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State Implementation Plan Revision: Redesignation Request and Maintenance Plan for the 2015 Ozone National Ambient Air Quality Standards for the Serious Baltimore Nonattainment Area

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1. Introduction

Maryland Department of the Environment (MDE) is submitting a redesignation request and maintenance plan for the Baltimore Nonattainment Area for the 2015 Ozone National Ambient Air Quality Standard (NAAQS) to the United States Environmental Protection Agency (EPA). Section 2 contains the redesignation request, and Section 3 contains the maintenance plan. Altogether, this document demonstrates that air quality in the Baltimore Nonattainment Area will remain compliant with the 2015 Ozone NAAQS until 2038.

1.1 National Ambient Air Quality Standard (NAAQS) for Ozone

When EPA establishes a NAAQS, this standard applies to the concentration of a pollutant in ambient outdoor air. If the air quality in a geographic area is at or below the national standard, EPA designates the area as attainment/unclassifiable. EPA designates areas that do not meet the national standard or contribute to nearby areas that violate the air quality standard as nonattainment.

Ground-level ozone is an extremely reactive gas comprised of three atoms of oxygen. Ozone, the primary constituent of smog, continues to be a pollution problem throughout many areas of the United States. Unlike other pollutants, ground-level ozone is not directly emitted into the atmosphere from a specific source. Instead, ground-level ozone forms when nitrogen oxides (NO_x) chemically react with volatile organic compounds (VOCs) through a series of chemical reactions in warm, sunny conditions.

Because ozone formation is greatest when the sunlight is most intense, the peak ozone levels typically occur during hot, dry, and stagnant summertime conditions. Peak ozone concentrations exhibit a clear seasonal cycle, with concentrations rising at the onset of warmer weather in spring and declining again as autumn approaches. Changing weather patterns can significantly contribute to yearly differences in ozone concentrations. Years with summertime weather conditions that are hot and dry will generally result in many more days of poor air quality than cool and wet summers.

The formation of ozone is not an instantaneous process, nor is it limited in geographical scope. While many urban areas tend to have high levels of ozone, even rural areas may experience increased ozone levels because wind carries ozone and its precursors hundreds of miles from their original sources. Numerous studies and modeling data show compelling evidence that weather patterns often result in the transport of ozone and the pollutants responsible for ozone formation well beyond the locality that produced the emissions. In many cases, unhealthy days of air pollution experienced in the Baltimore Nonattainment Area are exacerbated by pollutants transported into the area from other states.

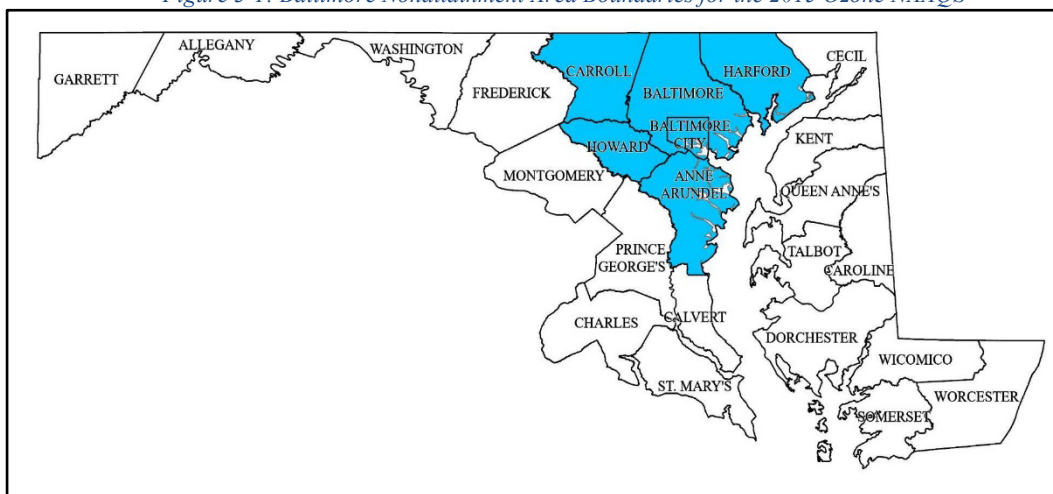
Ground-level ozone can have significant impacts on human health, particularly people with existing respiratory disease, the elderly, and children. Ozone also impacts the environment and ecosystem health. Scientific evidence suggests that air pollution weakens the immune systems of many types of vegetation and can cause significant crop damage. In addition, rain and snow wash air pollution deposited on vegetation and architectural surfaces into the streams and rivers of the region and finally into the Chesapeake Bay.

1.2 2015 Ozone National Ambient Air Quality Standard (NAAQS) in the Baltimore Nonattainment Area

The EPA promulgated a primary NAAQS of 70 parts per billion (ppb) for ozone in 2015.¹ The standard is measured over 8 hours, with the average fourth highest concentration over a 3-year period determining if an area is monitoring attainment. The ozone NAAQS, as a primary standard, is defined in CAA Section 109(b)(1) as a standard “the attainment and maintenance of which in the judgment of the [EPA] Administrator, based on [the air quality] criteria and allowing an adequate margin of safety, are requisite to protect the public health.”² The NAAQS aims to protect the health of populations who are particularly sensitive to air pollution, such as children, the elderly, and those with conditions, such as asthma and emphysema.

In 2018, the EPA designated the Baltimore metropolitan area as a “marginal” nonattainment area for the 2015 Ozone NAAQS.³ The nonattainment area is composed of Baltimore City, and Anne Arundel, Baltimore, Carroll, Harford, and Howard Counties. The entire nonattainment area is contained in Maryland.

Figure 3-1: Baltimore Nonattainment Area Boundaries for the 2015 Ozone NAAQS



In 2022, EPA finalized an action that reclassified the Baltimore Nonattainment Area to “moderate.”⁴ In June and July of 2023, there were significant wildfires that impacted large portions of the United States, including Maryland. As a result, in February 2024, MDE submitted Exceptional Event demonstrations requesting the exclusion of 33 monitor-days of ozone data in 2023. MDE’s Exceptional Event Request demonstrated that emissions from wildfires based in Canada and New Jersey impacted ozone concentrations at 16 monitors in Maryland. Because these events have regulatory significance, MDE requested through the Exceptional Event Rule that these datapoints be excluded from regulatory decision-making.⁵ In July 2024, MDE requested

¹ *National Ambient Air Quality Standards for Ozone*, Final Rule, 80 FR 65292, October 26, 2015.

² 42 U.S.C. 7409

³ *Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards*, Final Rule, 83 FR 25776, June 4, 2018.

⁴ *Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Areas Classified as Marginal for the 2015 Ozone National Ambient Air Quality Standards*, Final Rule, 87 FR 60897, October 7, 2022.

⁵ The Exceptional Events Rule (codified at 40 CFR 50.1, 50.14 and 51.930) governs the exclusion of event-affected air quality data. The CAA recognizes that it may not be appropriate to use monitoring data influenced by “exceptional” events collected by the ambient air quality monitoring network when making certain regulatory determinations. When “exceptional” events influence monitoring data and cause exceedances or violations of the

a voluntary reclassification to “serious” nonattainment when it became apparent that issues surrounding attainment and the influence of Exceptional Events would not be resolved by the moderate attainment date.⁶ In August 2024, EPA finalized an action that reclassified the Baltimore Nonattainment Area to “serious.”⁷

On November 12, 2025, EPA issued a partial concurrence and deferral for MDE’s 2023 Exceptional Events requests.⁸ EPA concurred on 15 of the 33 requested monitor-days, and deferred on the remaining days, finding at the date of publication that they do not have regulatory significance. The exclusion of the regulatorily significant monitor-days from 2023 corrected the Baltimore Nonattainment Area monitored design values sufficient to show attainment with the 2015 ozone NAAQS based on 2022-2024. EPA proposed to grant a Clean Data Determination (CDD) for the Baltimore Nonattainment Area on January 23, 2026.⁹ Under EPA’s Clean Data Policy, certain SIP elements are suspended for a nonattainment area when EPA issues a determination that air quality data demonstrates that the NAAQS is being attained. EPA deems these suspended SIP elements as no longer applicable as long as air quality continues to meet the NAAQS.

1.3 Health Effects from Elevated Concentrations of Ozone

Ozone is a highly reactive gas that reacts strongly with living tissues, as well as many synthetic substances. As an oxidizing gas, it can cause oxidative damage to the cells and the lining fluids of the airways, which may trigger immune-inflammatory responses.¹⁰ Excess ozone in the air can be harmful to people who work or exercise outdoors regularly, people with respiratory difficulties, and especially children. The most common symptom of ozone exposure is pain when taking a deep breath. Exposure to ozone can result in both long-term and short-term effects in healthy individuals, as well as those who are already sensitive to air pollution, such as children, asthmatics, and elderly individuals. Research suggests that repeated exposure to ozone may cause damage to lung tissue, thereby reducing lung function. According to EPA, “Long-term exposure to ozone is linked to aggravation of asthma and is likely to be one of many causes of asthma development. Studies in locations with elevated concentrations also report associations of ozone with deaths from respiratory causes.”¹¹ Short-term effects of ozone exposure among healthy populations include impaired lung function, throat irritation, pain or burning in the chest when taking a deep breath, chest tightness, wheezing, shortness of breath, and reduced ability to perform physical exercise. Additionally, other potential short-term effects include increased hospital admissions and emergency room visits for respiratory reasons and increased school absences.¹²

NAAQS, air agencies can request the exclusion of event- influenced data, and the EPA can agree to exclude these data, from the data set used for certain regulatory decisions.

⁶ EPA-R03-OAR-2024-0352-0002

⁷ *Designations of Areas for Air Quality Planning Purposes; Maryland; Baltimore, MD 2015 8-Hour Ozone Nonattainment Area, Reclassification to Serious*, Final Rule, 89 FR 62663, August 1, 2024.

⁸ EPA-R03-OAR-2025-2532-0014

⁹ *Air Plan Approval; Maryland; Clean Data Determination for the Baltimore, MD Nonattainment Area for the 2015 Ozone National Ambient Air Quality Standards*, Proposed Rule, 91 FR 2887, January 23, 2026.

¹⁰ Kelly FJ. Oxidative stress: its role in air pollution and adverse health effects. *Occupational and Environmental Medicine* 2003; 60:612-616. <http://dx.doi.org/10.1136/oem.60.8.612>

¹¹ “Health Effects of Ozone Pollution.” Ground-level Ozone Pollution, Environmental Protection Agency, <https://www.epa.gov/ground-level-ozone-pollution/health-effects-ozone-pollution>

¹² “Health Effects of Ozone in the General Population.” Ozone Pollution and Your Patients’ Health, Environmental Protection Agency, <https://www.epa.gov/ozone-pollution-and-your-patients-health/health-effects-ozone-generalpopulation#short%20term>

1.4 Redesignation Request and Maintenance Plan Requirements

Nonattainment areas can be redesignated to attainment providing that States meet specific conditions. EPA provided guidance on the redesignation request and maintenance plan process in the memorandum entitled *Procedures for Processing Requests to Redesignate Areas to Attainment*.¹³ The memorandum provides guidance regarding the processing of redesignation requests for ozone, carbon monoxide (CO), particulate matter, sulfur dioxide, nitrogen dioxide (NO₂), and lead nonattainment areas. MDE followed the redesignation guidance while preparing this maintenance plan and redesignation request.

The CAA lists five obligations that must be met during the redesignation process. Section 107(d)(3)(E) states:

The Administrator may not promulgate a redesignation of a nonattainment area (or portion thereof) to attainment unless –

- (i) the Administrator determines that the area has attained the national ambient air quality standard;
- (ii) the Administrator has fully approved the applicable implementation plan for the area under section 110(k);
- (iii) the Administrator determines that the improvement in air quality is due to permanent and enforceable reductions in emissions resulting from implementation of the applicable implementation plan and applicable Federal air pollutant control regulations and other permanent and enforceable reductions;
- (iv) the Administrator has fully approved a maintenance plan for the area as meeting the requirements of section 175A; and
- (v) the State containing such area has met all requirements applicable to the area under section 110 and part D.

2. Redesignation Request

2.1 Attainment of the Standard

A State requesting redesignation must show that the area is attaining the applicable NAAQS. For the 2015 Ozone NAAQS, the design value (DV) must be less than or equal to 0.070 ppm. EPA determined that the Baltimore Nonattainment Area had attained the 2015 Ozone NAAQS based on 2022-2024 ambient air quality monitoring data. MDE has evaluated the data from the ozone monitoring network within the nonattainment area to confirm that the ambient air quality concentrations show attainment of the NAAQS based on the most recent available air monitoring data. The ozone DVs for the 2023 to 2025 time period are shown in Table 4-1 below. The monitored design values in the nonattainment area are all under the 70 ppb standard as shown in the table, demonstrating continued attainment of the 2015 Ozone NAAQS.

¹³ *Procedures for Processing Requests to Redesignate Areas to Attainment*. John Calcagni. September 4, 1992.

Table 2-1: Ozone Monitoring Data and NAAQS Attainment for the Baltimore Nonattainment Area

Monitor Name	County	Air Quality System (AQS) Site ID	2021-2023 DV	2022-2024 DV	2023-2025 DV	Attainment of the 8 Hour 0.070 ppm Standard (Yes/No)
Aldino	Harford	24-025-9001	0.071	0.069	0.068	Yes
Edgewood	Harford	24-025-1001	0.071	0.070	0.070	Yes
Essex	Baltimore	24-005-3001	0.073	0.069	0.068	Yes
Lake Montebello *	Baltimore City	24-510-5253	N/A	0.069	0.069	Yes
Padonia	Baltimore	24-005-1007	0.068	0.069	0.070	Yes
South Carroll	Carroll	24-013-0001	0.067	0.066	0.066	Yes

*Lake Montebello began operations in 2022, so the first available DV is 2024.

2.2 Fully Approved Implementation Plan Under Section 110(k)

Numerous requirements have been fulfilled by Maryland's designation status for previous iterations of the NAAQS, as well as Maryland's inclusion in the Ozone Transport Region (OTR). Maryland has implemented all required provisions of the CAA related to nonattainment classifications, which has led to all monitors attaining the NAAQS. More details of SIP revisions are provided in Section 2.5.

2.3 Permanent and Enforceable Improvements to Air Quality

2.3.1 Emissions Reductions between 2017 and 2023

For the 2015 Ozone NAAQS, MDE developed and submitted a base-year inventory of 2017. Between 2017 and 2023, the attainment year inventory, significant emissions reductions

have occurred thanks to a variety of federal and state control measures. Overall, there has been a 31.47% reduction in NO_x emissions and a 11.84% reduction in VOC emissions. A comparison of the inventories is presented in Table 2-2, while Section 2.3.2 contains a list of control measures that have benefited air quality in the Baltimore Nonattainment Area.

Table 2-2: 2017 and 2023 Emissions Inventory for the Baltimore Nonattainment Area

Sector	2017		2023	
	NO _x	VOC	NO _x	VOC
Point	47.53	5.73	29.06	4.41
Quasi-Point	7.27	1.31	9.83	1.64
Area	10.93	72.23	12.72	71.17
Nonroad	13.16	21.31	9.84	18.11
Onroad	53.72	25.86	24.42	16.38
M-A-R	7.44	0.93	10.11	0.58
Total	140.06	127.38	95.98	112.29

2.3.2 Control Measures for Maintenance of Good Air Quality

Emission projections for 2032 and 2038 include a variety of control strategies that will continue to reduce emissions of NO_x and VOCs in future years. The sections below describe notable control programs in each emissions sector. Many of these programs are federal programs that are enforced on a regional or national level while other programs are delegated to states for compliance and enforcement purposes. A full write up of control measures, including supplemental and voluntary measures, can be found in Chapter 6 of MDE's Moderate Attainment SIP for the Baltimore Nonattainment Area.¹⁴

2.3.2.1 Control Measures Included in the Designation Year

The following is a non-comprehensive list of control measures in place at the time of designation. Many measures were instituted as part of SIP submittals for previous iterations of the Ozone NAAQS or due to Maryland's inclusion in the Ozone Transport Region (OTR). These regulations and control measures continue to reduce emissions in the region.

Point Measures

- Healthy Air Act¹⁵
- Control of Nitrogen Oxide Emissions From Coal-Fired Electric Generating Units¹⁶

¹⁴ Maryland Department of the Environment (MDE). *Baltimore Moderate Nonattainment Area 0.070 ppm 8-Hour Ozone State Implementation Plan Attainment Demonstration*, March 7, 2023. <https://mde.maryland.gov/programs/air/AirQualityPlanning/Documents/Baltimore%20Ozone%20NAA%2070ppm/Baltimore%20Moderate%20Nonattainment%20Area%20%200.070%20ppm%208-Hour%20Ozone%20State%20Implementation%20Plan%20Attainment%20Demonstration.pdf>

¹⁵ Annotated Code of Maryland Environment Title 2 Ambient Air Quality Control Subtitle 10 Health Air Act Sections 2-1001 - 2-1005. COMAR 26.11.27.

¹⁶ U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Nitrogen Oxide Emissions From Coal-Fired Electric Generating Units. <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-nitrogen-oxide-emissions-coal-fired-electric>. COMAR 26.11.38.

- Control of Portland Cement Manufacturing Plants¹⁷
- Control of VOC Emissions from Expandable Polystyrene Operations¹⁸
- Control of VOC Emissions from Yeast Manufacturing¹⁹
- Control of VOC Emissions from Commercial Bakery Ovens²⁰
- Federal Air Toxics
- State Air Toxics
- Enhanced Rule Compliance
- RACT
- NOx Phase II/Phase III Ozone Transport Commission (OTC)/NOx Budget Rule (Phase II) and NOx SIP Call (Phase III)

Nonpoint/Area Measures

- Municipal Landfills
- Burning Ban
- Surface Cleaning and Degreasing
- Architectural and Industrial Maintenance Coatings
- Commercial and Consumer Products
- Automobile Refinishing
- Motor Vehicle and Mobile Equipment Coating Operations
- Lithographic and Letterpress Printing²¹
- Screen Printing and Digital Imaging²²
- Flexographic and Rotogravure Printing²³
- Industrial Adhesives and Sealants

Onroad Mobile Measures

- Vehicle Inspection and Maintenance²⁴
- Tier I Vehicle Emission Standards for New Federal Evaporative Test Procedures

¹⁷ U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Portland Cement Manufacturing Plants <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-portland-cement-manufacturing-plants>. COMAR 26.11.30

¹⁸ U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Volatile Organic Compounds (VOC) Emissions from Expandable Polystyrene Operations. <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-volatile-organic-compounds-voc-emissions-2>. COMAR 26.11.19.19

¹⁹ U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Volatile Organic Compounds (VOC) Emissions from Yeast Manufacturing. <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-volatile-organic-compounds-voc-emissions-1>. COMAR 26.11.19.17

²⁰ U.S. Environmental Protection Agency (EPA). Maryland SIP, COMAR 26.11.19.21 - Control of Volatile Organic Compounds (VOC) Emissions from Commercial Bakery Ovens <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-comar-26111921-control-volatile-organic-compounds-voc>. COMAR 26.11.19.21

²¹ U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Volatile Organic Compounds (VOC) Emissions from Sheet- Fed and Web Lithographic Printing <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-volatile-organic-compounds-voc-emissions-3>. COMAR 26.11.19.11

²² U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Volatile Organic Compounds (VOC) Emissions from Screen Printing and Digital Imaging <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-volatile-organic-compounds-voc-emissions>. COMAR 26.11.19.18

²³ U.S. Environmental Protection Agency (EPA). Maryland SIP, Volatile Organic Compounds from Specific Processes - Flexographic and Rotogravure Printing <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-volatile-organic-compounds-specific-processes-0>. COMAR 26.11.19.10

²⁴ U.S. Environmental Protection Agency (EPA). Maryland SIP, Vehicle Emissions Inspection Program <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-vehicle-emissions-inspection-program> COMAR 11.14.08

- Reformulated Gasoline
- Tier II Vehicle Emission Standards
- National Low Emission Vehicle Program
- Federal Heavy-Duty Diesel Engine Rule
- New Vehicle On-Board Vapor Recovery Systems

Nonroad Mobile Measures

- Nonroad Small Gasoline Engines
- Nonroad Diesel Engines - Tier I and Tier II
- Marine Engine Standards
- Emission Standards for Large Spark Ignition Engines
- Reformulated Gasoline
- Railroad Engine Standards
- Emission Control Area

2.3.2.2 Control Measures Implemented After the Designation Year Leading to Attainment

The following control measures have been implemented or have effective dates after the designation year. Emissions reductions from these measures (in conjunction with the existing measures) are sufficient controls leading to attainment of the NAAQS.

Control of Nitrogen Oxide Emissions from Coal-Fired Electric Generating Units

In 2015, MDE implemented *Control of Nitrogen Oxide Emissions From Coal-Fired Electric Generating Units*, which regulated NO_x emissions at coal-fired electric generating units (EGU) by enforcing a 24-hour block average emission rate.²⁵ Phase II of the regulation (COMAR 26.11.38.04), required, beginning no later than June 1, 2020, that all coal-fired EGUs with less than top of the line pollution controls either (1) install and operate the most advanced NO_x pollution controls, (2) permanently retire, (3) permanently switch to burning natural gas, or (4) meet a system wide daily or mass rate limit that would require cleaner natural-gas burning units to operate more than the coal-fired units. All the affected sources except for one chose to permanently retire; the un-retired unit chose to permanently switch to burning natural gas.

Control of Emissions of Volatile Organic Compounds from Consumer Products

In late 2017, MDE implemented revisions to *Control of Emissions of Volatile Organic Compounds from Consumer Products*, which enhanced VOC standards for specific consumer products and introduced VOC standards for new products; the amendments are based upon the 2014 Ozone Transport Commission (OTC) model rule for consumer products.²⁶ The amendments consist of updates to the VOC content limits and standards for a variety of consumer product categories, including personal care products, household products, automotive cleaners, and adhesives. The regulations set forth content and labeling requirements for flammable multi-purpose solvents and paint thinners. In addition, the regulations prohibit the sale, offer for sale, supply, or manufacture for use in the State of certain products manufactured on or after January 1 that contain methylene chloride, perchloroethylene, or trichloroethylene. These products include any bathroom and tile cleaner, construction panel and floor covering adhesive, electronic cleaner

²⁵ Control of Nitrogen Oxide Emissions From Coal-Fired Electric Generating Units., COMAR 26.11.38. <https://dsd.maryland.gov/regulations/Pages/26.11.38.00.aspx>

²⁶ U.S. Environmental Protection Agency (EPA). Maryland SIP, Control of Emissions of Volatile Organic Compounds from Consumer Products <https://www.epa.gov/air-quality-implementation-plans/maryland-sip-control-emissions-volatile-organic-compounds-consumer>. COMAR 26.11.32

labeled “Energized Electronic Equipment use only,” general purpose cleaner, or oven or grill cleaner. The amendments also establish VOC standards for 11 new consumer product categories. In addition, the amendments further strengthen the VOC standards for 15 consumer product categories based on improved reformulations of these products that are capable of achieving lower VOC emissions while demonstrating an ability to maintain performance specifications for the products. The amendments also incorporate new definitions and numerous modifications to existing definitions to improve clarity.

CARB and OTC have estimated that the Phase III and IV emission reductions are between a range of 10.3 to 15% of the total commercial and consumer products category. MDE uses the lowest control efficiency value of 10.3%.

Federal Tier 3 Motor Vehicle Emission and Fuel Standards

Starting in 2017, Tier 3 set new vehicle emissions standards and lowers the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system.

- The Tier 3 vehicle standards reduce both tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles.
- The Tier 3 gasoline sulfur standard will make emission control systems more effective for both existing and new vehicles and will enable more stringent vehicle emissions standards. Removing sulfur allows the vehicle’s catalyst to work more efficiently. Lower sulfur gasoline also facilitates the development of some lower-cost technologies to improve fuel economy and reduce greenhouse gas (GHG) emissions, which reduces gasoline consumption and saves consumers money.
- The tailpipe standards include different phase-in schedules that vary by vehicle class but generally phase in between model years 2017 and 2025. In addition to the gradual phase in schedules, other flexibilities include credits for early compliance and the ability to offset some higher-emitting vehicles with extra-clean models.
- The fuel sulfur standards include an averaging, banking, and trading (ABT) program that will allow refiners and importers to spread out their investments through an early credit program and rely on ongoing nationwide averaging to meet the sulfur standard. EPA is also finalizing flexibilities such as the ability to carry over credits from Tier 2 to Tier 3 and hardship provisions for extenuating circumstances, as well as flexibility provisions for small businesses (small manufacturers of Tier 3 vehicles and small refiners), small volume manufacturers, and small volume refineries.
- The Tier 3 program continues the successful transition that began with EPA’s Tier 2 program, finalized in 2000, in which EPA treated vehicles and fuels as a system to reduce both gasoline sulfur and vehicle emissions. While there were claims at the time that the program would cause fuel prices to increase far in excess of EPA’s estimates and would result in closures and fuel supply shortages, the Tier 2 program was a success and resulted in gasoline sulfur reductions of up to 90 percent and enabled the use of new emission control technologies in cars and trucks with no serious negative impacts on the refining industry. EPA’s Clean Diesel Program similarly utilized a systems approach to reducing sulfur emissions from diesel fuels and enabling cleaner diesel technologies with the Highway Diesel Rule (finalized in 2001) and the Nonroad Diesel Rule (finalized in 2004) again with no serious negative impacts. Now that the U.S. refining industry routinely produces lower sulfur fuel products, new market opportunities for international fuel exports have opened up.

MD Clean Cars Program (California Low Emission Vehicle II Standards)

The Maryland Clean Cars Program adopts California's stricter vehicle emission standards. These standards, known as California Low Emission Vehicle Standards II (Cal LEV II), became effective in Maryland for model year 2011 vehicles, significantly reducing a number of emissions including volatile organic compounds (VOCs) and nitrogen oxides (NOx). The VOC reduction achieved from this program was expected to be greater than the existing Federal standards and the NOx reduction was expected to be greater than the existing Federal Tier 2 standards that were in place at the time of its adoption. The Clean Cars Program also represents the first program that directly regulates the most prevalent greenhouse gas pollutant, carbon dioxide (CO₂) emissions. In addition to regulating GHG from passenger vehicles, the Clean Cars Program includes a Zero Emissions Vehicle (ZEV) mandate that car manufacturers must meet.

MD Clean Cars Program (California Low Emission Vehicle III Standards)

Since initially adopting the Clean Cars Program, California has developed stricter tailpipe and GHG standards. These standards, known as Cal LEV III, were also adopted by Maryland in 2012. The LEV III Program takes effect in model years 2015-2025 and sets all new emissions standards for criteria pollutants as well as GHGs. By 2025, vehicles will emit 75% less smog-forming pollutants and 34% less GHG emissions under Cal LEV III. The LEV III Program also strengthens the ZEV mandate, increasing the requirements for ZEVs beginning in 2018. ZEVs include electric vehicles and plug-in electric hybrids.

2.3.3 Meteorology

States should demonstrate that attainment of the NAAQS for the area were not a result of either temporary economic conditions or unusually favorable meteorology during the attainment timeframes.²⁷ In order to comply with EPA guidance, MDE has done an analysis of the annual surface meteorological conditions in the area to look at the variance in the meteorology over the 2018-2025 time period. The data indicates that attainment of the NAAQS in the Baltimore Nonattainment Area is not a result of a significant change in or development of unusually favorable meteorology during the attainment timeframe.

Table 2-2 shows various meteorological factors that influence ozone formation on both annual and ozone season (May-September) timeframes. These include temperature, dew point, relative humidity, wind speed, wind direction, mean sea level pressure, and precipitation. The meteorological data is from the National Weather Service's Baltimore Washington International Airport (BWI), MD, US Weather Station.²⁸

A coefficient of variation of less than 1 suggests a low variance in the data set. All the meteorological factors have coefficients of 0.46 or less, which indicates that none of the years had significantly unusual weather for the time period and does not indicate any unusually favorable meteorological conditions for the 2022-2024 attainment time frame. The data suggests that temperature, dew point, relative humidity, wind speed, wind direction, mean sea level pressure, and annual precipitation remained relatively consistent over the attainment time frame.

²⁷ *Procedures for Processing Requests to Redesignate Areas to Attainment*. Calcagni, John, Director, Air Quality Management Division, OAQPS, U.S. EPA, Research Triangle Park, N.C. September 4, 1992. Page 4.

²⁸ Surface meteorological measurements were taken from the Baltimore-Washington International Airport (BWI) ASOS monitor. Network: GHCND, ID: USW0009372

Table 2-3: 2018-2025 Meteorological Conditions in Maryland

Year	Ozone Season (May-September)							Annual					
	Avg Max Temp (°F)	# 90° days	Precipitation (in)	DP (°F)	RH (%)	WS (mph)	WD (deg)	Avg Temp (°F)	Precipitation (in)	RH (%)	WS (mph)	WD (deg)	MSLP (mb)
2018	82.80	33	42.70	46.71	76.71	0.85	81.84	56.78	71.82	72.07	1.63	299.43	1018.22
2019	85.29	50	14.86	45.49	67.84	0.61	273.35	58.10	38.13	66.02	1.64	293.91	1017.29
2020	82.33	39	27.34	45.90	67.14	0.55	260.48	58.80	57.38	65.22	1.70	282.73	1017.35
2021	84.21	45	20.43	45.00	65.72	1.26	245.15	58.90	40.79	63.14	2.04	283.38	1017.16
2022	83.49	40	21.42	44.31	66.61	0.72	259.19	57.67	46.87	64.19	1.78	287.17	1017.79
2023	82.64	31	21.70	45.86	65.49	0.56	328.9	59.59	42.39	63.75	1.75	292.77	1016.03
2024	83.86	41	13.69	46.50	70.30	0.51	128.22	58.86	36.78	67.02	1.21	285.18	1016.75
2025	82.01	23	20.91	62.11	71.53	0.32	86.20	56.94	35.97	64.62	2.05	286.21	1016.99
SD	1.10	8.50	9.06	5.86	3.80	0.28	94.69	1.01	12.44	2.84	0.26	5.90	0.66
CV	0.01	0.23	0.40	0.12	0.06	0.42	0.46	0.02	0.27	0.04	0.15	0.02	0.00
DP: dew point, RH: relative humidity, WS: wind speed, WD: wind direction, MSLP: mean sea level pressure, SD: standard deviation, CV: coefficient of variation													

2.4 Maintenance Plan

The redesignation process provides that States may petition EPA to redesignate a nonattainment area to attainment and that EPA may approve the redesignation provided certain criteria are met. Section 107(d)(3)(D) states:

(D) The Governor of any State may, on the Governor's own motion, submit to the Administrator a revised designation of any area or portion thereof within the State. Within 18 months of receipt of a complete State redesignation submittal, the Administrator shall approve or deny such redesignation. The submission of a redesignation by a Governor shall not affect the effectiveness or enforceability of the applicable implementation plan for the State.

States may submit both the redesignation request and the maintenance plan at the same time, and rulemaking on both may proceed on a parallel track. All applicable nonattainment area requirements must remain in place, and the maintenance plan constitutes a SIP revision. The

maintenance plan must contain the following elements:

- A comprehensive “attainment year” emissions inventory of the ozone precursors NO_x and VOCs;
- A projection of the emissions inventory forward to a year at least 10 years after redesignation and a demonstration that the projected level of emissions is sufficient to maintain compliance with the ozone NAAQS;
- A demonstration of maintenance by showing that future emissions of a pollutant or its precursors will not exceed the level of the attainment inventory over the 10-year period following redesignation;
- A commitment that, once redesignated, the state will continue to operate an appropriate monitoring network to verify maintenance of the attainment status;
- A demonstration of legal authority to implement and enforce all control measures contained in the SIP;
- Provisions for future updates of the inventory to enable tracking of emissions levels, including an annual emissions statement from major sources;
- MVEBs for transportation conformity for the 10-year maintenance period;
- A commitment to submit a revised maintenance plan eight years after redesignation;
- A commitment to enact and implement additional contingency measures expeditiously in the event that future violations of the NAAQS occur; and a list of potential contingency measures that would be implemented in such an event.

Section 3 contains the maintenance plan for the Baltimore Nonattainment Area for the 2015 Ozone NAAQS.

2.5 Requirements of Section 110 and Part D

Table 2-3 contains a non-exhaustive list of SIP revisions that Maryland has submitted and implemented to address requirements related to the 2015 Ozone NAAQS.

Table 2-4: Status of 2015 Ozone NAAQS SIP Requirements

Requirement	Title of SIP	Date of SIP	EPA Approval²⁹
Emissions Inventory	2015 8-Hour Ozone NAAQS (0.070 ppm) Marginal Area State Implementation Plan for the Baltimore, MD Nonattainment Area	June 29, 2020	11/5/2021, 86 FR 61075
NO _x and VOC RACT	State of Maryland 0.070 ppm 8-Hour Ozone Reasonably Available Control Technology	August 10, 2020	4/29/2026, 91 FR 23046

²⁹ U.S. Environmental Protection Agency (EPA). *EPA Approved Nonregulatory Provisions and Quasi-Regulatory Measures in the Maryland SIP* (October 30, 2025). <https://www.epa.gov/air-quality-implementation-plans/epa-approved-nonregulatory-provisions-and-quasi-regulatory-39>

	(RACT) State Implementation Plan		
Emissions Statement	Emissions Statement Requirement Certification Addressing CAA Section 182(a)(3)(B) for the State of Maryland 2015 Ozone NAAQS Nonattainment Areas	May 12, 2020	9/7/2021, 86 FR 49925
Nonattainment New Source Review	Nonattainment New Source Review (NNSR) Certification for the State of Maryland 2015 Ozone NAAQS Nonattainment Areas	May 12, 2020	6/10/2022, 87 FR 35421
Infrastructure – Implementation, Maintenance, and Enforcement	State of Maryland 8-Hour Ozone - 0.070 ppm National Ambient Air Quality Standard Implementation, Maintenance, and Enforcement State Implementation Plan	September 24, 2018	9/18/2019, 84 FR 49062
Moderate Attainment	Baltimore Moderate Nonattainment Area 0.070 ppm 8-Hour Ozone State Implementation Plan Attainment Demonstration	March 7, 2023	Pending
Supplemental Serious Elements	State Implementation Plan Revision: Outstanding Requirements for the 2015 Ozone National Ambient Air Quality Standard	June 11, 2026	Pending

3 Maintenance Plan

MDE has developed a maintenance demonstration that meets all EPA requirements and shows that because of permanent and enforceable measures, emissions over the 10 years following redesignation approval will remain sufficiently low to maintain attainment of the NAAQS while allowing for growth in population and vehicle miles traveled. The period covered by this maintenance plan is 2023 through 2038.

3.1 Attainment Inventory

MDE has developed an attainment year inventory that identifies the level of emissions sufficient to achieve the 2015 Ozone NAAQS. This attainment inventory consists of the actual emissions for a year, during a period associated with compliant monitoring data showing attainment. EPA guidance specifies that States should “develop an attainment emissions inventory to identify the level of emissions in the area which is sufficient to attain the NAAQS”.³⁰ The guidance also specifies that “Where the state has made an adequate demonstration that the air

³⁰ *Procedures for Processing Requests to Redesignate Areas to Attainment*. Calcagni, John, Director, Air Quality Management Division, OAQPS, U.S. EPA, Research Triangle Park, N.C. September 4, 1992. Page 8.

quality has improved as a result of the SIP..., the attainment inventory will generally be the actual inventory at the time the area attained the standard.”³¹

After EPA’s concurrence with additional Exceptional Events requests on November 12, 2025, the Baltimore Nonattainment Area qualified for a Clean Data Determination (CDD). EPA proposed the CDD based on a review of the 2022-2024 emissions data. Based on EPA’s determination of attainment, years that fall between 2022 and 2024 could be representative of levels of emissions that lead to attainment of the 2015 Ozone NAAQS. MDE has elected to use 2023 as the attainment year inventory.

A summary of the 2023 attainment year inventory is presented in Table 3-1. A more detailed accounting of the attainment inventory is contained in Appendix A and Appendix D.

Table 3-1: 2023 Baltimore Nonattainment Area Attainment Year Inventory

Source Category	NOx (tpd)	VOC (tpd)
Point	29.06	4.41
Non-Point (Area)	12.72	71.17
Marine, Air, Rail	10.11	0.58
NonRoad Model	9.84	18.11
On-Road Mobile	24.42	16.38
Quasi-Point	9.83	1.64
TOTAL	95.98	112.28

3.2 Projection Inventory

A maintenance plan must contain a demonstration that the levels of emissions projected for the 10-year period following redesignation are sufficient to maintain the NAAQS. Accordingly, MDE has projected NOX and VOC emissions for the Baltimore Nonattainment Area for 2038, as well as an interim year of 2032. Emissions for 2038 must be equivalent to or lower than emissions levels in 2023 to ensure that air quality continues to meet the 2015 ozone NAAQS during this period. Table 3-2 in Section 3.3 contains the projection year inventory for the Baltimore Nonattainment Area.

Typically, a projected emissions inventory includes all source categories: on-road mobile, non-road mobile, major point sources, non-point sources, quasi point sources, and marine/air/rail emissions. This is accomplished by applying a “growth factor” to the 2023 baseline emissions. Growth in emissions can be affected by future control programs, fuel switching, shutdowns, or any number of reasons. Growth can also reflect a change in source activity as a result of wider societal changes, such as employment, population, energy use, and vehicle miles traveled. In some cases, growth is positive, resulting in increased future activity, while in others, growth is negative, resulting in a reduction of future activity. In some states, where emissions from shutdowns are preserved as offsets for future growth, those states may elect to reset negative growth values to “1” reflecting no growth.

A more detailed accounting of the 2032 and 2038 projection inventories is contained in

³¹ *Procedures for Processing Requests to Redesignate Areas to Attainment*. Calcagni, John, Director, Air Quality Management Division, OAQPS, U.S. EPA, Research Triangle Park, N.C. September 4, 1992. Page 8.

Appendix B, Appendix C, and Appendix D.

3.3 Demonstration of Maintenance

Table 3-2 demonstrates how future emissions of NO_x and VOCs will not exceed the levels of the attainment year inventory for a minimum of 10 years following redesignation. The projected emissions reflect the expected daily emissions based on the best available growth rates and projections. The total NO_x and VOC emissions in 2038 are equivalent or lower than 2023; therefore, the projected inventory demonstrates future maintenance of the 2015 Ozone NAAQS.

Table 3-2: NO_x and VOC Emissions for 2023, 2032, and 2038

Source Category	NO _x (tpd)			VOC (tpd)		
	2023	2032	2038	2023	2032	2038
Point	29.06	39.40	39.94	4.41	4.95	5.06
Nonpoint	12.72	13.32	13.72	71.17	72.75	73.60
M-A-R	10.11	10.28	10.39	0.58	0.59	0.60
Nonroad	9.84	8.60	9.00	18.11	18.42	19.05
Onroad	24.42	9.71	5.77	16.38	10.78	7.69
Quasi-Point*	9.83	10.63	11.14	1.64	1.88	2.03
Total	95.98	91.95	89.95	112.28	109.37	108.03
Δ (2038-2023)	-4.25			-6.03		

*Quasi-point sources are generally considered part of the area or nonroad emissions sectors but are included in the point source emissions inventory for a particular reason. Such reasons include, but are not limited to, federal guidance (such as in the case of certain airports) or to facilitate future general conformity determinations (such as in the case of military bases, ports, and other similar facilities).

3.4 Commitment to Operate Air Quality Monitoring Network

EPA guidance specifies that “...once an area has been redesignated, the state should continue to operate an appropriate air quality monitoring network, in accordance with 40 CFR Part 58, to verify the attainment status of the area. The maintenance plan should also contain provisions for continued operation of air quality monitors that will provide such verification”.³²

MDE will continue to operate the air monitoring network in accordance with 40 CFR Part 58 with no reductions in the number of sites from those in the existing network unless pre-approved by EPA. The monitoring network is reviewed on an annual basis, and an annual network design plan with any proposed changes for the upcoming year is submitted to the EPA and shared publicly. In addition, the MDE provides EPA Region III with prior notification of any planned changes to the network between formal network design submissions. A monitoring network assessment is also conducted every 5 years, and the report is shared publicly. MDE will continue to operate the ozone air monitoring network in accordance with 40 CFR Part 58 to verify the attainment status of the area, with no changes to the existing network unless pre-approved by EPA. Monitored ambient air concentrations will be the primary mechanism for verification of continued attainment for the area and will also serve as the triggering indicator for contingency measures.

³² *Procedures for Processing Requests to Redesignate Areas to Attainment*. John Calcagni. September 4, 1992. Page 11.

3.5 Legal Authority to Implement and Enforce

MDE has the legal authorities to develop, implement, and enforce regulations regarding air pollution including the requirements of this SIP submittal. The following regulations demonstrate MDE's legal authority to develop, implement, and enforce regulations regarding air pollution including the requirements of this SIP submittal.

- Legal Authority to Implement and Enforce – Maryland Annotated Code § 2-103
- Authority for MDE to set emission standards and ambient air quality standards for each air quality control area in the State– Environment Article, §2-302 (a)-(d), Annotated Code of Maryland
- Authority for MDE to enforce the standards and impose penalties– Environment Article, §§2-601-614, Annotated Code of Maryland.
- Emissions Statements: COMAR 26.11.01.05-1.
- I/M program requirements: COMAR 11.14.08.
- Permitting Requirements: COMAR 26.11.02 & COMAR 26.11.03.
- PSD Requirements: COMAR 26.11.06.14.

Please also refer to the approved sections of Maryland's 110(a)(2) 2008 and 2015 Ozone NAAQS SIPs.

3.6 Emissions Inventory Data to Verify Continued Attainment

Periodic emissions inventories, as developed by MDE, will be examined for comparison to the attainment inventory for the relevant sources in the nonattainment area. MDE expects that future conditions will reflect emissions levels that will not exceed the levels of the attainment inventory. The emissions data will not be solely relied upon as an indicator of nonattainment for the area. Periodic or intermittent increases in emissions above the attainment year inventory do not automatically indicate a failure to continue to attain the NAAQS. Further investigation would be required to determine if the emissions produce ambient air concentrations above the NAAQS.

3.7 Motor Vehicle Emissions Budgets

Transportation conformity is required under § 176(c) to ensure that transportation plans, transportation improvement programs (TIPs), and federally-supported highway and transit project activities are consistent with ("conform to") air quality planning goals outlined in the applicable SIP. These requirements ensure that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS or any interim milestones. For the purposes of this document this is specific to attainment and maintenance of the 2015 ozone NAAQS. These requirements are found in §176(c)(B)(i), (ii), and (iii), which states:

Conformity to an implementation plan means—That such activities will not cause or contribute to any new violation of any standard in any area; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emissions reductions or other milestones in any area.

The federal Transportation Conformity Rule is codified in 40 CFR Part 93, Subpart A,

entitled *Determining Conformity of Federal Actions to State or Federal Implementation Plans*. Transportation conformity applies to areas that are designated nonattainment and those areas redesignated to attainment after 1990 (i.e., “maintenance areas”) for transportation-related criteria pollutants: CO, ozone, NO₂, and particulate matter (PM_{2.5} and PM₁₀).

The responsible metropolitan planning organization (MPO) addressing transportation planning for the Baltimore 2015 Ozone NAAQS Nonattainment Area is the Baltimore Regional Transportation Board (BRTB), which is housed at the Baltimore Metropolitan Council (BMC). In order for a transportation plan to “conform”, the estimated emissions from the region’s transportation plan cannot exceed the mobile budgets set by MDE in conjunction with Maryland Department of Transportation (MDOT) and BMC. The MVEB acts as the federally enforceable cap or control measure on the onroad mobile transportation source sector. If the estimated emissions are shown to exceed the budget, then mitigation measures must be taken to ensure emissions will not exceed the budgets. Prior to this maintenance plan, the most recent MVEBs were established in the *Baltimore Moderate Nonattainment Area 0.070 ppm 8-Hour Ozone State Implementation Plan Attainment Demonstration* and were deemed adequate by EPA on August 3, 2023.³³

Per 40 CFR part 93, a MVEB must be established for the last year of the maintenance plan. However, a State may adopt MVEBs for other years as well. If the maintenance plan does not establish MVEBs for any years other than the last year of the maintenance plan, the demonstration of consistency with the motor vehicle emissions budget(s) must be accompanied by a qualitative finding that there are no factors which would cause or contribute to a new violation or exacerbate an existing violation in the years before the last year of the maintenance plan. This maintenance plan establishes MVEBs for NO_x and VOC for 2023 the attainment year, 2032 the interim year, and 2038 the last year of the maintenance plan.

These budgets represent the level of mobile source emissions that can be emitted in the area while supporting the air quality plan. 2023, 2032, and 2038 onroad emissions were calculated using the most recent EPA MOVES (motor vehicle emissions simulator) model (MOVES5) and are presented in Table 3-3.

Table 3-4 presents the MVEBs for 2023, 2032, and 2038, which include a transportation buffer.³⁴ A transportation buffer or safety margin is the amount by which the total projected emissions from all sources of a given pollutant is less than the total emission needed for Reasonable Further Progress (RFP), attainment, or maintenance. The maintenance plan demonstrates that the region attained the standard in 2023 and can therefore emit up to the attainment year emission level.

The MVEBs provided in Table 3-4 have been developed by adding a transportation buffer to the mobile emissions inventory projections for VOC and NO_x. The buffers add 4.04 tpd of NO_x and 2.91 tpd of VOC to the 2032 emission inventories and 6.03 tpd of NO_x and 4.25 tpd of VOC to the 2038 emission inventories. Even with buffered MVEBs, the projected 2038 inventory remains at or below the attainment year inventory for NO_x and VOCs as shown in Table 3-5.

³³ *Adequacy Status of Motor Vehicle Emissions Budgets for the Baltimore 2015 8-Hour Ozone Moderate Nonattainment Area*, Notice, August 3, 2023, 88 FR 51310.

³⁴ Section 93.124(a) of the Code of Federal Regulations (CFR) allows for the use of transportation buffers (or safety margins) in setting motor vehicle emissions budgets.

Further details regarding the development of the MVEBs can be found in Appendix E.

Table 3-3: Baltimore Maintenance Plan On-Road Mobile Source Emissions without Buffers

Year	NOx (tpd)	VOC (tpd)
2023 - Attainment Year	24.42	16.38
2032 – Interim Year	9.71	10.78
2038 – Final Year	5.77	7.69

Table 3-4: Baltimore Maintenance Plan Motor Vehicle Emissions Budgets (MVEB) with Buffers

Year	NOx Emissions (tpd)	VOC Emissions (tpd)
2023 - Attainment Year	24.42	16.38
2032 – Interim Year	13.75	13.69
2038 – Final Year	11.80	11.94

Table 3-5: Baltimore Maintenance Plan NOx and VOC Emissions Including MVEBs with Buffers

Source Category	NOx (tpd)			VOC (tpd)		
	2023	2032	2038	2023	2032	2038
Point	29.06	39.40	39.94	4.41	4.95	5.06
Nonpoint	12.72	13.32	13.72	71.17	72.75	73.60
M-A-R	10.11	10.28	10.39	0.58	0.59	0.60
Nonroad	9.84	8.60	9.00	18.11	18.42	19.05
Onroad MVEB	24.42	13.75	11.80	16.38	13.69	11.94
Quasi-Point*	9.83	10.63	11.14	1.64	1.88	2.03
Total	95.98	95.98	95.98	112.28	112.28	112.28

3.8 Commitment to Submit a Maintenance Plan for an Additional 10 Years

This plan provides an analysis of emissions required for maintenance of the 2015 Ozone NAAQS up to 2038. MDE commits to the submittal of an additional maintenance plan eight years after the original redesignation request is approved that provides for maintenance of the NAAQS for an additional 10 years.

3.9 Contingency Measures

Section 175A of the CAA requires a maintenance plan to contain contingency provisions so that any violation of the NAAQS which occurs after redesignation will be promptly corrected.³⁵ These provisions should include measures that will lead to additional emissions reductions, beyond those included in the SIP that were needed for attainment of the area.

Per EPA guidance, contingency provisions for a maintenance area are not required to “have fully adopted contingency measures that will take effect without further action by the state in order for the maintenance plan to be approved”.^{36,37} However, the contingency provisions are

³⁵ 42 U.S.C.7505a(d)

³⁶ *Procedures for Processing Requests to Redesignate Areas to Attainment*. Calcagni, John, Director, Air Quality Management Division, OAQPS, U.S. EPA, Research Triangle Park, N.C. September 4, 1992. Page 12.

³⁷ EPA specifies in its March 2023 *Draft: Guidance on the Preparation of State Implementation Plan Provisions that Address the Nonattainment Area Contingency Measure Requirements for Ozone and Particulate Matter (page 2)*.that the guidance "...does not address contingency provisions required for maintenance plans in section 175A(d)..."

an enforceable part of the maintenance plan and should ensure that contingency measures are adopted expeditiously if needed to maintain attainment. Furthermore, contingency provisions should clearly identify the measures to be adopted, a schedule and procedures for adoption, and specific indicators or triggers which will be used to determine the need for contingency measures. The contingency measures identified in this section are measures that have not been used previously to meet SIP requirements or any other air quality planning purpose.

3.9.1 Triggering Mechanism

The official monitored ambient air ozone concentration will serve as an indicator for the triggering of contingency measures. The monitored data will be based on fully validated and quality-assured results from all EPA-approved monitors operated and maintained by MDE.

An initial “warning level” response will be triggered if any monitor in the Baltimore Nonattainment Area has a 1-year fourth-high 8-hour ozone concentration greater than 70 ppb. A warning level response will consist of a study to determine whether the ozone value indicates a trend toward a higher ozone value and whether emissions appear to be increasing. The study will evaluate whether the trend, if any, is likely to continue and, if so, the control measures necessary to reverse the trend taking into consideration ease and timing for adoption.

A second “action level” response will be triggered if any monitor in the Baltimore Nonattainment Area has a fourth-high 8-hour ozone concentration, averaged over two years, greater than 70 ppb. A violation of the NAAQS (4th high, daily maximum 8-hour average, averaged over three years, with a value of 70 ppb or greater) shall also prompt an “action level” response. An action level response, where appropriate, will trigger procedures for contingency measure implementation.

3.9.2 Trigger Responses

An initial “warning level” response will be triggered if any monitor in the Baltimore Nonattainment Area has a 1-year fourth-high 8-hour ozone concentration greater than 70 ppb. A one-year monitoring exceedance is concerning but does not constitute a violation of the NAAQS as attainment is determined based on a 3-year design value. Therefore, the initial response will consist of a study conducted by MDE to gain insight into the exceedance and determine if further action is necessary to ensure maintenance going forward. The study would include:

- An assessment of whether actual emissions have deviated significantly from the attainment and/or maintenance level emissions, along with an evaluation of which sources are responsible for any emissions increases; and
- A study of whether unusual meteorological conditions during the high-ozone year led to elevated monitored ozone concentrations

Should it be determined that action is necessary to ensure maintenance, MDE will follow the procedures for contingency measures. The “warning level” study will be completed no later than the beginning of the following ozone season.

A second “action level” response will be triggered if any monitor in the Baltimore Nonattainment Area has a fourth-high 8-hour ozone concentration, averaged over two years, greater than 70 ppb, or has recorded a 3-year design value exceeding the NAAQS. In the event an “action level” response is triggered and is not found to be due to an exceptional event, malfunction, noncompliance with applicable regulatory requirements, or significant interstate transport, MDE will follow the procedures for contingency measures as outlined in this maintenance plan. MDE will adopt additional control measures, as necessary and appropriate, in order to correct the violation as expeditiously as practicable.

3.9.3 Adoption Schedule – As Expeditiously as Possible

Regulatory measures for contingency measures, if needed, will follow all requirements and procedures of the CAA³⁸ and MDE’s regulatory adoption process. If triggered, MDE will evaluate the nature of the violations and, if necessary, select and adopt contingency measures according to the following (non-binding) schedules for regulatory measures (with durations given from the time of MDE’s determination of a violation of the NAAQS based on fully validated and quality-assured data). The adoption of regulatory measures would be expected for completion within 12 to 18 months following a violation of the NAAQS based on fully validated and quality-assured data.

- Rule Development -5 months to 13 months
 - [3 months] - MDE will select one or more measures to be implemented and will obtain approval to initiate the process for a new regulatory action.
 - [1-6 months] - MDE will initiate a stakeholder process and seek input on the development of the regulation.
 - [1-6 months] - MDE will develop the fact sheet, regulation and technical support document
- Adoption Process - 6-9 months
 - [start] - MDE will begin the formal adoption process by presenting the proposed regulatory action(s) to the Air Quality Control Advisory Council (AQCAC) for its review and vote.
 - [2 months] - Secretary signature and Administrative, Executive and Legislative Review (AELR) Committee review
 - [1 month] - Notice of Proposed Action in the Maryland Register
 - [1 months] - Public Hearing
 - [2-3 months] - Notice of Final Action & Adoption

3.9.4 Contingency Measure Selection

The selection of a contingency measure (or measures) to be adopted and implemented in the event of an anticipated failure to maintain the NAAQS would be based on the following criteria:

- Air quality analysis indicating the nature of the violation (location, source, upwind conditions, etc.)
- Degree of the violation
- Emission reduction potential
- Timeliness
- Cost-effectiveness

MDE has identified several potential regulatory contingency measures for this

³⁸ 42 U.S.C. 7401 et seq.

maintenance plan. Depending on the nature of the violation(s), measures could be selected individually or in combination, in complete or partial fashion, and/or area wide or source specific. The measures identified here are not exclusive to the potential use as contingency measures for ozone maintenance. If MDE chooses to adopt one or more measures without the triggering of contingency measures for this maintenance plan, those same measures would then not be available for use as future contingency measures.

- Commercial and Consumer Products Phase V³⁹
- Dripless gas nozzles and low permeation hoses
- Updated NOx RACT for stationary internal combustion sources, utility boilers, or process heaters
- Updated VOC RACT for surface coatings
- Traffic flow improvements
- Anti-idling control programs

³⁹ Ozone Transport Commission (OTC). *OTC Regulatory and Technical Guideline for Reduction of Ozone Precursor Emissions from Consumer Products - Phase V*. (November 20, 2018). https://otcair.org/upload/Documents/Reports/OTC_RegAndTechGuidelineOnConsumerProducts_Phase_V_Final_11202018.pdf