NYS Department of Environmental Conservation

County Level Attainment Status of National Ambient Air Quality Standards (NAAQS)

Overview

The Clean Air Act, which was last amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The primary NAAQS provide public health protection, including protecting the health of sensitive populations such as asthmatics, children and the elderly.

The EPA has established NAAQS for six principal pollutants, which are called "criteria" air pollutants. Periodically, the standards are reviewed and may be revised. The criteria air pollutants are Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone, Particulate Matter, and Sulfur Dioxide.

New York's Air Pollution Control Program

The federal and state air pollution programs include permits and technical requirements to control emission of pollutants, along with extensive measurement and monitoring of ambient pollutant levels.

Federal law requires the New York State Department of Environmental Conservation (DEC) to submit a State Implementation Plan (SIP) that demonstrates how state air pollution control programs will be carried out to reduce pollution and to ensure that air contaminant levels are in compliance with the NAAQS. The SIP includes plans to bring areas that contravene the NAAQS into attainment. SIPs are developed to demonstrate that the state has appropriate program components in place, and to identify emission control programs that the state will rely on to meet and maintain the NAAQS. State SIPs must also account for pollution that contributes to visibility impairment, otherwise known as regional haze.

The New York SIP is made up of many related actions that have been taken to meet these Clean Air Act requirements, such as infrastructure assessments, attainment demonstrations, and regulations. Whenever a revision to the SIP is required, DEC solicits public comments on a proposed version before a final version is submitted to EPA.

NAAQS Designation and Classification Information

Nonattainment - any area that does not meet (or that contributes to ambient air quality in a nearby area that does not meet) the primary or secondary NAAQS for the pollutant.

Attainment - any area that meets the primary or secondary NAAQS for the pollutant.

Pollutant Definitions

The criteria air pollutants for which NAAQS have been established are further defined as follows.

Carbon Monoxide (CO) - CO is a colorless, odorless gas that forms when carbon in fuel is not burned completely. Carbon monoxide is a component of exhaust from motor vehicles and engines. CO emissions increase when conditions are poor for combustion; thus, the highest CO levels tend to occur when the weather is very cold or at high elevations where there is less oxygen in the air to burn the fuel.

Lead (Pb) - Lead is a naturally occurring element found in small amounts in the earth's crust. Exposure comes from human activities including the use of fossil fuels including past use of leaded gasoline, some types of industrial facilities, and past use of lead- based paint in homes. Lead and lead compounds have been used in a wide variety of products found in and around our homes, including paint, ceramics, pipes and plumbing materials, solders, gasoline, batteries, ammunition, and cosmetics. Lead can also be emitted into the environment from industrial sources and contaminated sites, such as former lead smelters.

Nitrogen Dioxide – Nitrogen Dioxide (NO_2) is one of a group of highly reactive gasses known as "oxides of nitrogen," or "nitrogen oxides (NOx). Most airborne NO_2 comes from combustion-related emissions sources of human origin, primarily fossil fuel combustion in electric utilities, high-temperature operations at other industrial sources, and operation of motor vehicles.

Ozone (O_3) - Ozone is a gas composed of three atoms of oxygen. Ozone occurs both in the Earth's upper atmosphere and at ground level. Ozone can be good or bad, depending on where it is found. Tropospheric, or ground level ozone, is not emitted directly into the air, but is created by chemical reactions between oxides of nitrogen (NOx) and volatile organic compounds (VOC). This happens when pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, and other sources chemically react in the presence of sunlight. Ozone at ground level is a harmful air pollutant, because of its effects on people and the environment, and it is the main ingredient in "smog."

Particulate Matter – Particulate matter are tiny particles or liquid droplets suspended in the air that can contain a variety of chemical components. Larger particles are visible as smoke or dust and settle out relatively rapidly. The tiniest particles can be suspended in the air for long periods of time and are the most harmful to human health because they

can penetrate deep into the lungs. Some particles are directly emitted into the air. They come from a variety of sources such as cars, trucks, buses, factories, construction sites, tilled fields, unpaved roads, stone crushing, and wood burning. Other particles are formed in the atmosphere by chemical reactions. Particulate matter is further defined as follows.

PM_{10} - Particles that are less than 10 microns in diameter. Most particulate matter is PM_{10}.

$PM_{2.5}$ - Particles that are less than 2.5 microns in diameter. These particles are often referred to as "PM fine." PM fine particles are so small that they are not typically visible to the naked eye. In the atmosphere, however, they are significant contributors to haze. Smaller particles are generally more harmful to human health because they can penetrate more deeply into the lungs than larger particles.

Sulfur Dioxide (SO_2) - SO_2 is part of a group of highly reactive gasses known as “oxides of sulfur.” The largest sources of SO_2 emissions are from fossil fuel combustion at power plants and other industrial facilities. Smaller sources of SO_2 emissions include industrial processes such as extracting metal from ore, and the burning of high sulfur containing fuels by locomotives, large ships, and non-road equipment. SO_2 is linked with a number of adverse effects on the respiratory system.

NAAQS for Criteria Air Pollutants

As established by EPA the following table lists the current primary NAAQS for the six criteria air pollutants.

Pollutant	Averaging Time	Level	Form
CO	8 hours	9 ppm	Not to be exceeded more than once per year
CO	1hour	35 ppm	Not to be exceeded more than once per year
Pb	3-month average	0.15 $\mu g/m^3$	Not to be exceeded
NO_2	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
NO_2	1 year	53 ppb	Annual Mean
O_3	8 hours	0.07 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
$PM_{2.5}$	1 year	12.0 $\mu g/m^3$	Annual mean, averaged over 3 years
$PM_{2.5}$	24 hours	35 $\mu g/m^3$	98th percentile, averaged over 3 years
SO_2	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years

Ozone nonattainment areas are designated as marginal, moderate, serious, severe, or extreme, depending on the level of pollution. The following classification list applies to the 2008 ozone NAAQS. The classification table above, applies to the 2015 ozone NAAQS, which will be finalized in the near future.

Extreme - Area has a design value of 0.175 ppm and above

Severe 17 - Area has a design value of 0.119 up to but not including 0.175 ppm

Severe 15 - Area has a design value of 0.113 up to but not including 0.119 ppm

Serious - Area has a design value of 0.100 up to but not including 0.113 ppm

Moderate - Area has a design value of 0.086 up to but not including 0.100 ppm

Marginal - Area has a design value of 0.076 up to but not including 0.086 ppm

Statistical & Analytical Issues

New York's county by county attainment status of the NAAQS is based on continuous statewide air monitoring data. This data is analyzed to determine if air pollution control programs have been successful and attainment of the NAAQS has been achieved. If DEC believes the current attainment status is inaccurate it may petition EPA and request a reclassification of its current attainment status based on the monitoring data.

Limitations

New York's attainment status is limited by the data provided by the air monitoring network. DEC measures air pollutants at more than 50 sites across the state, using continuous and/or manual instrumentation. These sites are part of the federally-mandated National Air Monitoring Stations Network and the State and Local Air Monitoring Stations Network. Real time direct reading measurements include gaseous criteria pollutants (ozone, sulfur dioxide, oxides of nitrogen, carbon monoxide), $PM_{2.5}$ (fine particulate with diameter less than 2.5 microns), and meteorological data. Filter based $PM_{2.5}$, lead, and acid deposition samples are collected manually and shipped to labs for analysis.

Monitoring air for pollutants is a complex technical task, requiring not only direct measurement, but also measurement standards and quality assurance to ensure that the information provides a correct understanding of air quality in New York State. Ambient air quality reports provide the data and interpretations to the technical community and the public.

Additional NYS statute

All New York State regulations pertaining to air pollution contribute to attainment of the NAAQS. A list of EPA-approved New York State regulations and laws that can include control programs that help New York achieve attainment of the NAAQS can be found at: https://www3.epa.gov/region02/air/sip/ny_reg.htm.

6 NYCRR Part 201: Permits and Registrations Part 202: Emissions Verification
6 NYCRR Part 205: Architectural and Industrial Maintenance (AIM) Coatings
6 NYCRR Part 206: State Aid For General Air Pollution Control Work, New York City
6 NYCRR Part 207: Control Measures For Air Pollution Episode
6 NYCRR Part 208: Landfill Gas Collection & Control Systems For Certain Municipal Solid Waste Landfills
6 NYCRR Part 209: Primary Aluminum Reduction Plants
6 NYCRR Part 210: Emissions and Labeling Requirements For Personal Watercraft Engines
6 NYCRR Part 211: General Prohibitions
6 NYCRR Part 212: Process Operations
6 NYCRR Part 213: Contaminant Emissions From Ferrous Jobbing Foundries
6 NYCRR Part 214: By-Product Coke Oven Batteries
6 NYCRR Part 215: Open Fires
6 NYCRR Part 216: Iron and/Or Steel Processes
6 NYCRR Part 217: Motor Vehicle Emissions
6 NYCRR Part 218: Emission Standards For Motor Vehicles and Motor Vehicle Engines
6 NYCRR Part 219: Incinerators
6 NYCRR Part 220: Portland Cement Plants and Glass Plants
6 NYCRR Part 221: Asbestos-Containing Surface Coating Material
6 NYCRR Part 223: Petroleum Refineries
6 NYCRR Part 224: Sulfuric and Nitric Acid Plants
6 NYCRR Part 225: Fuel Composition and Use
6 NYCRR Part 226: Solvent Metal Cleaning Processes
6 NYCRR Part 227: Stationary Combustion Installations
6 NYCRR Part 228: Surface Coating Processes, Commercial and Industrial Adhesives, Sealants and Primers
6 NYCRR Part 229: Petroleum and Volatile Organic Liquid Storage and Transfer
6 NYCRR Part 230: Gasoline Dispensing Sites and Transport Vehicles
6 NYCRR Part 231: New Source Review for New and Modified Facilities
6 NYCRR Part 232: Perchloroethylene Dry Cleaning Facilities
6 NYCRR Part 233: Pharmaceutical and Cosmetic Manufacturing Processes
6 NYCRR Part 234: Graphic Arts
6 NYCRR Part 235: Consumer Products
6 NYCRR Part 236: Synthetic Organic Chemical Manufacturing Facility Component Leaks
6 NYCRR Part 239: Portable Fuel Container Spillage Control
6 NYCRR Part 240: Transportation Conformity
6 NYCRR Part 241: Asphalt Pavement and Asphalt Based Surface Coating
6 NYCRR Part 242: CO2 Budget Trading Program
6 NYCRR Part 243: Transport Rule NOx Ozone Season Trading Program

6 NYCRR Part 244: Transport Rule NOx Annual Trading Program
6 NYCRR Part 245: Transport Rule SO2 Group 1 Trading Program
6 NYCRR Part 246: Mercury Reduction Program for Coal-Fired Electric Utility Steam Generating Units
6 NYCRR Part 247: Outdoor Wood Boilers
6 NYCRR Part 248: Use of Ultra Low Sulfur Diesel Fuel and Best Available Retrofit Technology for Heavy Duty Vehicles
6 NYCRR Part 249: Best Available Retrofit Technology (BART)
6 NYCRR Part 251: CO2 Performance Standards for Major Electric Generating Facilities