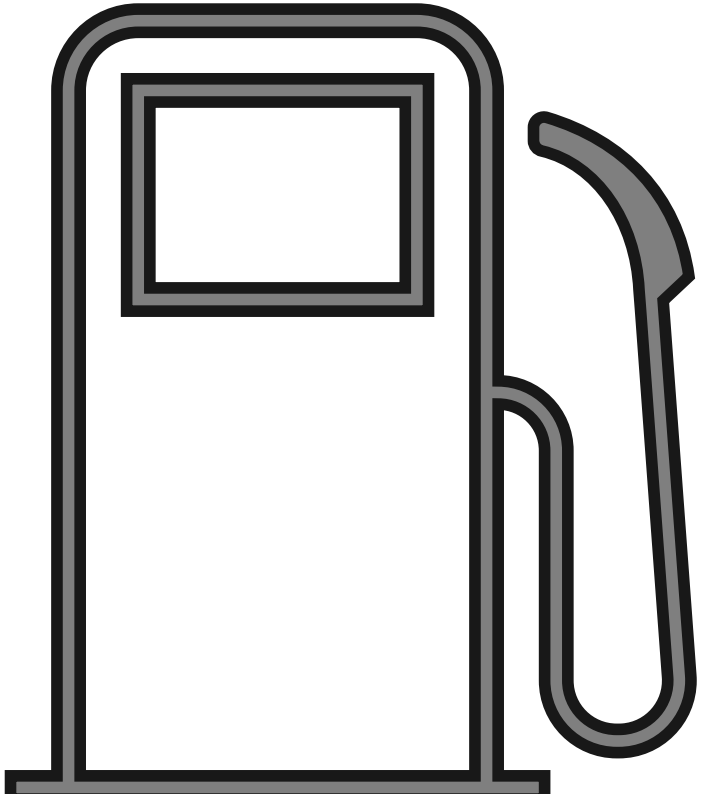
Stakeholder Presentation: ECO Nozzles and Low Permeation Hoses

October 16, 2025
Maryland Department of Environment

Randy Mosier, Deputy Program Manager, Air Quality Planning Program
Kelsey Sisko, Senior Natural Resources Planner, Air Quality Regulations Division

Overview



- Background
- Draft Regulations
- Impacts
- Equipment Overview

Federal Air Quality Standards

- In 2015, EPA promulgated a more stringent 8-hour ozone National Ambient Air Quality Standard (NAAQS) of 70 ppb

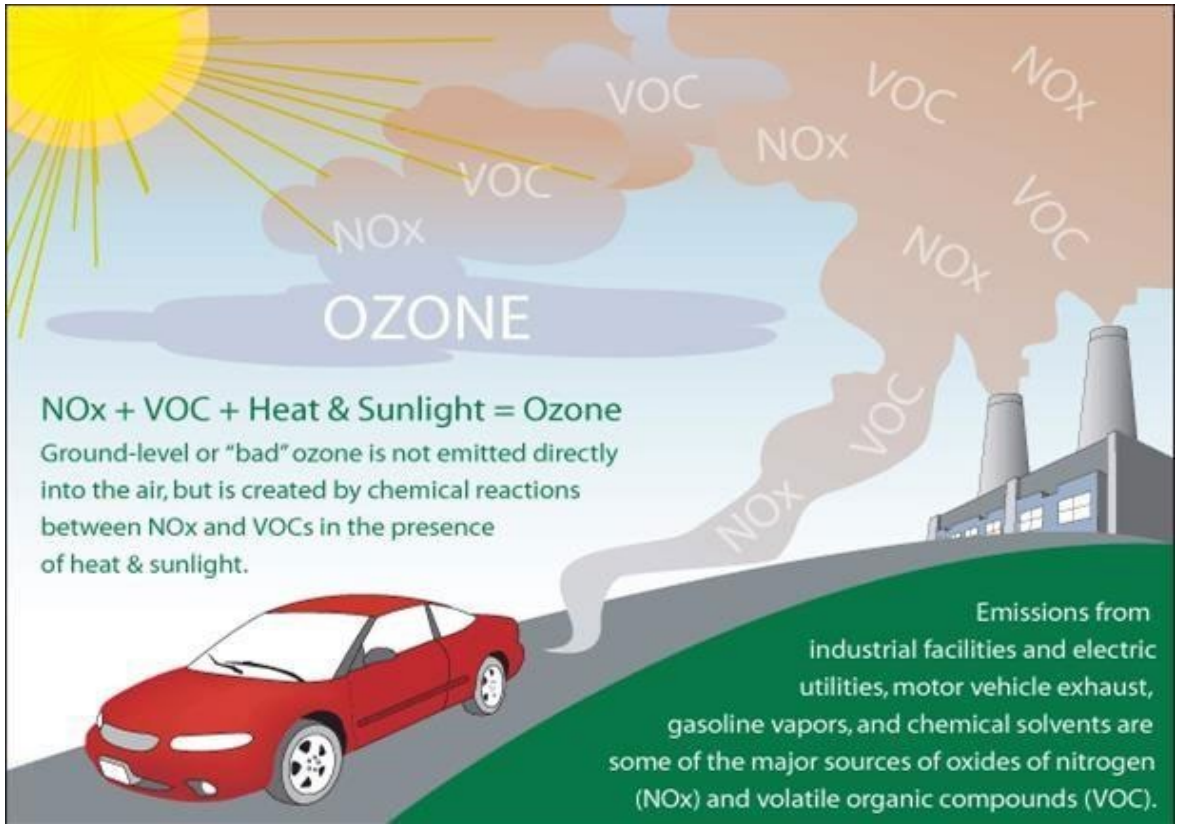
- The Baltimore region, which comprises Baltimore City and the surrounding Counties of Baltimore, Carroll, Anne Arundel, Howard, and Harford, as well as Cecil County have been designated nonattainment

- MDE is required to develop and implement air quality plans called State Implementation Plans (SIPs) that show how the State will reduce pollution to meet the federal standards

Ground-level Ozone & EPA

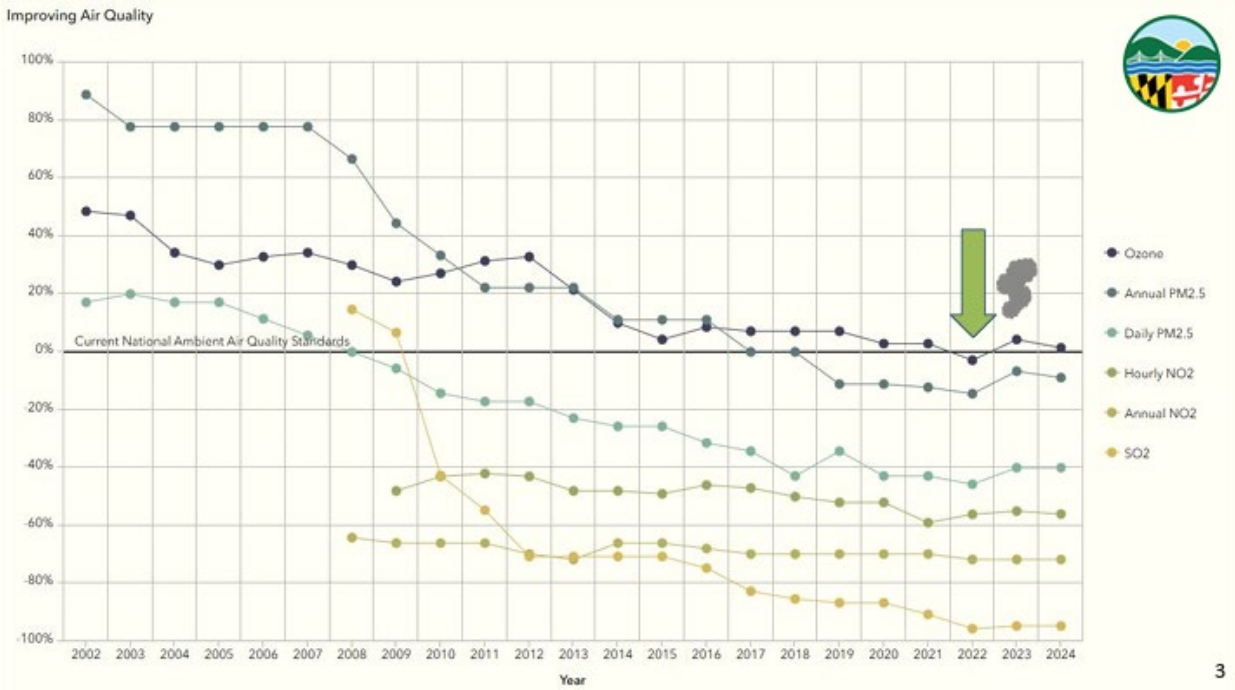
- While air quality continues to improve in Maryland, the State struggles to meet the 8-hour ozone standard
  - In 2018, EPA designated the Baltimore metropolitan area as a “marginal” nonattainment area for the standard. In 2022, the nonattainment area failed to attain the standard and was consequently bumped up to “moderate”
  - In 2023, Maryland submitted data to the EPA to show that Canadian wildfire smoke influenced ozone values and therefore certain data should be excluded
  - Unfortunately, EPA had not acted upon the report and the nonattainment area faced a pending bump-up to “serious” nonattainment. As a result, Maryland requested that the Baltimore and Cecil County Nonattainment Areas be preemptively bumped up to “serious” nonattainment for the 2015 ozone NAAQS
  - For Maryland, the Serious Ozone SIP is due January 1, 2026. These areas must implement enhanced control measures and have a shorter timeframe to achieve ozone attainment

Ground-level Ozone

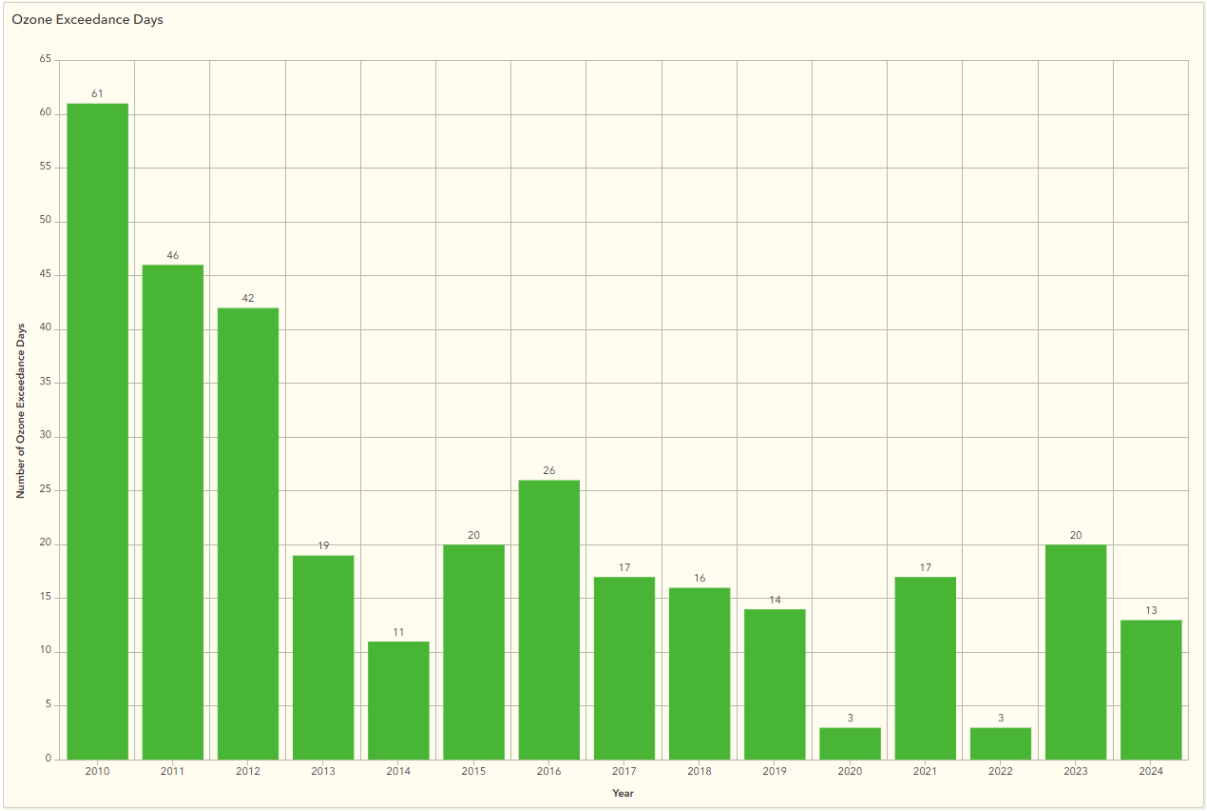


Improving Air Quality

- Despite improving air quality trends, attaining the federal ground level ozone standard remains a challenge



Ozone Exceedance Days



Environmental Justice

- The Maryland Department of the Environment implements environmental laws and programs to protect and restore the environment for the health and wellbeing of all Marylanders

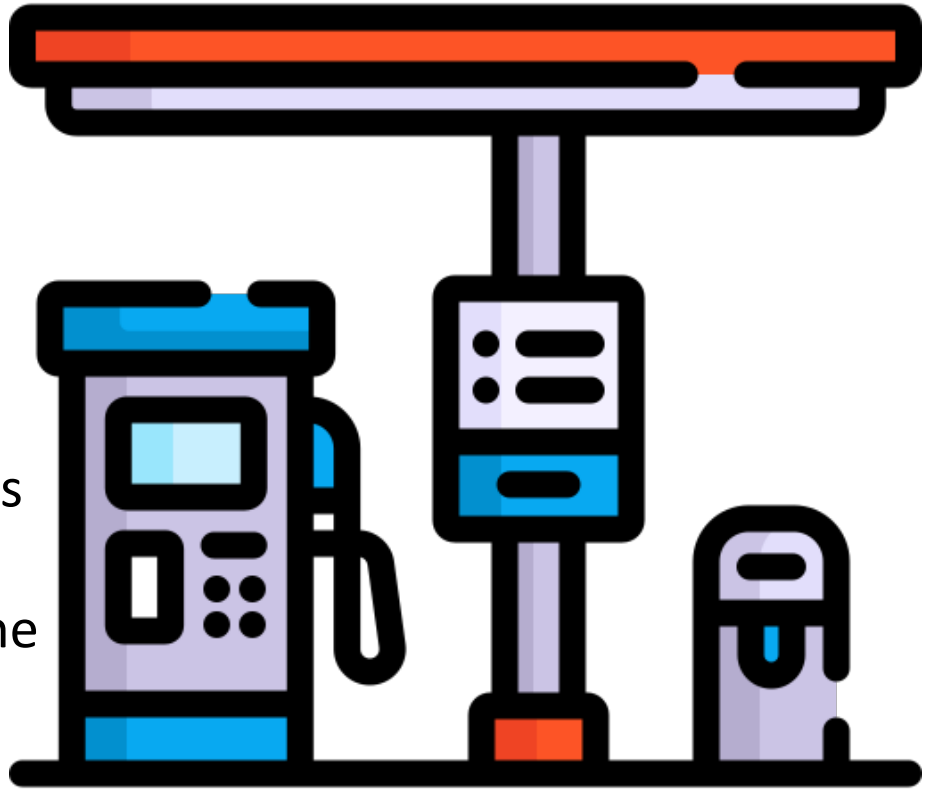
- National studies show that communities with environmental justice (EJ) concerns bear a disproportionate share of the negative environmental consequences resulting from industrial activities, land-use planning and zoning, municipal and commercial operations or the execution of federal, state, or local programs and policies

- MDE is committed to the goal of achieving environmental equity for all Maryland residents

Draft Proposed Regulation

- Gasoline dispensing facilities (GDFs) statewide will need to install enhanced conventional (ECO) nozzles and low permeation hoses

- Technologies are designed to reduce toxic and VOC emissions that have direct public health impacts and contribute to ozone formation



Draft Proposed Regulation Requirements

Starting January 1, 2028, existing GDFs must begin installing low permeation hoses and ECO nozzles when equipment needs to be replaced and must have replaced all nozzles* and hoses by January 1, 2030.

Beginning January 1, 2028, New GDFs must install ECO nozzles and low permeation hoses prior to operation.

*An owner or operator of a GDF may choose to keep one standard conventional nozzle on one gasoline fuel dispenser.

A Win-Win for the Environment and Industry

- This regulatory proposal is not only good for the environment, but also for the owners of GDFs due to less product lost
- These regulations would reduce ozone forming VOC emissions and decrease the amount of gasoline leaked into our groundwater and air, creating an overall health and environmental benefit for Marylanders
- A GDF could save between $248-$999 by installing ECO nozzles and low permeation hoses solely on the lifespan of the equipment
- The use of ECO nozzles and low permeation hoses at all GDFs in the state is projected to result in a savings of approximately 332,430 gallons of gasoline per year (or ~910 gallons of fuel saved per day)

Health and Environmental Impacts

- The pollutants emitted from GDFs during refueling are harmful to the public's health, as well as the ecosystems encompassing Maryland
- Gasoline vapors emitted into the air are not only impacting our air quality but are also indirectly contributing to climate change by releasing VOCs which contribute to the formation of tropospheric ozone
- Many of the GDFs within the state are located in overburdened communities already facing pollution issues from vehicle traffic and nearby industries

Gasoline Spillage

- A typical gas station dispensing 1 million gallons a year could spill between 70 to 100 gallons due to excess drips from conventional nozzles and when customers top off the tank
- For larger volume gasoline stations, this can result in around 2,000 gallons spilled every year
- Some of the gasoline evaporates leading to VOC emissions and ozone production
- Spilled gasoline can also penetrate the concrete near the gas pumps and contaminate the soil and groundwater beneath it

Enhanced Conventional (ECO) Nozzles

- An ECO Nozzle is a conventional nozzle certified by the California Air Resources Board's CP-207 that is equipped with features to control excess liquid releases such as spillage, spitting, post fueling drips, and liquid retention
- An ECO Nozzle releases less than 3 post-refueling drips and spill (including drips from spout) less than 0.05 pounds/1,000 gallons of gasoline
- During field tests conducted to prepare for both Underwriters Laboratories (UL) and CARB certification, an ECO Nozzle was found to reduce spillage at fuel station forecourts by 90%

- ECO nozzles result in an emission reduction of 92% as compared to conventional nozzles

ECO Nozzles

https://www.youtube.com/watch?v=J7rFBaMar5g&t=36s

ECO Nozzles & Compatibility Issues

- ECO Nozzle manufacturers have indicated that the filler necks on 2015-2019 Dodge Ram Trucks did not meet the Society of American Engineers (SAE) requirements and these vehicles may have issues with ECO nozzles during the refueling of the vehicle
- The proposed regulation includes an exemption allowing for one gasoline fuel dispenser to have a conventional nozzle

Low Permeation Hoses

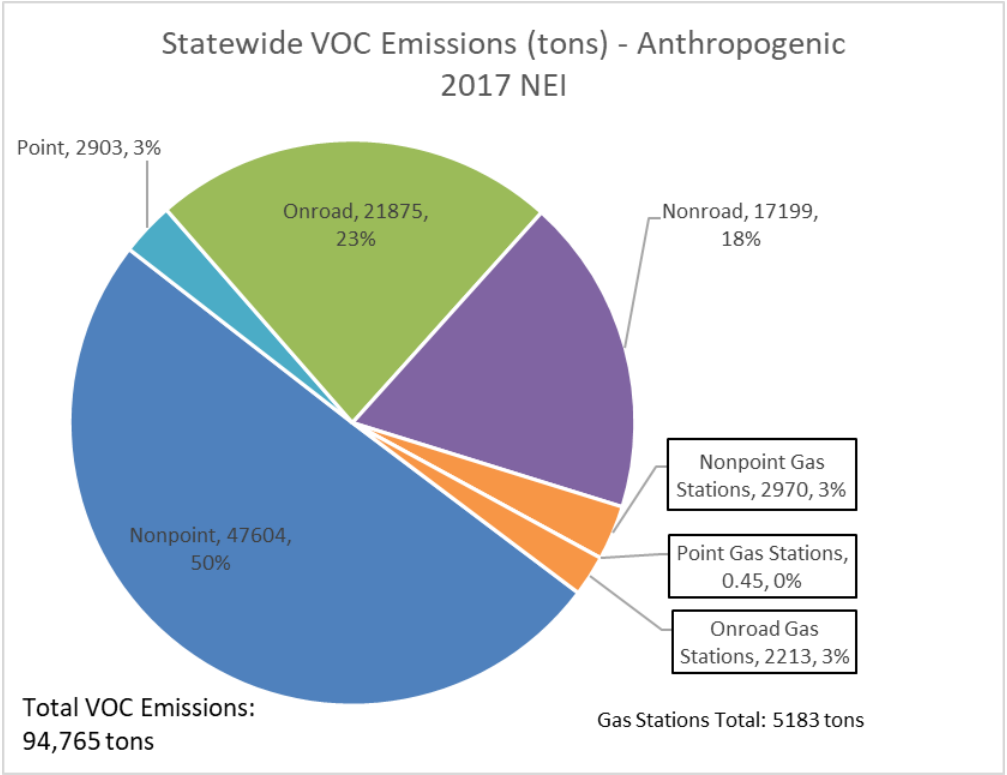
- A low permeation hose is one that will limit the release of gasoline vapor emissions through thermoplastic or rubber materials that are used for hose construction
- Low permeation hoses result in an emission reduction of 96% as compared to conventional hoses

Estimated Emission Reductions

The use of both ECO nozzles and low permeation hoses at GDFs within Maryland will help reduce VOCs and toxic emissions

The use of low permeation hoses would reduce, on average, 205 tpy of VOC (or 0.56 tpd of VOC)

The use of ECO nozzles statewide would reduce, on average, 891 tpy of VOC (or 2.44 tpd of VOC)



*4,087 tons of VOC at gas stations with the installation of ECO nozzles and low permeation hoses

Estimated Nozzle and Hose Costs

Average Pricing, Lifespan, and Savings of an ECO Nozzles/Low Permeation Hoses vs. Conventional Nozzles and Hoses

	Price*	Lifespan	Savings
ECO Nozzle	**$225**	4 years	Average $145-515
Conventional Nozzle	**$185**	1-3.5 years	-
Low Permeation Hose (8’)	**$185**	6 years	Average $103-484
Conventional Hose (8’)	**$96-223 (depends on width/parts)**	2.5 years	-

*Please note these are averages and are subject to change.

Recordkeeping and Reporting

- All GDFs will be required to electronically submit information on the installation of ECO nozzles and low permeation hoses to mdeair.gas@maryland.gov

- If an owner or operator would like to maintain one gasoline fuel dispenser with a standard conventional nozzle and a low permeation hose, they will be required to inform the Department

- All records must be maintained on-site for five years and made available to the Department upon request

Estimated Timeline

- Fall 2025: Stakeholder meetings and engagement
- March 2026: Take the proposed action to the Air Quality Control Advisory Council
- Mid/End Year 2026: Regulation final and effective
- **January 1, 2028**: All existing GDFs must begin to install ECO nozzles and low permeation hoses as replacements are needed and must have all equipment replaced no later than **January 1, 2030**
- **January 1, 2028**: All new GDFs must install ECO nozzles and low permeation hoses prior to operation

Thank you!

Questions?

Email

Kelsey Sisko: kelsey.sisko@maryland.gov

General: airregulations.mde@maryland.gov

Website

https://mde.maryland.gov/programs/Regulations/air/Pages/index.aspx