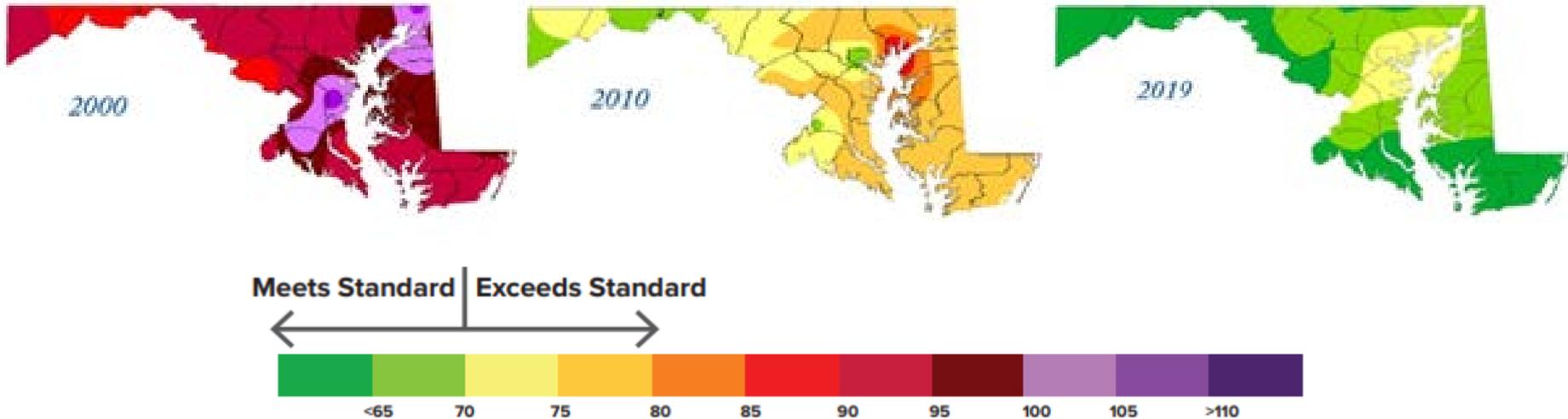




Maryland
Department of
the Environment

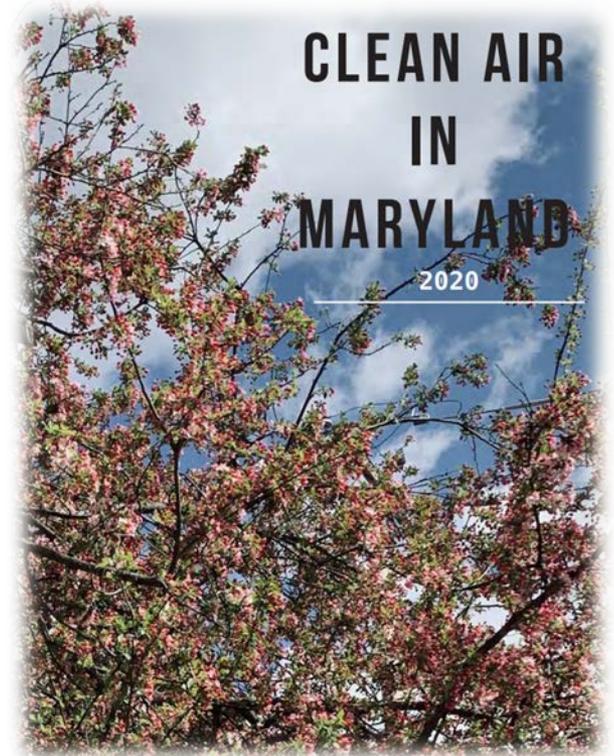
Clean Air Progress in Maryland





Overview of Presentation

- Clean Air Highlights
 - Progress in reducing:
 - Ozone
 - Fine Particles
 - Sulfur Dioxide
 - Air Toxics
 - Reductions from Coal-fired Power Plants
- Clean Air and Transportation
- Addressing Climate Change in Maryland
- Legal Efforts to Address Transported Air Pollution
- COVID 19 – An Unexpected Air Quality Experiment





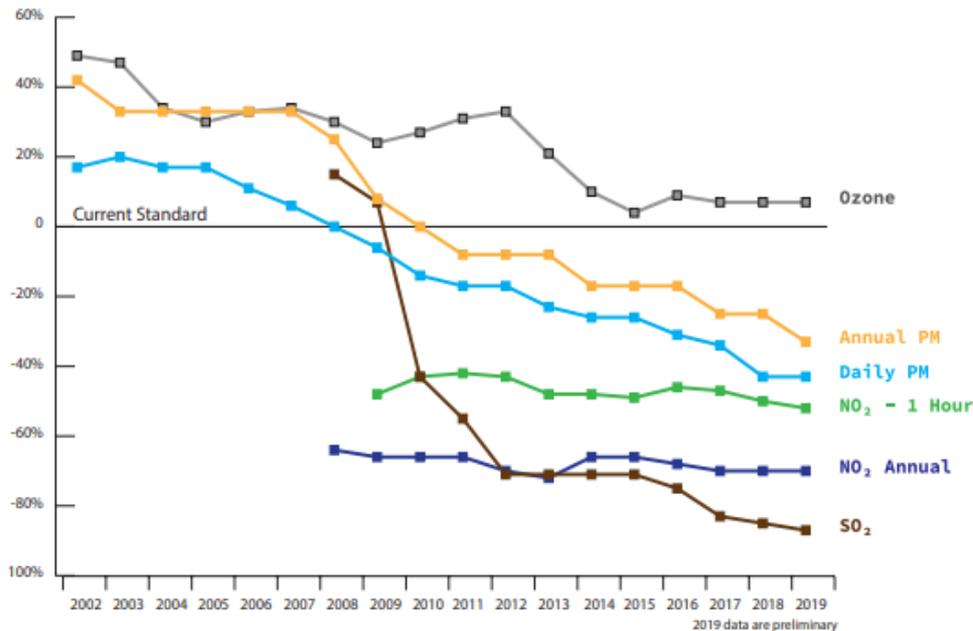
CLEAN AIR HIGHLIGHTS

PROGRESS CONTINUES



Clean Air Highlights

- For nearly 30 years, Maryland's air quality has dramatically improved
- Air quality policies and regulations have lowered levels of six common pollutants — particles, ozone, lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide



NITROGEN DIOXIDE (NO₂) ANNUAL ↓ 16% (FROM 2008)

NITROGEN DIOXIDE (NO₂) 1-HOUR ↓ 8% (FROM 2009)

OZONE (O₃) ↓ 21%

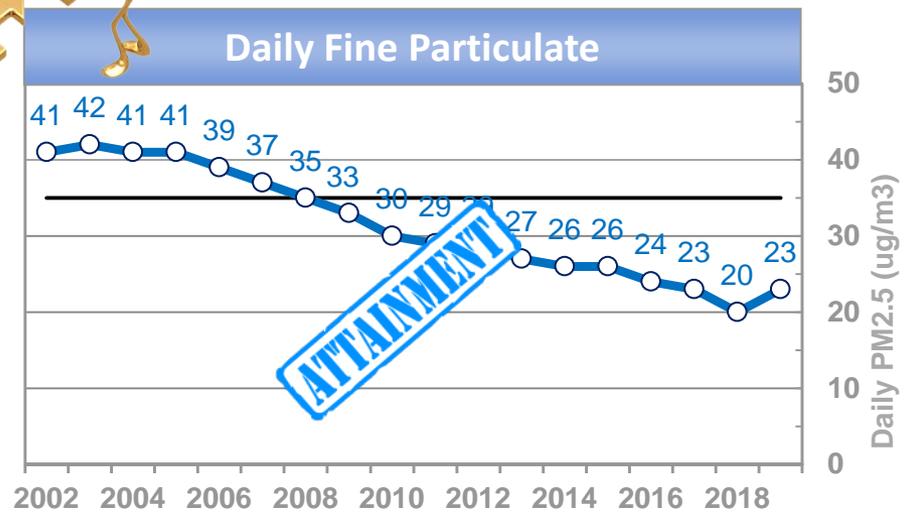
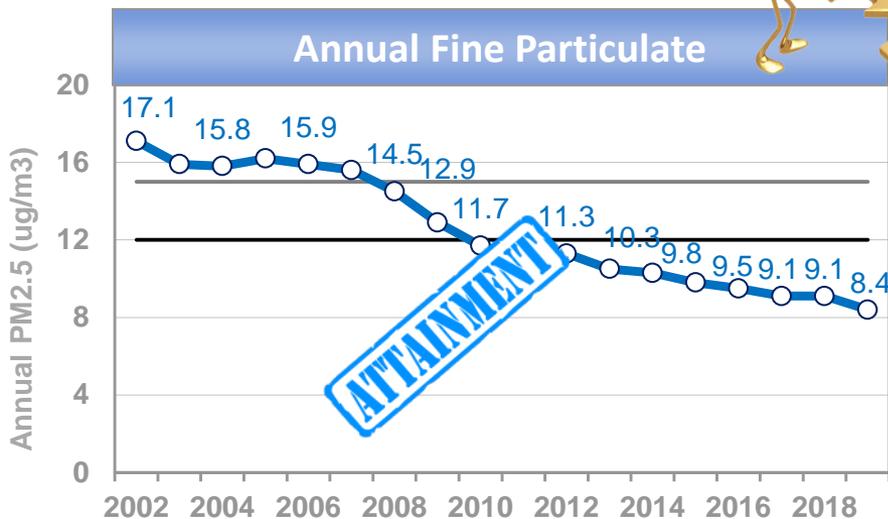
PARTICLES (PM_{2.5}) ANNUAL ↓ 53%

PARTICLES (PM_{2.5}) 24-HOUR ↓ 51%

SULFUR DIOXIDE (SO₂) 1-HOUR ↓ 88%



Progress in Cleaning Maryland's Air



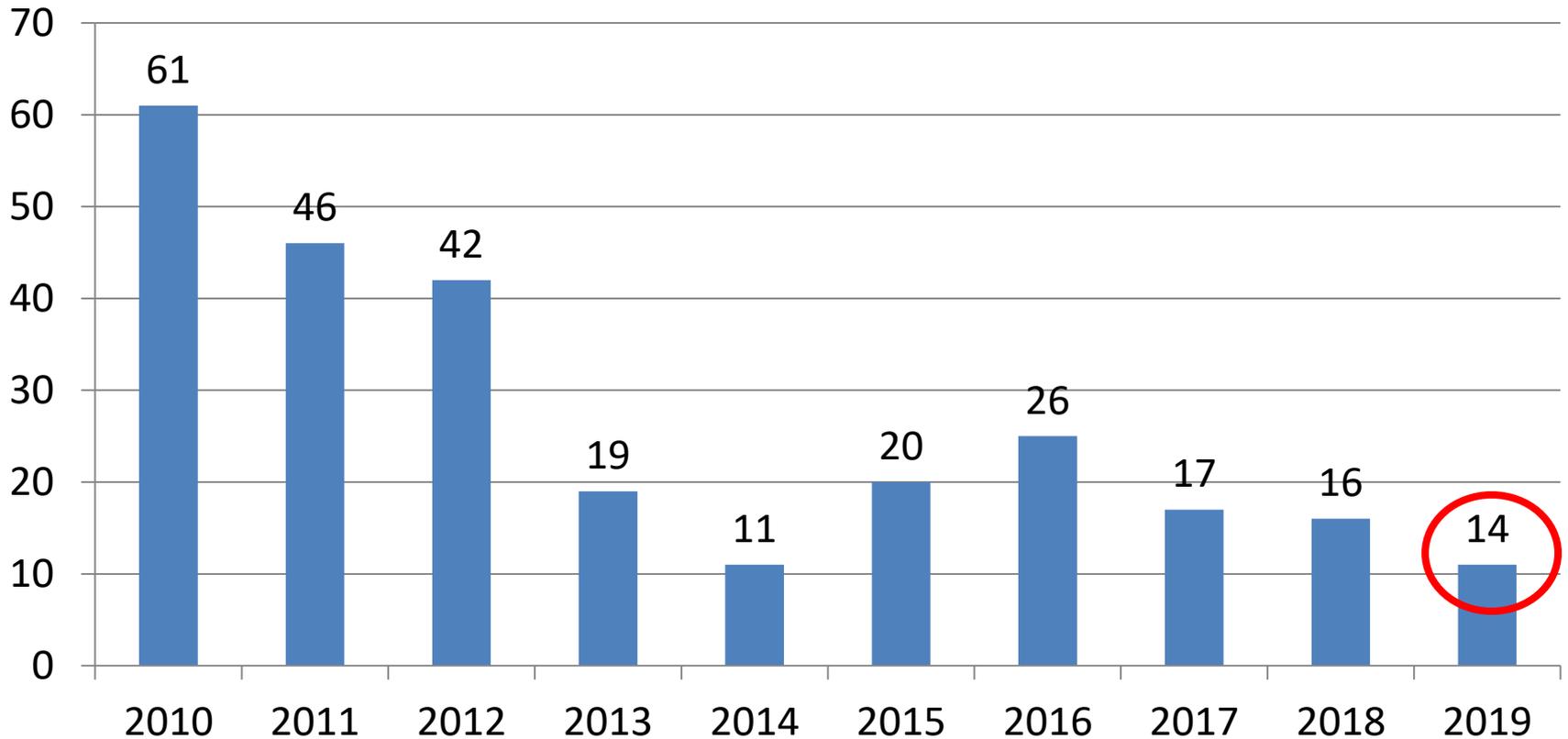
What Have We Learned from All of This?

* 2019 data is preliminary



Maryland Bad Ozone Days

Exceedance Days

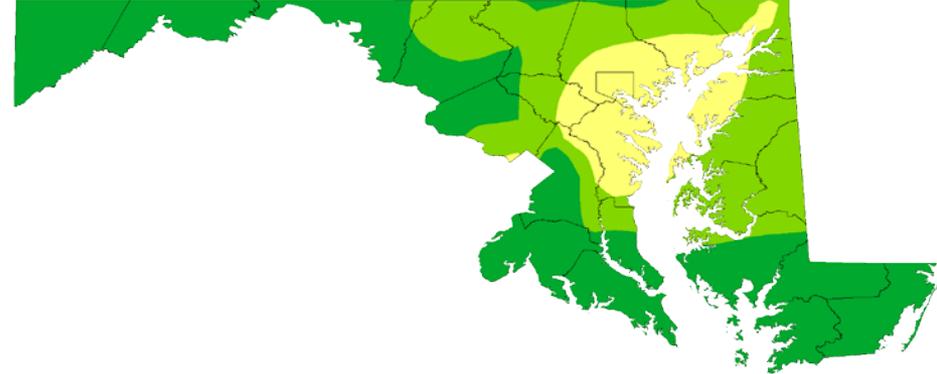
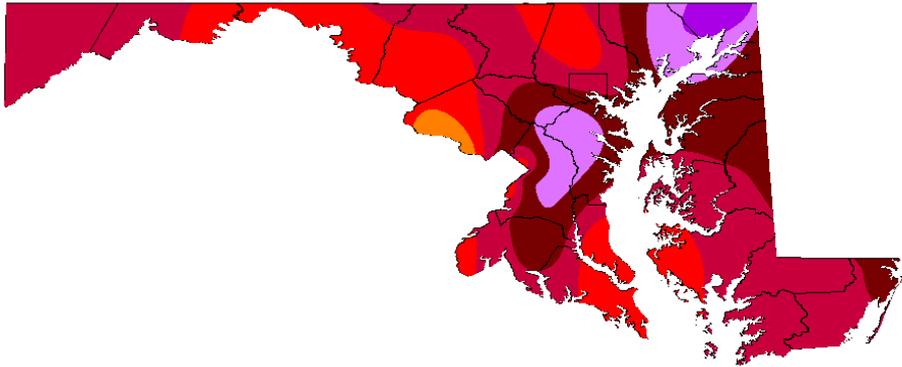


Shrinking Ozone

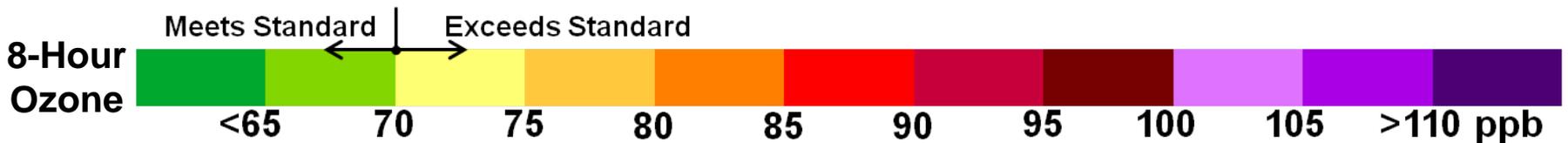


1998

2019*



The Shrinking Ozone Problem: Not just the magnitude, but its nature: “We’re going local”

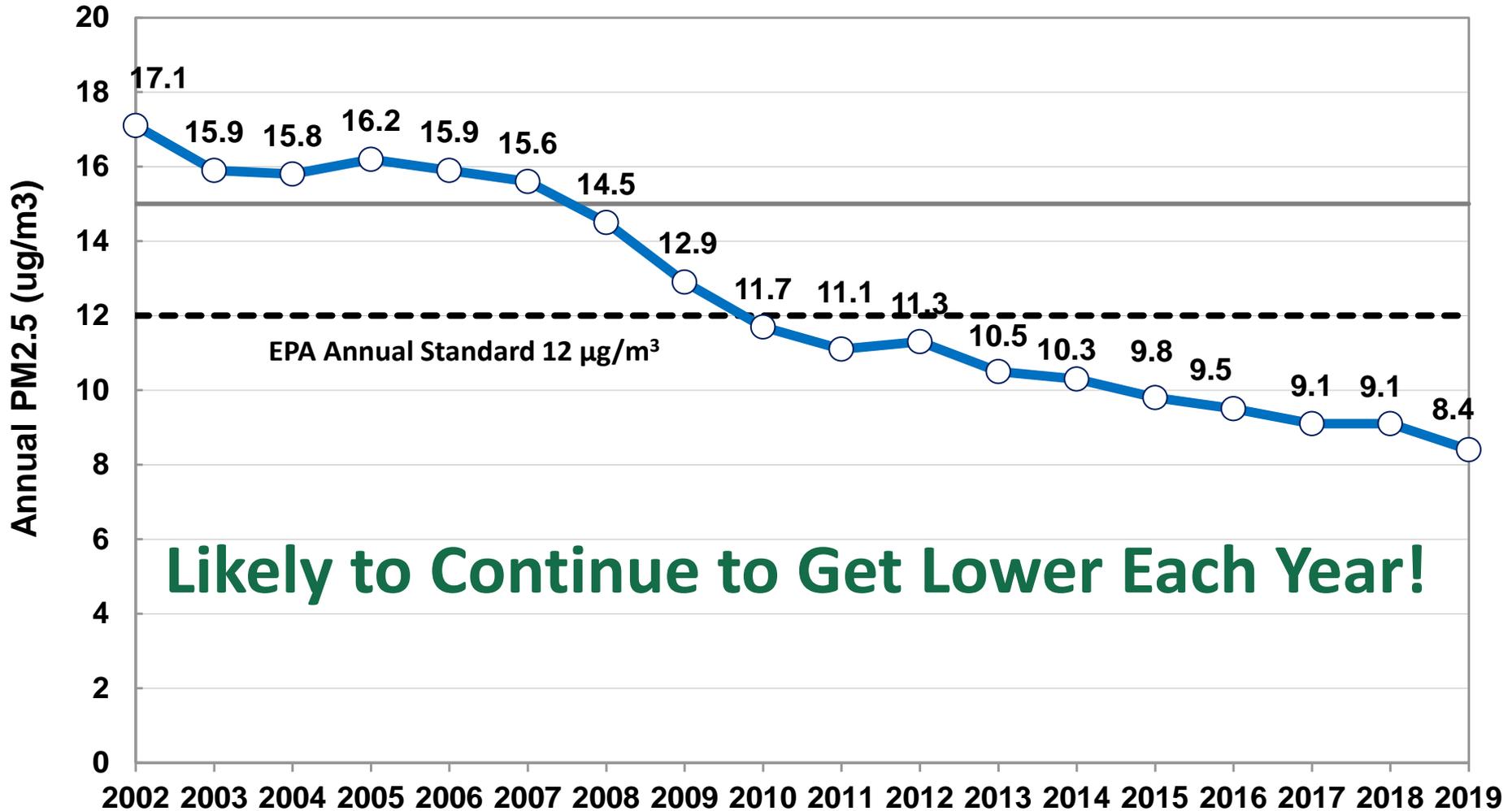


*Preliminary Data: Subject to Change



Fine Particle Air Pollution

Lower Levels Across the State

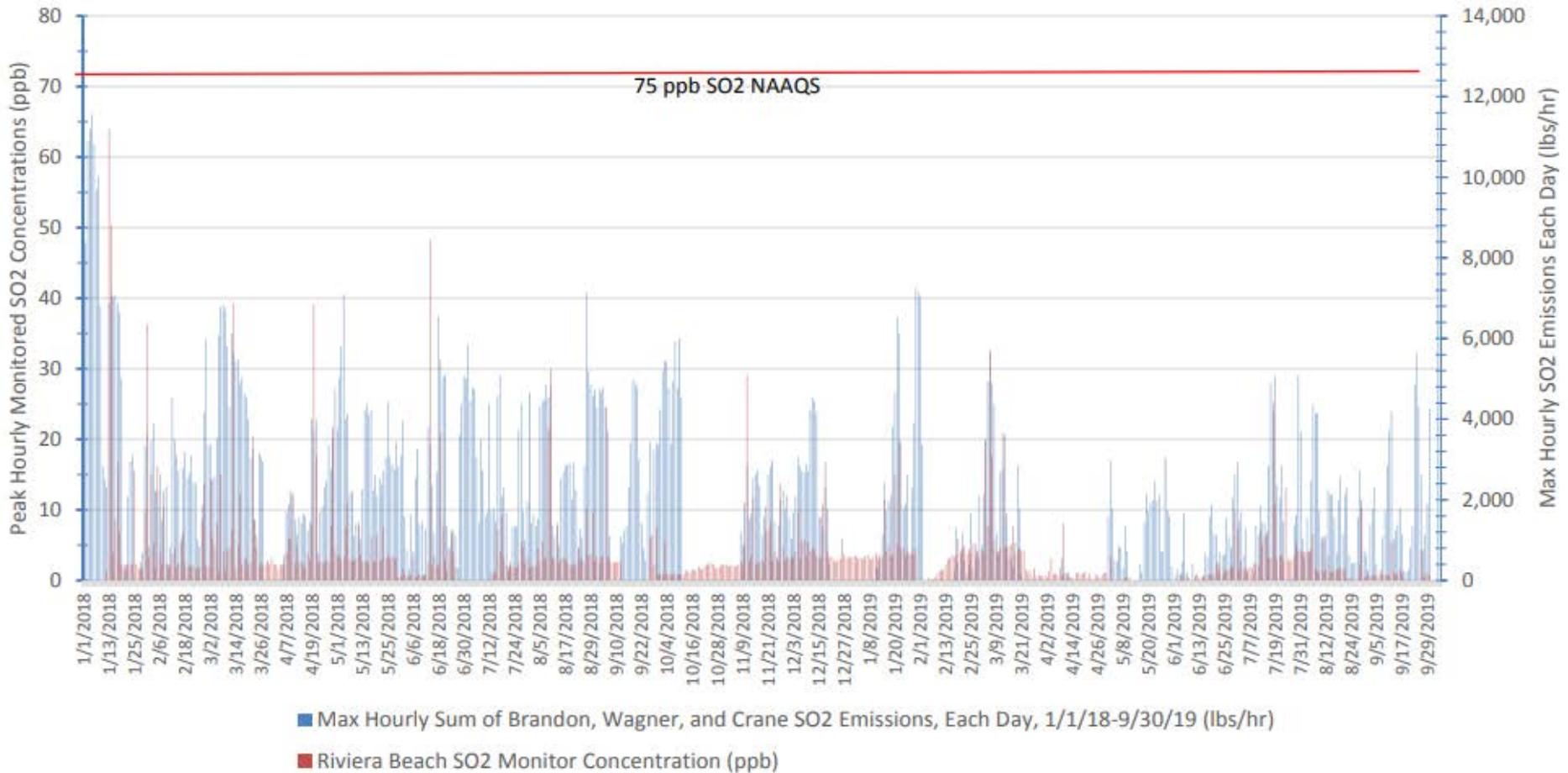


* 2019 data is preliminary



SO₂ Air Pollution Levels Well Below the NAAQS

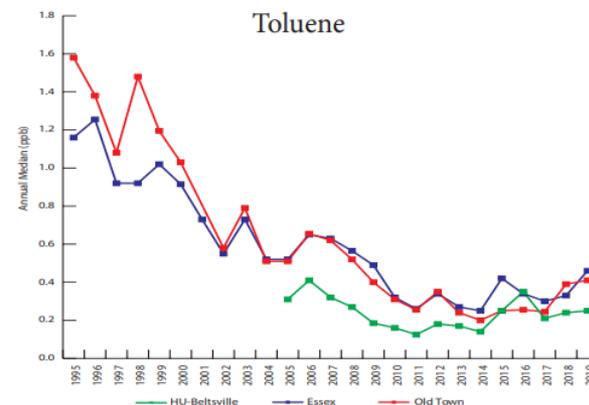
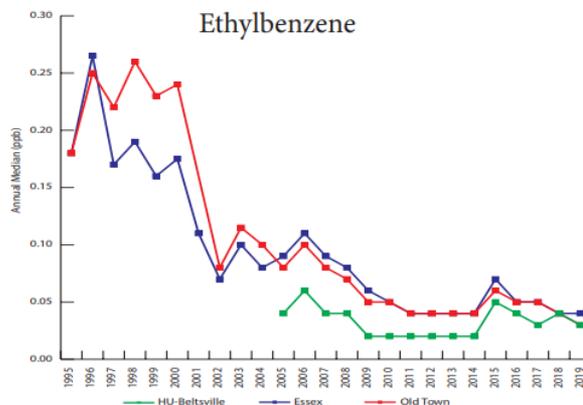
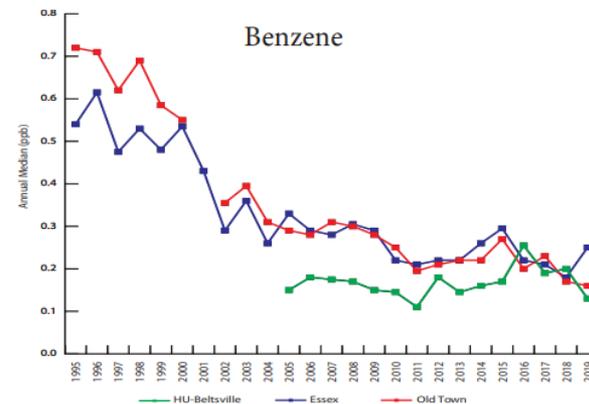
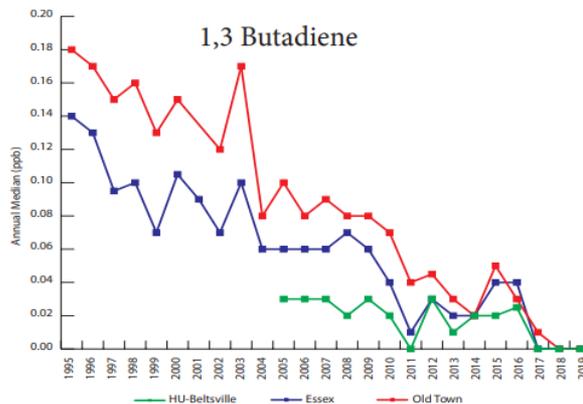
Peak Daily Riviera Beach Monitor SO₂ Concentrations &
Maximum Hourly Sum of Brandon, Wagner, & Crane SO₂ Emissions
Each Day, 1/1/18-9/30/19





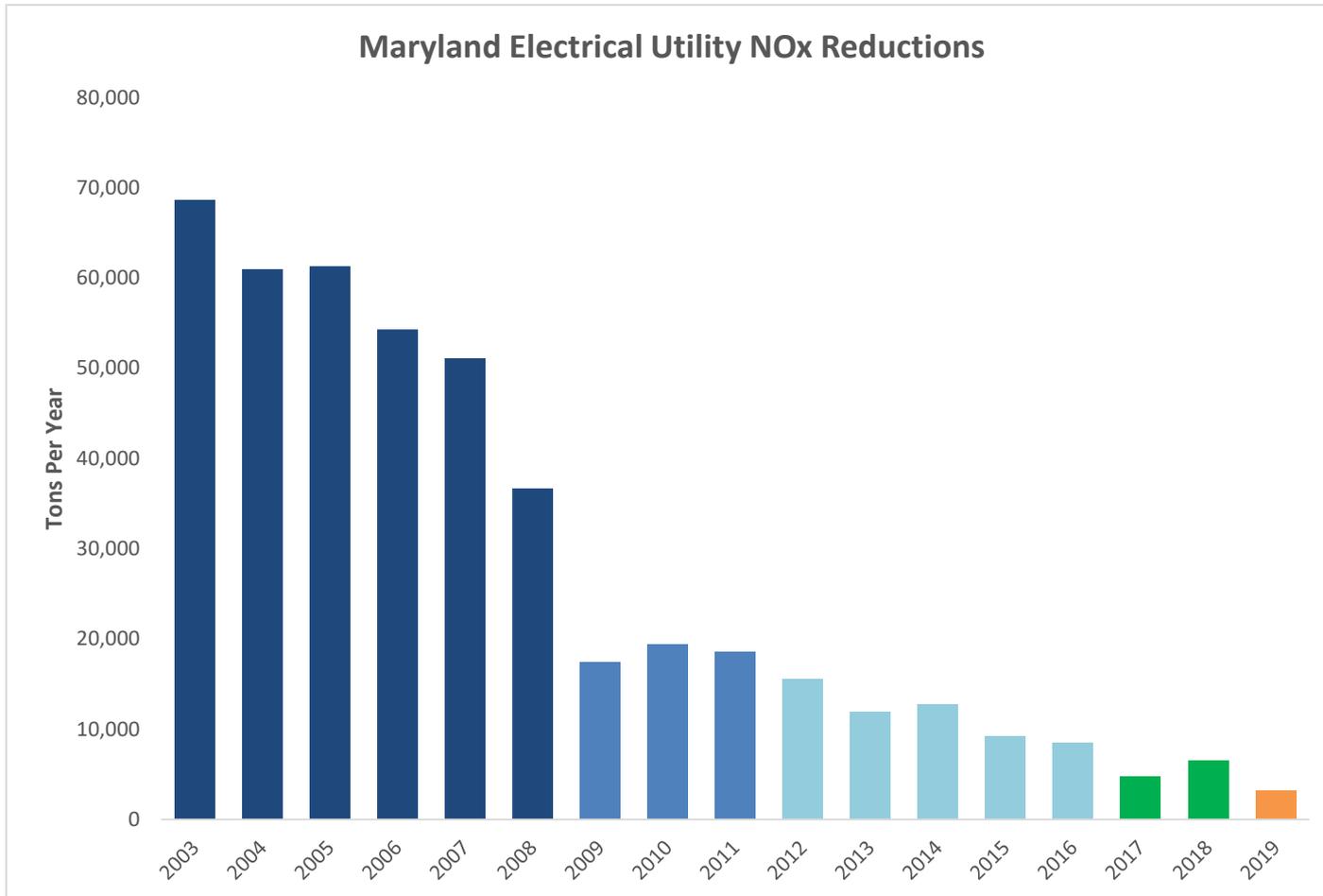
Air Toxics Have Been Significantly Reduced

- Air toxics are those known to cause cancer and other serious health impacts
- Over the last 25 years, Maryland has generally cut concentrations of air toxics by 50%



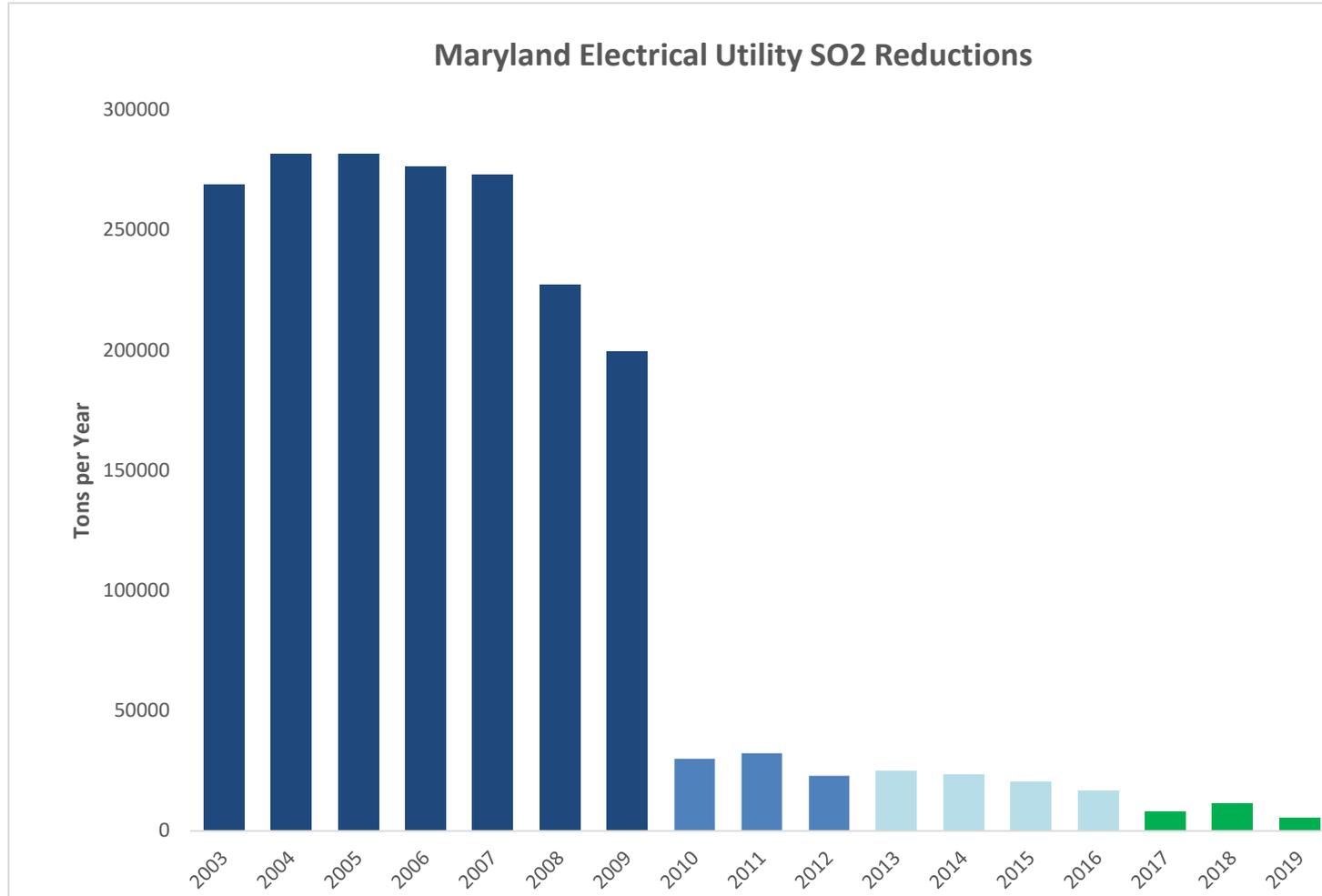


NOx Reductions from Coal-fired Power Plants





SO2 Reductions from Coal-fired Power Plants



A bright sun is shining in a clear blue sky, with several rays of light extending outwards. The sun is partially obscured by a layer of white, fluffy clouds that stretch across the horizon. The overall scene is bright and clear, suggesting a clean, sunny day.

CLEAN AIR AND TRANSPORTATION



Clean Air and Transportation

- **Mobile Source Related Federal Rollbacks**
 - The federal Safer Affordable Fuel Efficient (SAFE) Vehicle Rule, will result in a weakening of existing auto emission standards adopted by previous administrations
 - Maryland and other states have 9 challenged EPA over the rollback of previously adopted standards and its authority to revoke the California waiver
- **Volkswagen Mitigation Plan**
 - Maryland is eligible to authorize spending of \$75.7 million for specifically defined mitigation projects to remediate excess NOx emissions
 - Maryland's first phase of the program funds electric and propane school buses
- **Idle Free Maryland**
 - Program designed to reduce unnecessary idling of vehicles
 - MDE is working with individual schools to assist in implementing their own idle reduction strategies
- **Port of Baltimore Inter-Agency Partnership**
 - To date, more than \$19 million has been invested into diesel emission reduction activities at the port
 - These projects will reduce thousands of tons of air pollutants including NOx , fine particles, hydrocarbons and carbon monoxide
 - Significant reductions in GHG emissions, primarily carbon dioxide (CO2) and black carbon

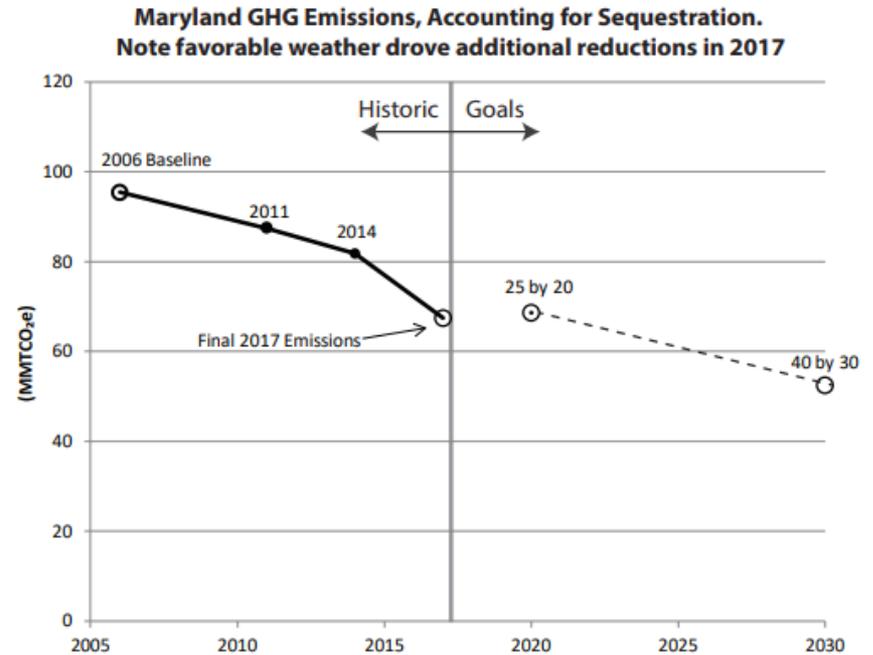


**ADDRESSING CLIMATE CHANGE
IN MARYLAND**



Greenhouse Gas Reduction Efforts

- Through the Greenhouse Gas Reduction Act, MDE is in process of detailing a comprehensive plan to reduce our GHG emissions by a minimum of 40% from 2006 levels by 2030 while positively impacting the state's economy and creating jobs
- The draft plan incorporates a comprehensive set of more than 100 measures designed to reduce GHG emissions





Further Climate Actions

- Clean Energy Jobs Act (CEJA) of 2019 sets a 50% renewable portfolio standard (RPS) by 2030
- Maryland's EmPOWER Energy Efficiency Program charges utility customers a monthly fee that is used to fund energy efficiency services among other incentives
- The Transportation Climate Initiative (TCI) is a regional effort of 11 Northeast and Mid-Atlantic states and Washington, D.C. working to reduce GHG emissions from the region's transportation sector
- The CoastSmart Communities Program assists Maryland's coastal communities to address short- and long-term coastal hazards, such as sea level rise



Further Climate Actions (cont.)

- The Maryland Energy Administration's Energy Finance Initiative is a collection of programs, financing tools, and other resources that help fill the funding needs of clean energy projects
- Maryland established the Maryland Healthy Soils Program to increase biological activity and carbon sequestration in the state's soils
- Maryland has initiated regulatory efforts to reduce leaking methane emissions from the natural gas industry, the distribution sector and landfills, and to ban certain highly potent HFCs



**LEGAL EFFORTS TO ADDRESS
TRANSPORTED AIR POLLUTION**



Addressing Transported Pollution

- In 2016, Maryland submitted a 126 petition to EPA requesting that it require 19 power plants with 36 generation units in five upwind states to run their already installed pollution control technology
 - EPA denied Maryland’s 126 petition, and on October 15, 2018, Maryland sued EPA in the United States Court of Appeals
- Maryland has petitioned OTC through Section 184c of the CAA detailing that Pennsylvania air quality rules allow up to a daily excess of 47 tons per day
- Maryland, with many other states, have sued EPA over CSAPR Closeout rule
 - The courts have ruled that the CSAPR rule did not fully address transport and that the CSAPR Closeout rule could not be used by upwind states as a complete transport remedy

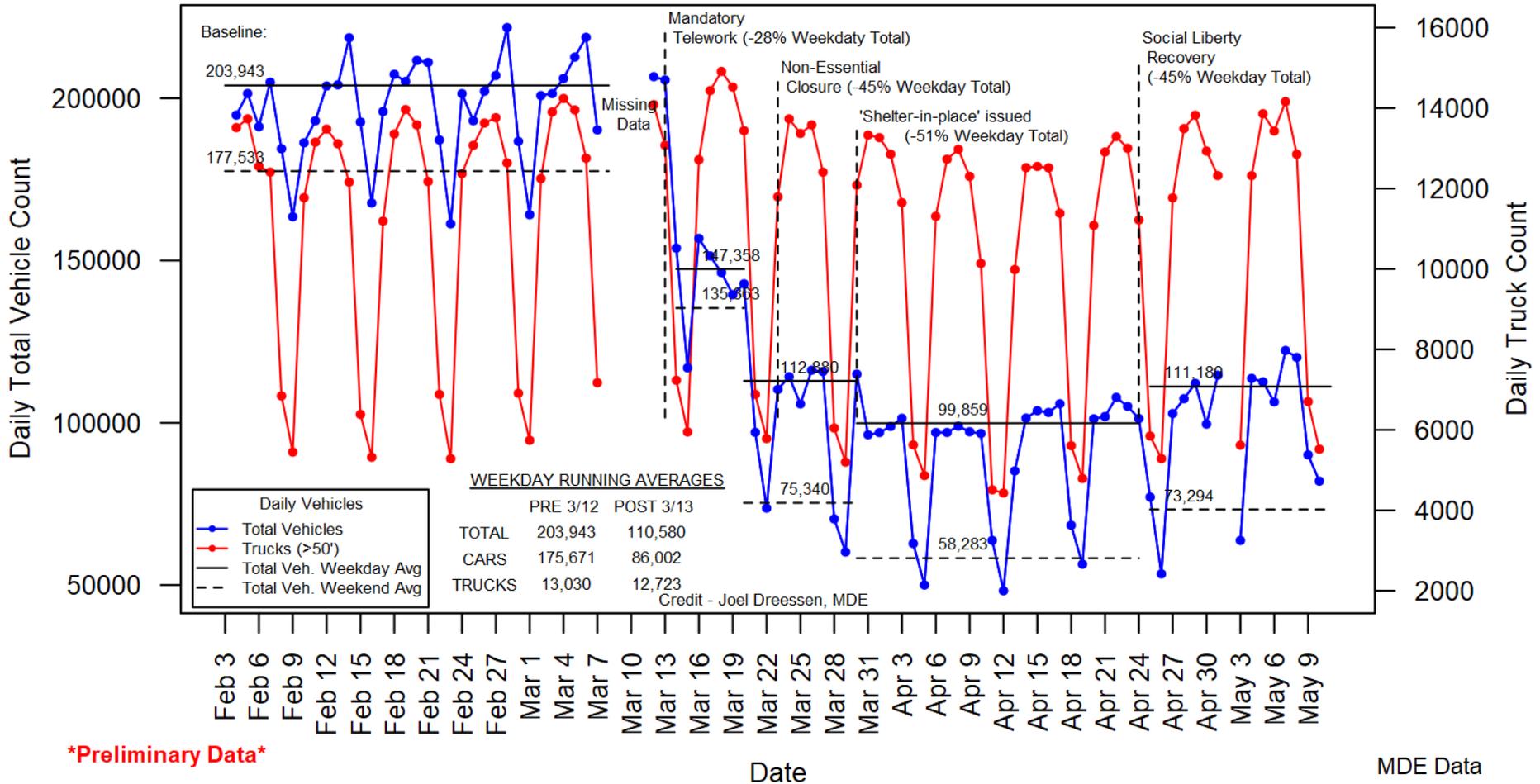


COVID 19
AN UNEXPECTED EXPERIMENT



Traffic Counts

MDE Traffic Counter at I-95 Near-Road Site (Feb 4 - May 10, 2020)



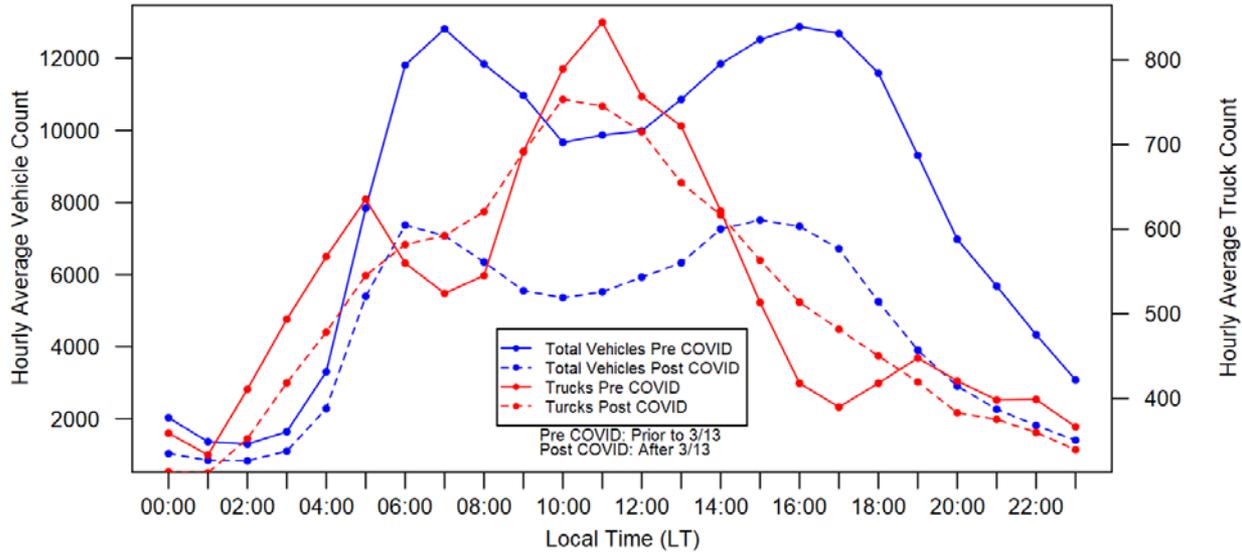
Preliminary Data

MDE makes no claims to traffic count accuracy

MDE Data
Not official MDOT traffic counter



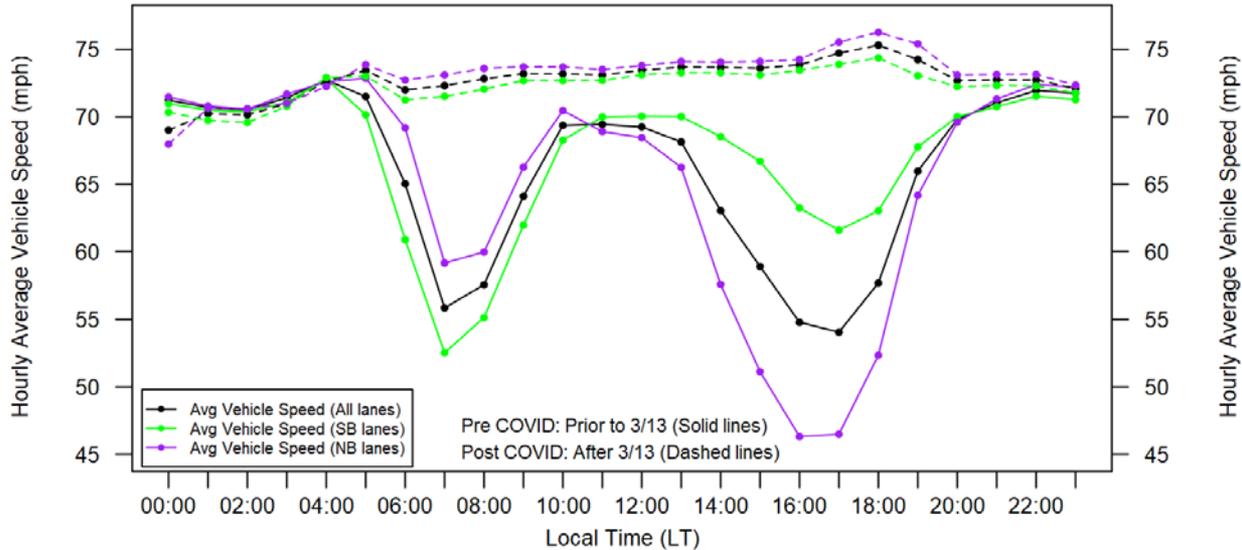
MDE Average Diurnal Traffic Speed Profile I-95 Near-Road Site (Feb 4 - Apr 28)



Preliminary Data

MDE Data

MDE Average Diurnal Traffic Speed Profile I-95 Near-Road Site (Feb 4 - Apr 28)



Preliminary Data

MDE Data

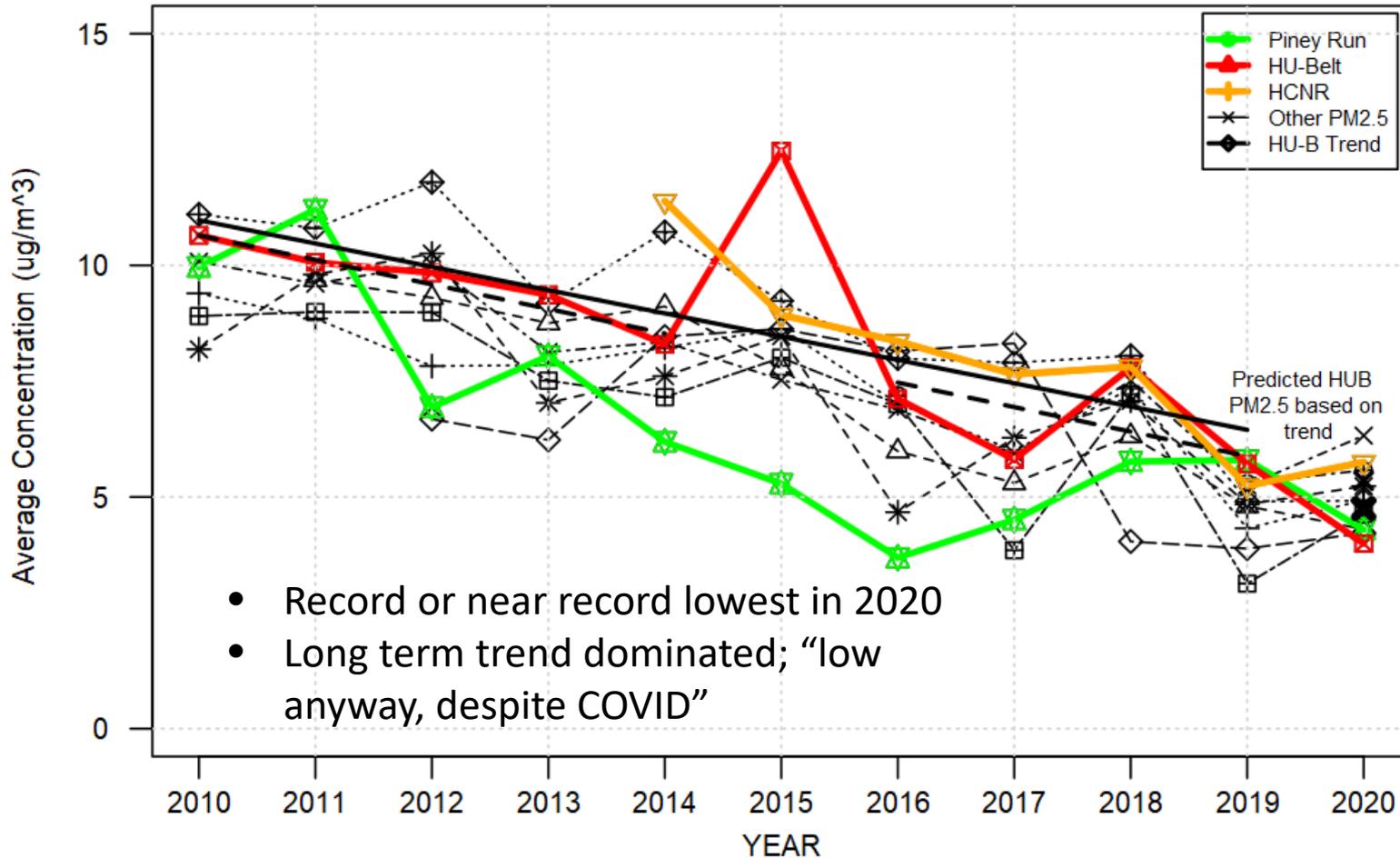
MDE makes no claims to traffic count accuracy

Not official MDOT traffic counter



PM 2.5 Since 2010

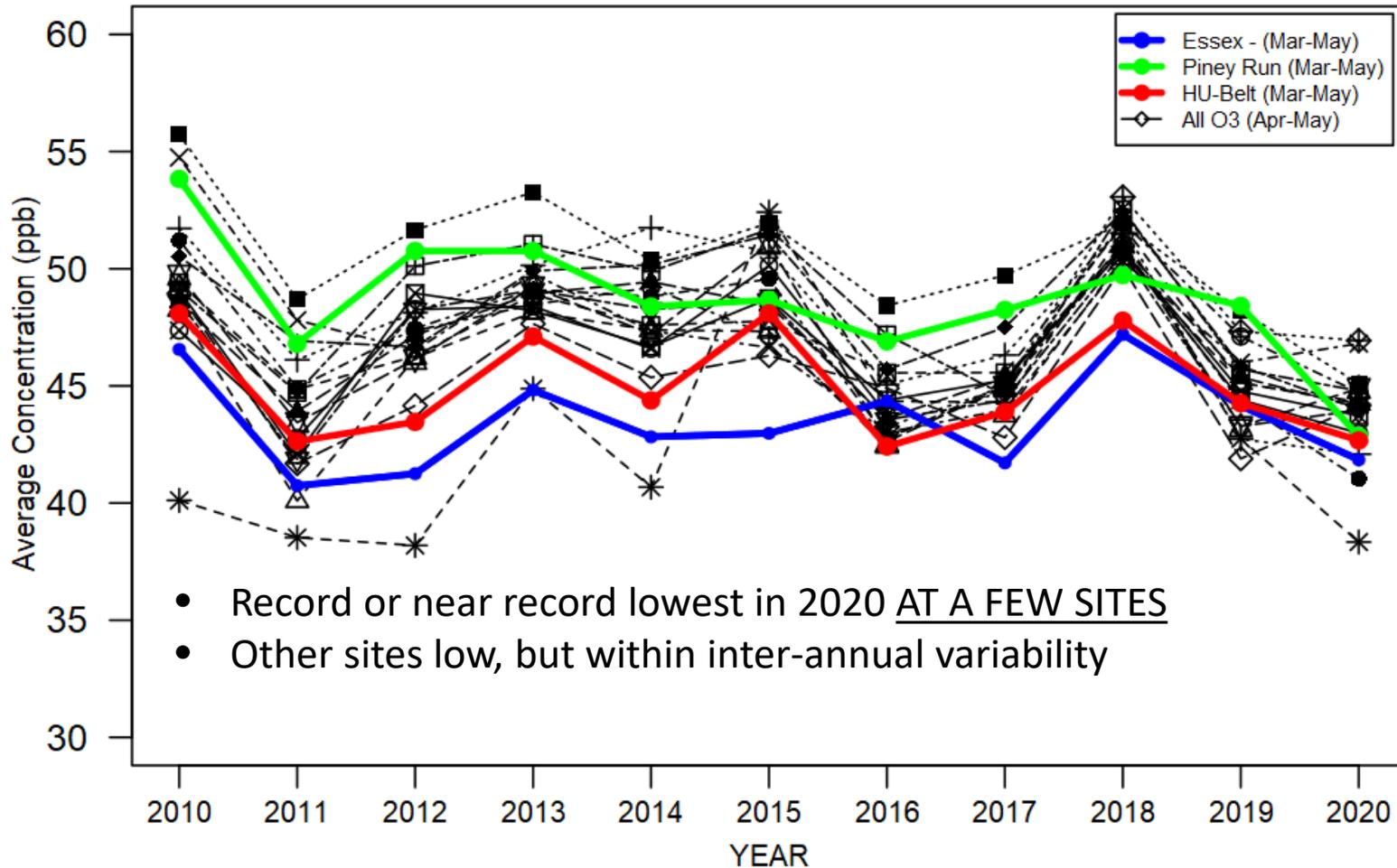
PM2.5 Averages Since 2010 in Maryland for COVID Period (Mar-14 - May-7)





Ozone Since 2010

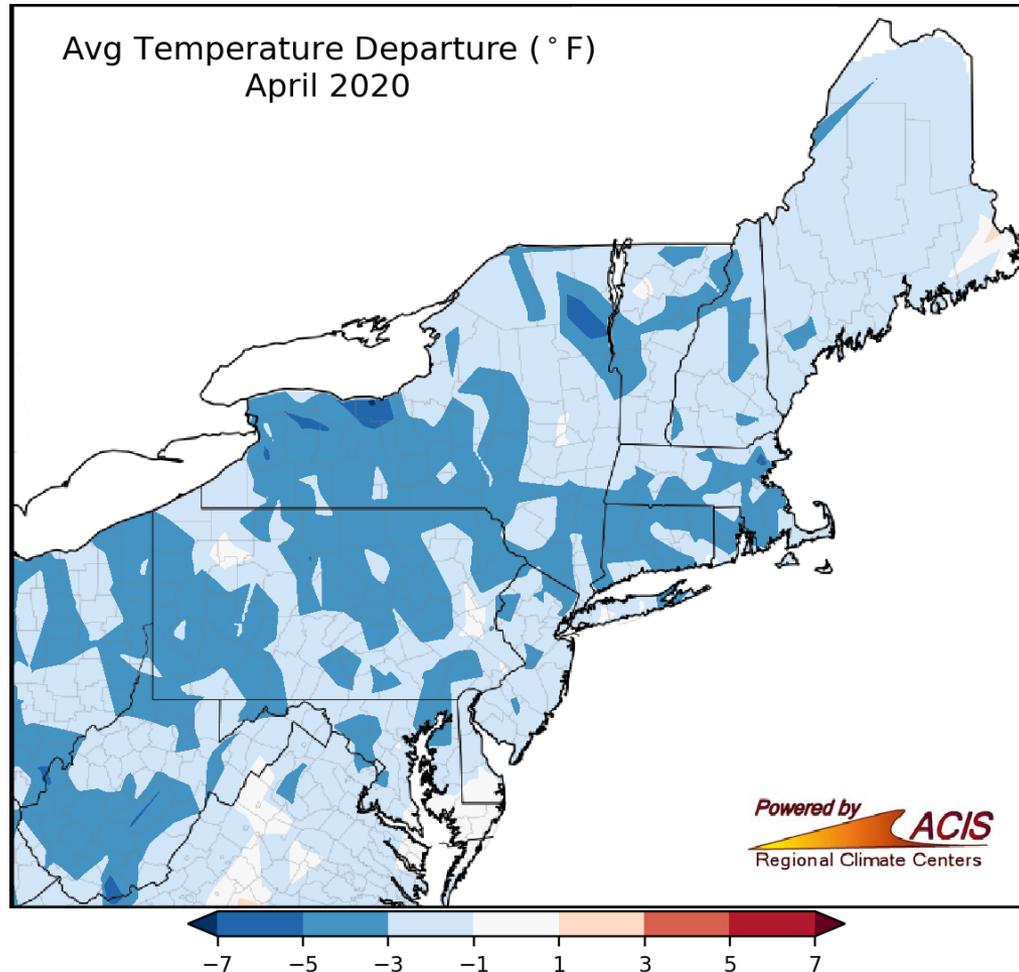
Ozone Averages (10am - 6pm) Since 2010 in Maryland for COVID Period (Mar-14 - May-7)





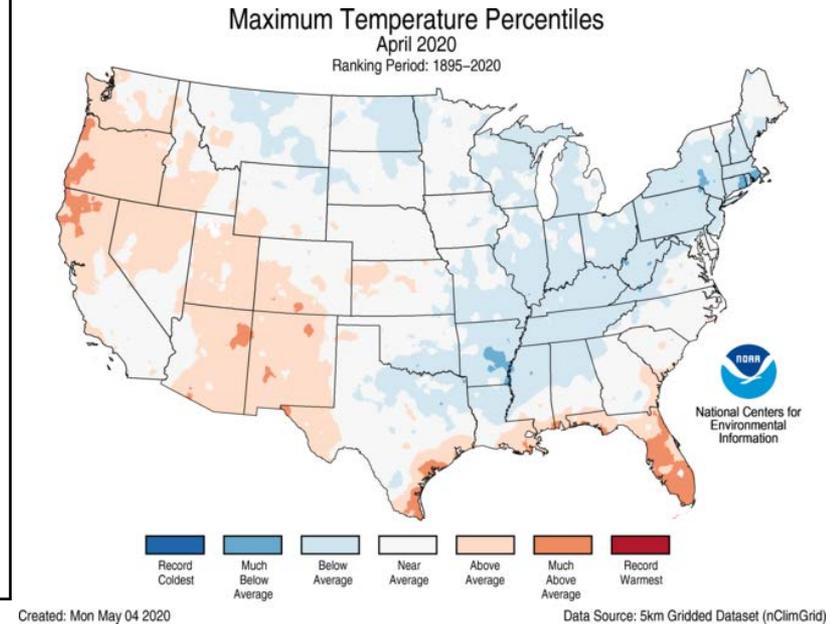
Been a cold April...

Not supportive of ozone

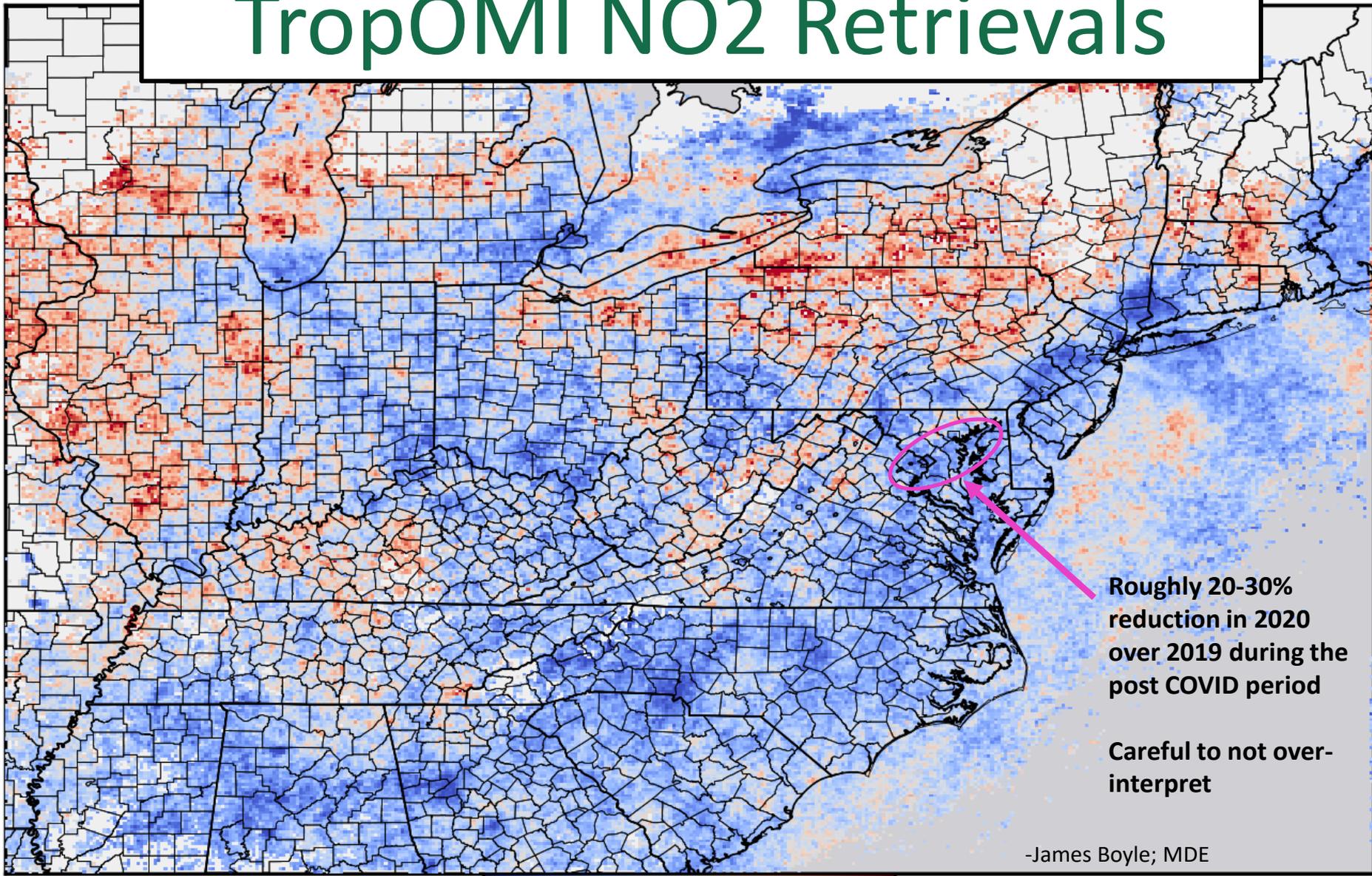


49th coolest of 126 years

~1°F below normal statewide
for maximum high temperature.



TropOMI NO₂ Retrievals



**Roughly 20-30%
reduction in 2020
over 2019 during the
post COVID period**

**Careful to not over-
interpret**

-James Boyle; MDE

20190313 - 20190511 VS
20200313 - 20200511



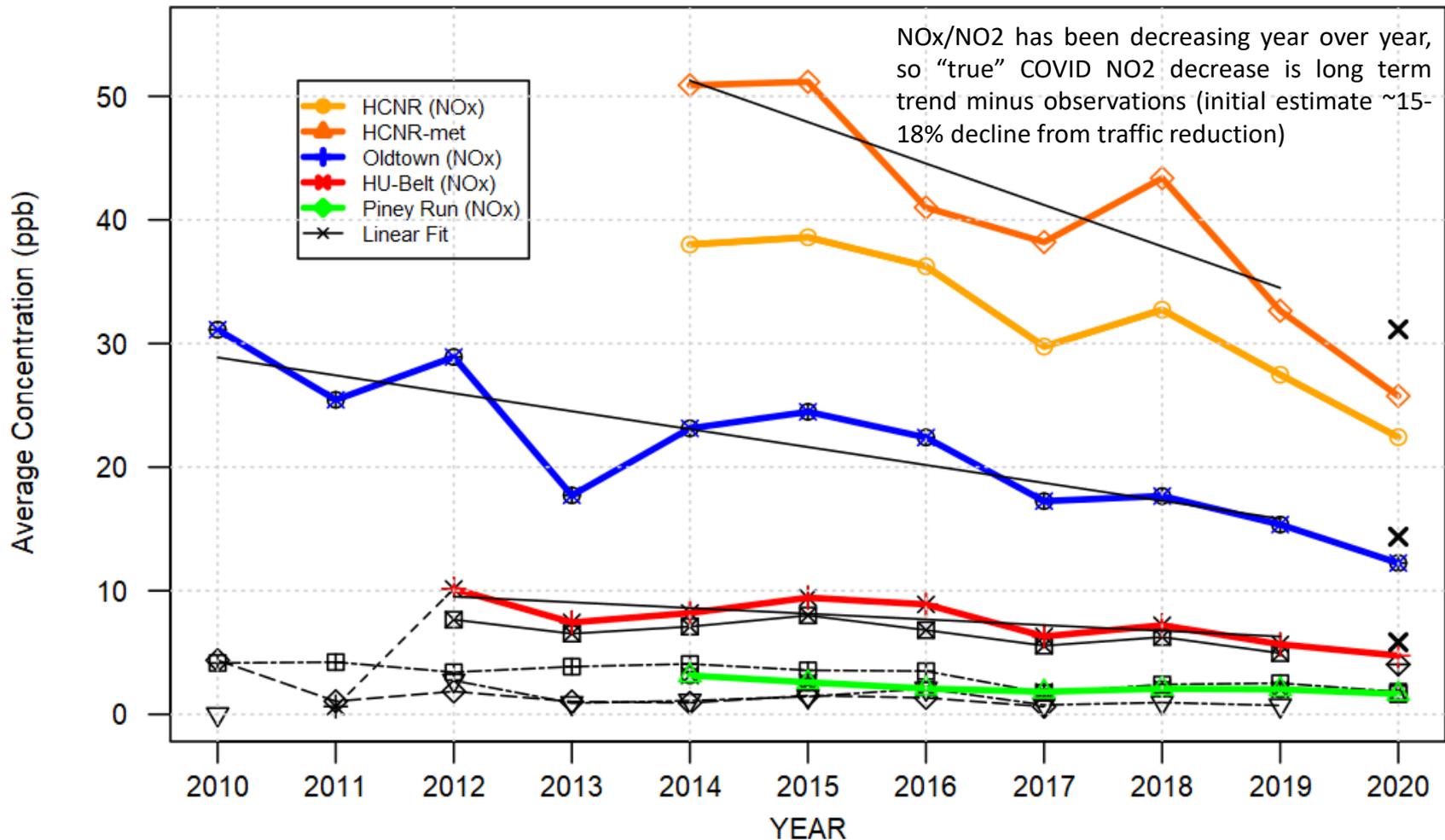
NO₂ Change (%)

QA Filter: 75%



NOx Since 2010

NOx/NO2 Averages Since 2010 in Maryland for COVID Period (Mar-14 - May-7)





Questions ... Comments ... Discussion

