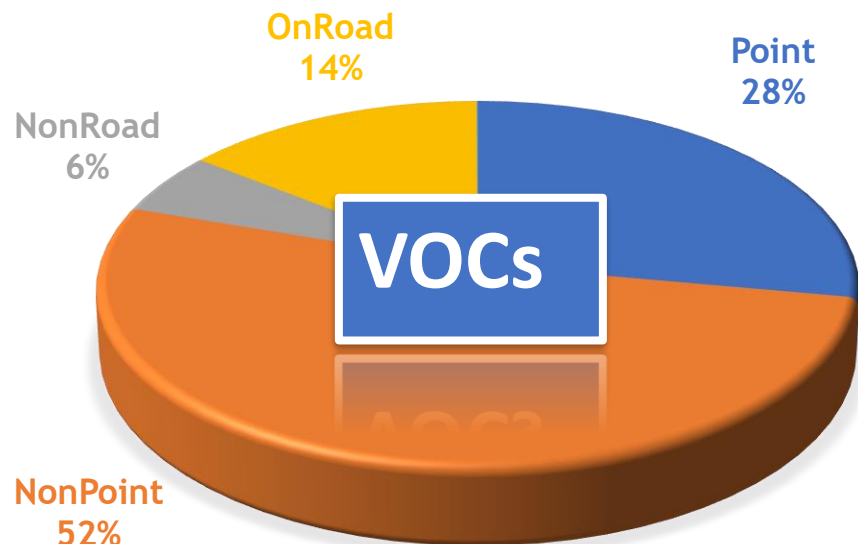
Pollutant	Standard	Averaging Time	Attainment Status
Carbon Monoxide	9 ppm	8-hour	Attainment
	35 ppm	1-hour	Attainment
Lead	0.15 $\mu\text{g}/\text{m}^3$	Rolling 3-month Average	Attainment
Nitrogen Dioxide	53 ppb	Annual Average	Attainment
	100 ppb	1-hour	Attainment
Particulate Matter (PM10)	150 $\mu\text{g}/\text{m}^3$	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

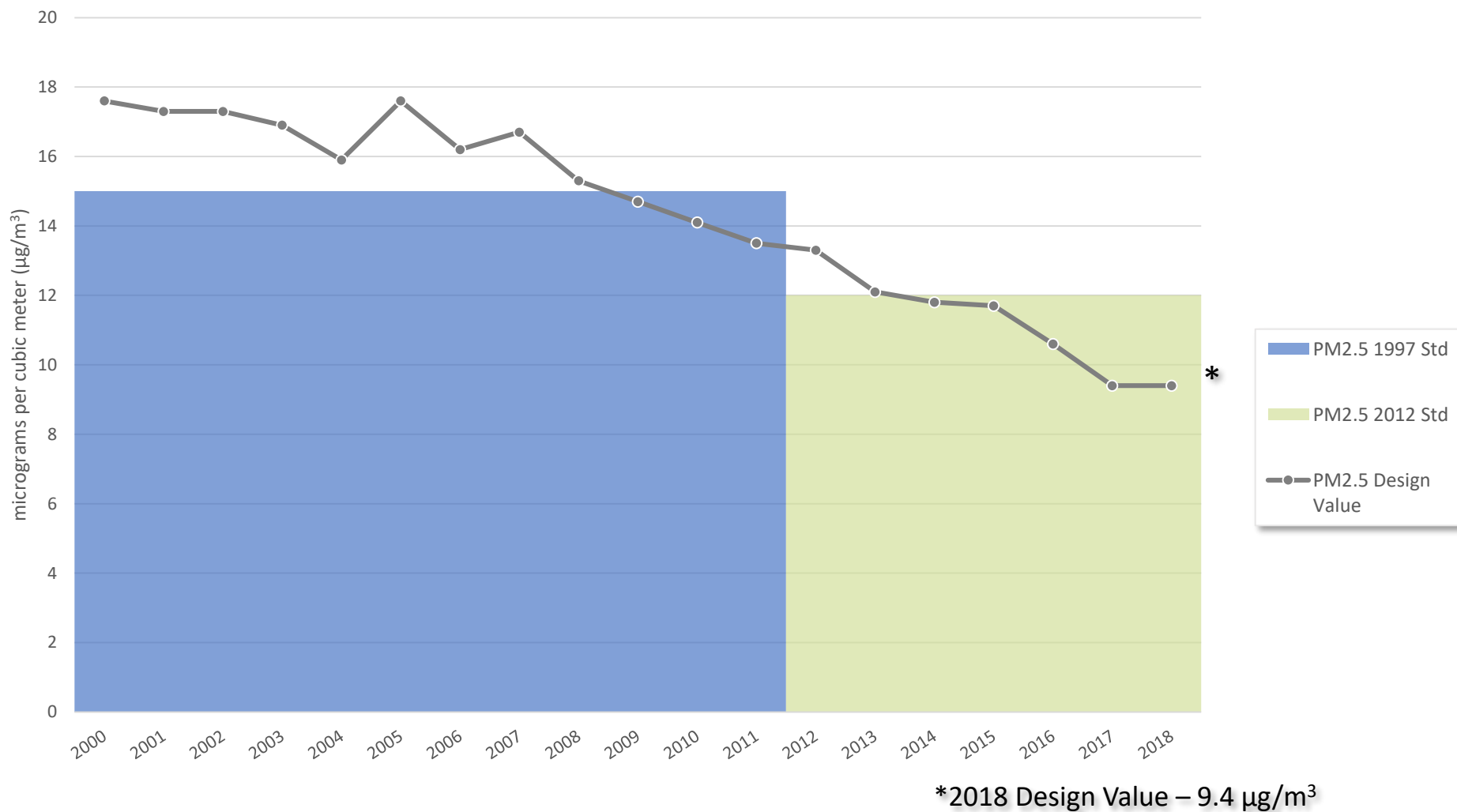
Goal	Outcomes
<ul style="list-style-type: none">Refine understanding for the regional drivers of ozone formation to make strategic policy decisions	<ul style="list-style-type: none">Comprehensive inventory of compounds contributing to the formation of ozoneImproved understanding of local ozone sensitivity to NOx/VOC reductionsScale 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

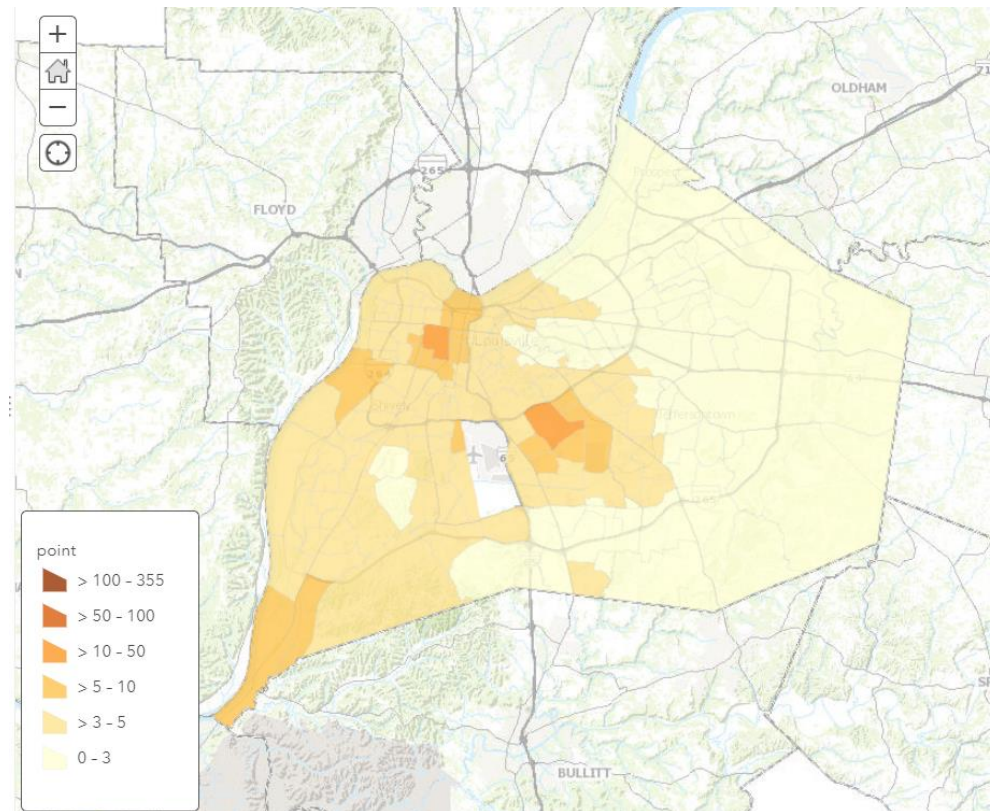
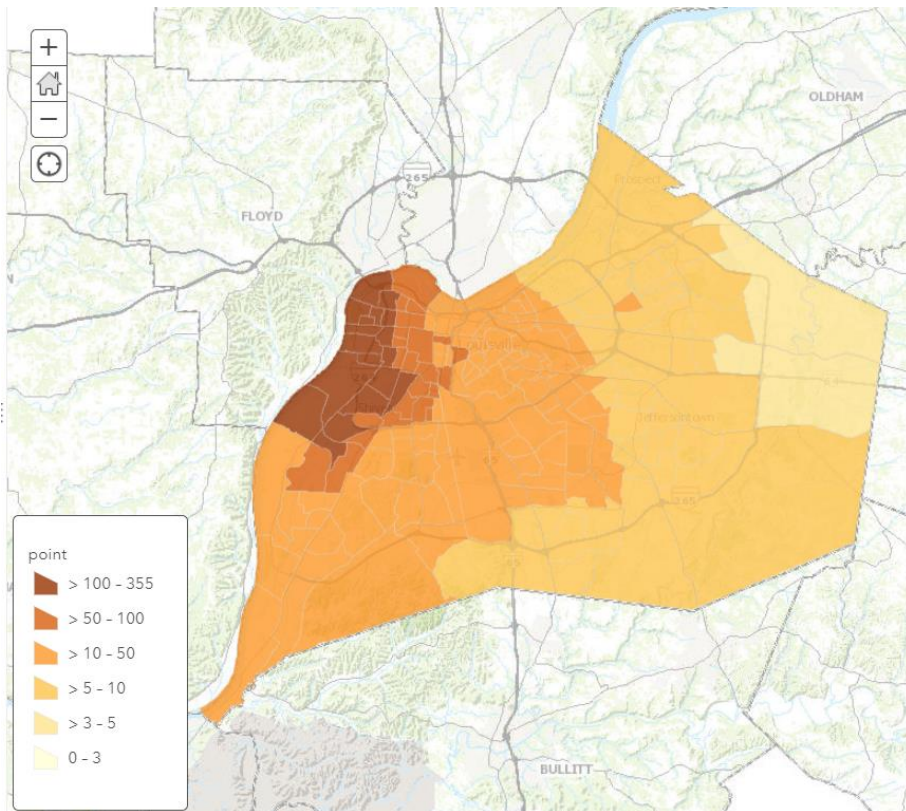
Total Air Toxics 2005 - 2017

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

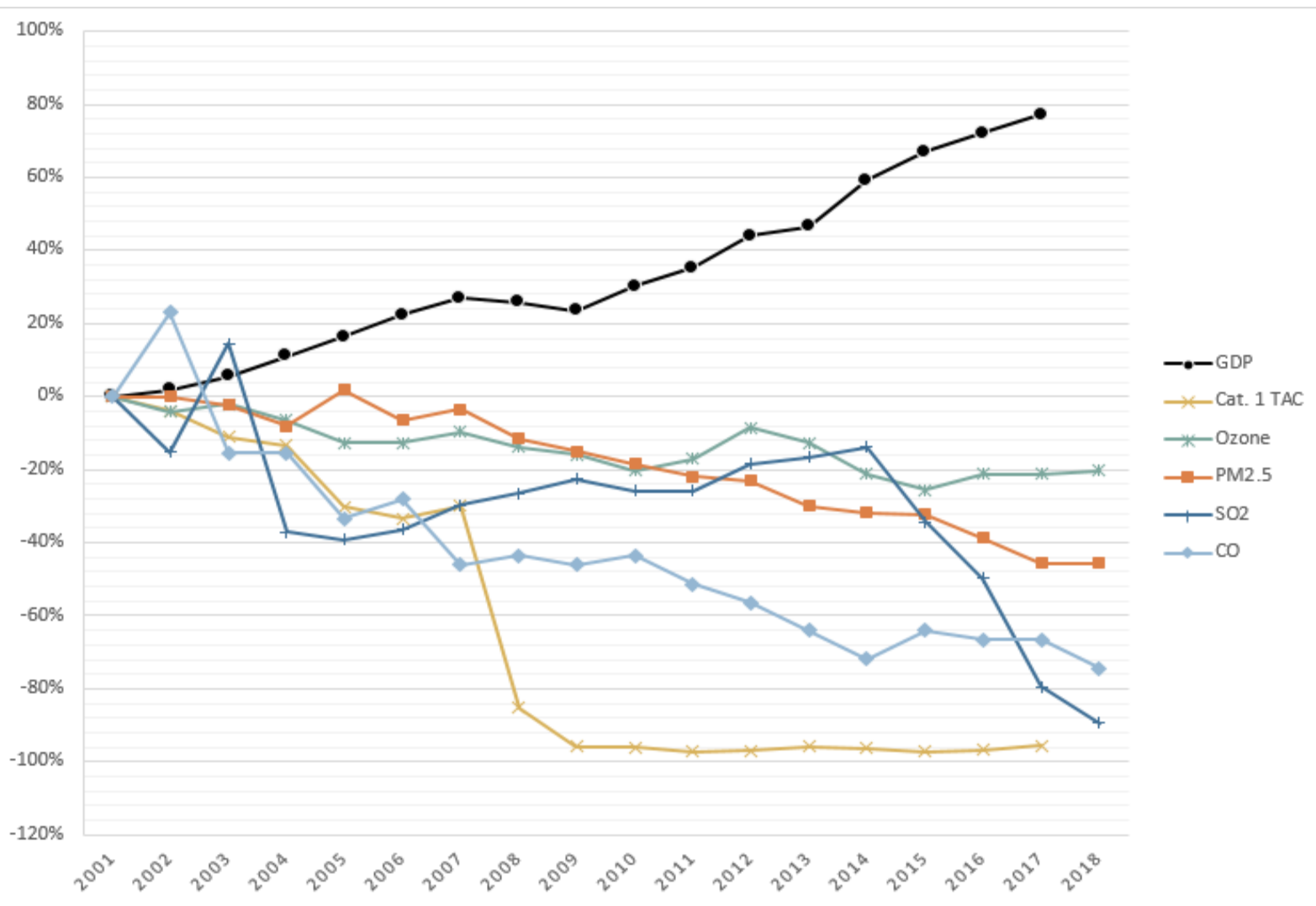
2005 v 2014 National Air Toxics Assessment – Point Sources



Multi-Pollutant Risk-Based AQ Management Strategy

Goal(s)	Outcomes
<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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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