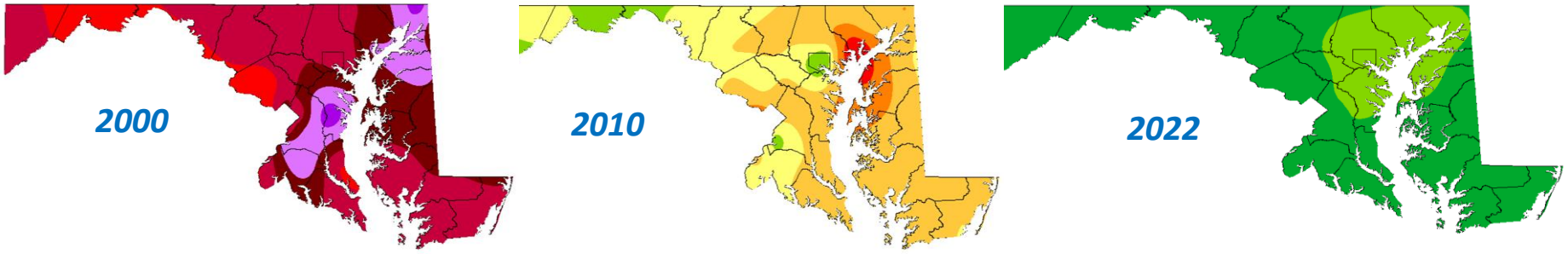
Maryland
Department of
the Environment

2022 Air Quality Progress



Kelsey Sisko, Natural Resources Planner, Air and Radiation Administration

Overview of Presentation

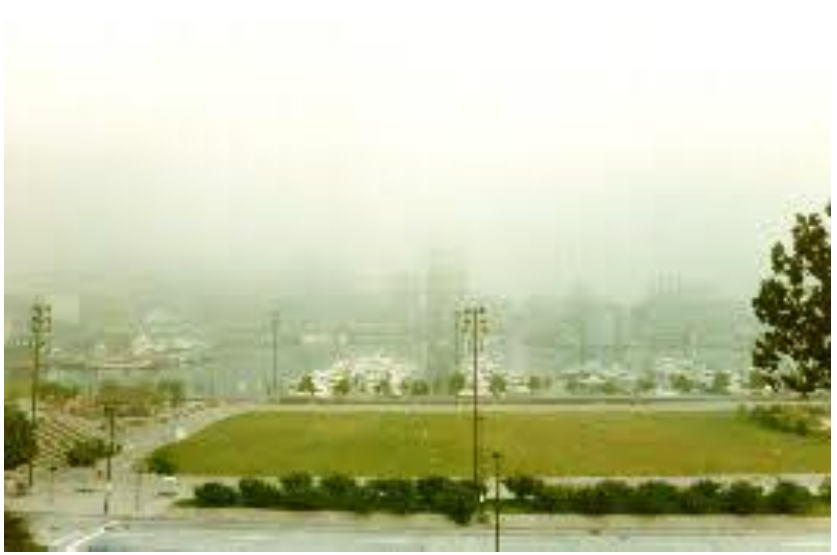
- Background
- Clean Air Progress
- Questions/Discussion

AIR QUALITY BASICS

Air Quality in the Past

- Up until 2010, Maryland continued to experience numerous bad air quality events with ground-level ozone and particulate matter levels in the unhealthy range
  - 2005 MIT PM Study - Maryland identified as the riskiest place to breathe the air east of the Mississippi
  - 2008 - EPA designates the Baltimore area as the worst ozone area outside of California and Texas

Federal Hill, Baltimore, Maryland 1995



Federal Hill, Baltimore, Maryland 1995

Air Quality in the Present

- In recent years, Maryland has achieved the federal fine particle standard, as well as the 2008 ozone standard, and is moving towards achieving the more stringent 2015 ozone standard. In 2020 and 2022, Maryland recorded the fewest number of bad ozone days ever recorded in a year

2022
CLEAN AIR HIGHLIGHTS

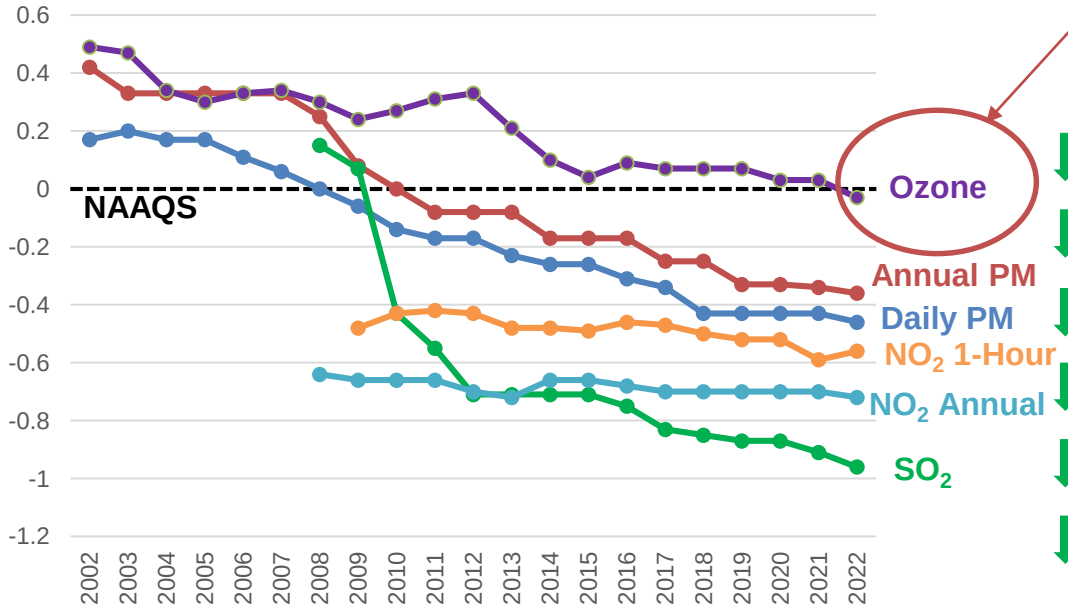
"Maryland has been measuring and monitoring air pollution levels for over 30 years. I can now announce the State is, for the first time ever, measuring levels of air pollution that meet all ambient air quality standards in every part of Maryland."

-Serena McIlwain, Secretary of the Maryland Department of the Environment

Clean Air Highlights

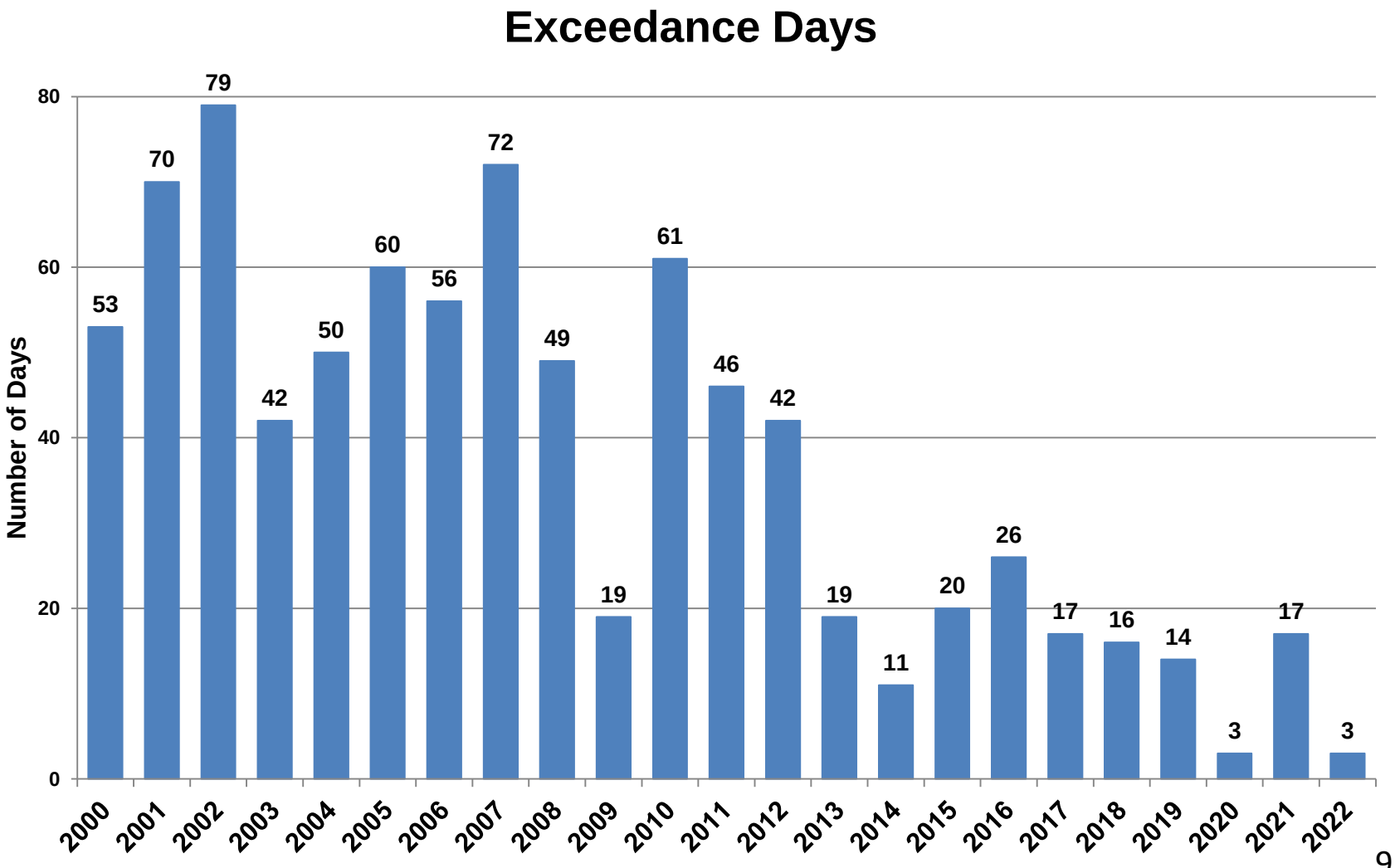
- For nearly 30 years, Maryland's air quality has dramatically improved
- Air quality policies and regulations have lowered levels of six common pollutants — particles, ozone, lead, carbon monoxide, nitrogen dioxide, and sulfur dioxide

In 2022, Maryland measured attainment of the federal standard for ground-level ozone for the first time in history. The state is now measuring levels of air pollution that meet all ambient air quality standards!



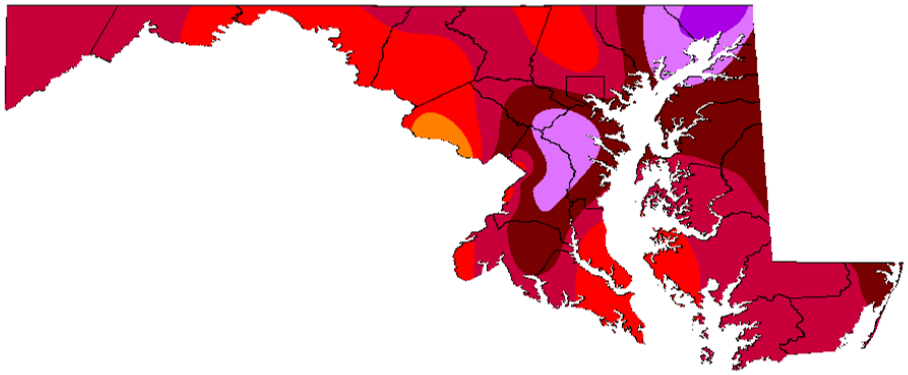
- Nitrogen Dioxide (NO_2) Annual 21% (2008 – 2022)
- Nitrogen Dioxide (NO_2) 1-Hour 16% (2009 – 2022)
- Ozone (O_3) 35% (2002 – 2022)
- Particles ($PM_{2.5}$) Annual 55% (2002 – 2022)
- Particles ($PM_{2.5}$) 24-Hour 54% (2002 – 2022)
- Sulfur Dioxide (SO_2) 1-Hour 96% (2008 – 2022)

Maryland Bad Ozone Days

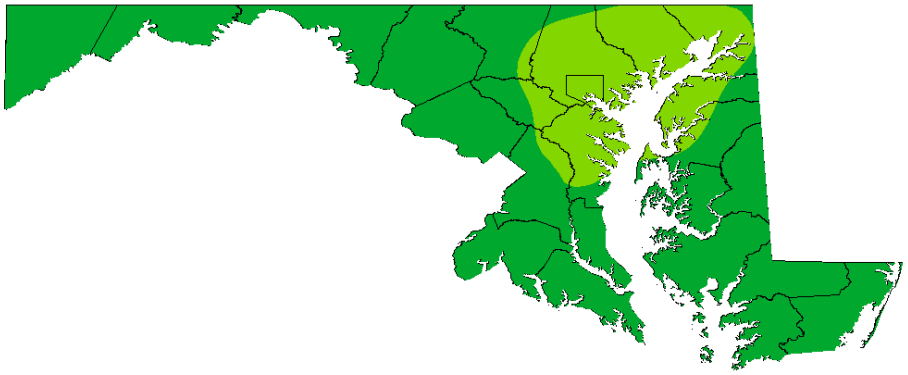


Ozone is Shrinking

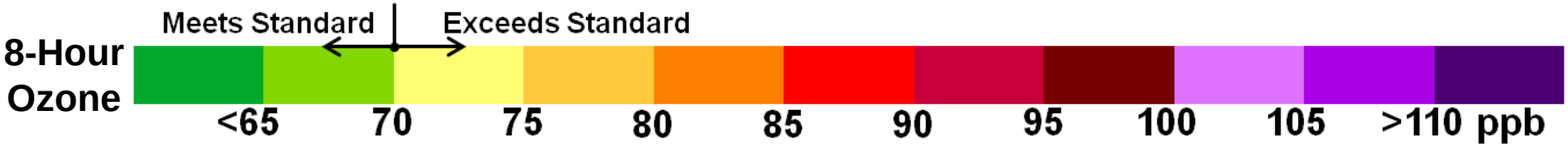
1998



2022



Lower Ozone Levels and Significant Spatial Risk Reduction

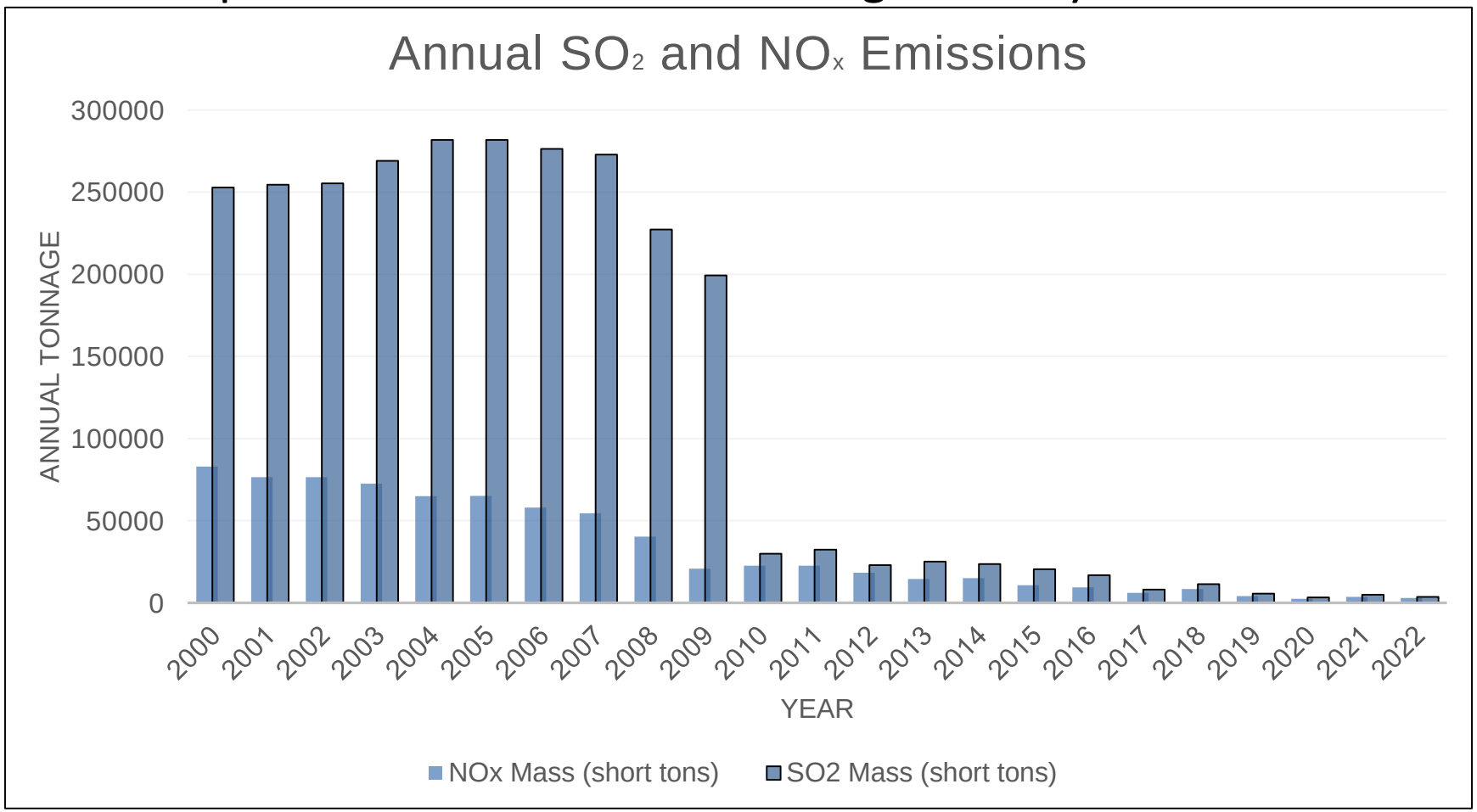


Fine Particle Air Pollution

Lower Levels Across the State

Annual SO_2 and NO_x Emissions

- The State has greatly reduced NO_x and SO_2 emissions by cleaning local coal-fired power plant emissions, and transported emissions have also significantly lessened



2022
CLEAN AIR PROJECTS

Current Clean Air Progress

- Adoption/building of climate and emission reducing regulations
  - Anti Tampering, Advanced Clean Cars II, Building Energy Performance Standards, Methane in MSW Landfills
- Environmental Justice Initiatives
  - EJ Tool Screening Tool, Community Partnerships
- Air Monitoring
  - New forecast region map, projects with Curtis Bay and Cheverly, Ammonia/PM projects in Eastern Shore
- Other projects done in 2022:
  - Port of Baltimore initiative, Regional Greenhouse Gas Initiative, Climate Solutions Now Act of 2022

Mobile Sources

- Anti Tampering
  - Strengthened prohibitions on tampering with a vehicle's emission control device
- Advanced Clean Cars II
  - By law, Maryland must include CARB's standards in its regulations
  - Maryland is currently in the process of adopting the Advanced Clean Cars II (ACC II) standards, which will increase the sales requirement for ZEVs, include emissions standards for criteria pollutants from internal combustion engines (ICE), and will cover Model Year (MY) 2027-2035 light-duty vehicles
  - By 2035, all new light-duty vehicles sold in the State of Maryland will be a ZEV or a Plug-In Electric Hybrid (PHEV)
- Port of Baltimore Modifications
  - Replacement of cargo-handling equipment to reduce emissions. A grant was awarded in 2022 by the EPA to help replace this equipment

Climate Change

- Building Energy Performance Standards
  - Required to adopt Building Energy Performance Standards (BEPS) by the Maryland Climate Solutions Now Act to achieve a 20% reduction in net greenhouse gas (GHG) emissions by January 1, 2030 and net-zero direct GHG emissions by January 1, 2040
  - Only applicable to covered buildings 35,000 square feet or larger
- Regional Greenhouse Gas Initiative
  - Group of twelve states working to reduce and cap carbon dioxide (CO_2) emissions coming specifically from power plants relying on fossil fuels for power. First ever cap-and-invest program to be initiated in the United States
  - MD raised a billion dollars in 2022 and is on track to meet the 60% reduction in GHG emissions by 2031 and net-zero emissions by 2045
  - In Maryland, more than half of the funds collected through RGGI auctions are invested in energy assistance for low-income households and energy efficiency in low-to-moderate income homes and communities. Other investments include grants for residential and commercial solar arrays and electric vehicles
- Reducing Greenhouse Gas Emissions: 2022 Progress Report
  - Listed the achievements and the new stringent goals Maryland is on track to meet (achieve a 60% reduction below the 2006 levels by 2031 and become net-zero by 2045)

Environmental Justice

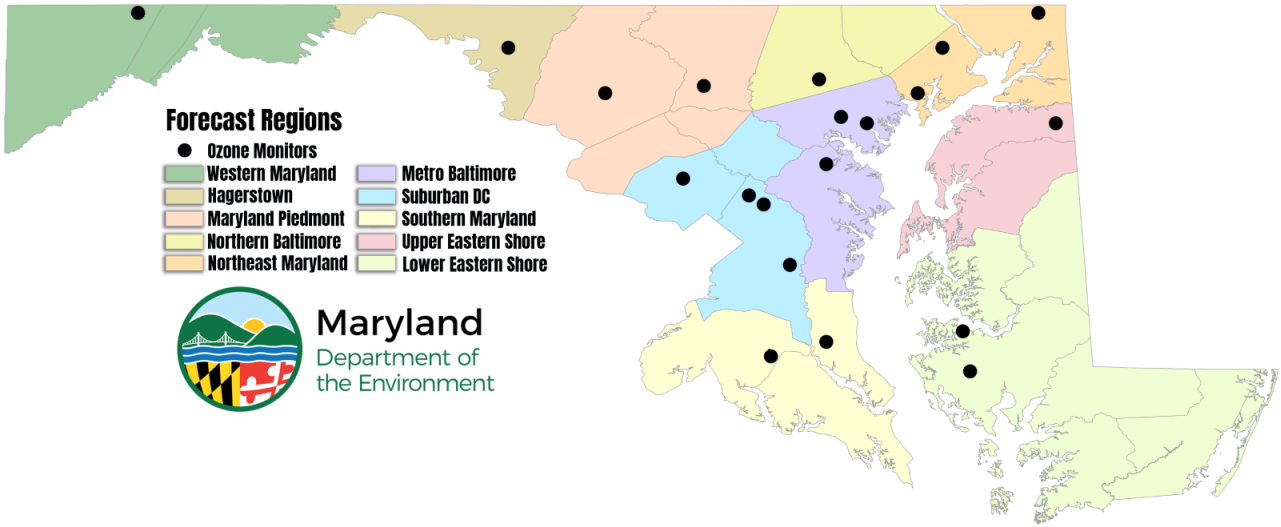
- MDE Environmental Justice Screening Tool
  - Allows users to locate on a GIS-based map issues regarding EJ within a specific location
  - The tool allows users to identify possible areas with EJ concerns
  - Currently, the tool composites an EJ score for underserved communities
  - Upcoming enhancements to the tool will also allow users to compile an EJ Score for overburdened communities
  - House Bill 1200 (2022 Legislative Session) requires a person applying for a public participation permit from the Department to include in the application an EJ Score for the census tract where the applicant is seeking the permit; requires the Department to review the EJ Score; and requires notices to include information related to those EJ Scores
  - Possible future uses of the tool include allowing MDE to identify overburdened areas that may benefit from increased enforcement and regulatory control

Environmental Justice

- Community Outreach and Involvement
  - Over the last few years, the Department has dedicated additional resources to increase engagement with communities facing environmental injustice
  - MDE has launched partnerships with several communities to protect the health of citizens and improve overall quality of life. These communities include, but are not limited to, Curtis Bay, Cheverly, Turners Station, North Point, and West Baltimore
  - MDE is working with university partners and communities on “hyper-local” air monitoring networks in Curtis Bay and Cheverly. These are a dense network of multipollutant sensors meant to collect data on the pollution burden in the community and its causes
  - MDE enhanced inspections within these communities to ensure sources are following state environmental requirements
  - MDE received a $500k ARP/IRA Community Air Monitoring Grant from EPA to monitor and mitigate cumulative air pollution concentrations in communities with environment justice concerns
  - MDE is partnering with UMD and three communities on this Grant and is currently meeting with the Steering Committee while awaiting the official award from EPA

Air Monitoring

- New Forecast Regions
  - Increased the number of forecast regions in Maryland to give more accurate forecasts from four to ten
  - The 10 forecast regions in the state have year-round fine particle and ground level ozone pollution forecasts from April through September
- Lower Eastern Shore Ambient Air Quality Monitoring Project
  - The purpose of this project is to collect data on ammonia and particulate matter near poultry houses on the Eastern Shore and compare that data to air quality in other parts of Maryland
  - All Eastern Shore monitoring sites continue to observe pollutant concentrations below EPA air quality standards or MDE screening levels



Future AQCAC Items

- Omnibus
  - This regulation should compliment the ACT regulation by providing NOx emission reductions from heavy-duty trucks
  - The Omnibus Regulation ultimately requires a 90% reduction in tailpipe NOx emissions for on-road heavy-duty engines from the current 0.20 gNOx/bhp-hr to 0.02 gNOx/bhp-hr
- Building Energy Performance Standards
  - Tentative proposal to AQCAC in September
- MSW Landfills
  - Proposed regulations became final effective on June 12, 2023
  - Amendments to the MSW Landfills regulations based upon stakeholder input


QUESTIONS?