



2016 New Jersey Air Quality Report

New Jersey Department of Environmental Protection



December 7, 2017

New Jersey Department of Environmental Protection
Bureau of Air Monitoring
Mail Code: 401-02E
P. O. Box 420
Trenton, New Jersey 08625-0420
Contact: bamweb@dep.nj.gov
Telephone: 609-292-0138

www.njaqinow.net

LIST OF CONTENTS

1. Executive Summary
2. Air Monitoring Network
3. Air Quality Index
4. Ozone
5. Particulate Matter
6. Nitrogen Dioxide
7. Sulfur Dioxide
8. Carbon Monoxide
9. Meteorology
10. Air Toxics

Appendix A: Air Monitoring Sites

Appendix B: Fine Particulate Speciation Data (Pending)

Cover photo: Brigantine HazeCam, <http://hazecam.net/camsite.aspx?site=brigantine> , 8/24/2017.

EXECUTIVE SUMMARY

This report summarizes the New Jersey Department of Environmental Protection (NJDEP) air quality monitoring data for 2016, collected from NJDEP's extensive air monitoring network. The state of New Jersey has been monitoring air quality since 1965. During that time pollution levels have improved significantly, as a result of state, regional and national air pollution reduction efforts.

The chapter on the Air Quality Index (AQI), a national air quality rating system based on the National Ambient Air Quality Standards (NAAQS), describes the overall quality of New Jersey's air in 2016, and lists the days on which the AQI was over 100 and NAAQS were exceeded. Twenty-six days were classified as "Unhealthy for Sensitive Groups" because their numerical AQI ratings were greater than 100. Two days in 2016 were classified as "Unhealthy" because their AQI ratings were greater than 150. The ratings for both days were attributed to a large wildfire in Canada, which elevated ozone levels throughout the state.

This report also includes detailed chapters for ozone, sulfur dioxide, nitrogen dioxide, particulate matter, and carbon monoxide. These are the criteria pollutants, those for which NAAQS have been set. Other information collected at our air monitoring stations includes meteorology, air toxics, and particulate species.

Figures 1-1 through 1-5 below illustrate the downward trends in concentrations of criteria pollutants in New Jersey over the past few decades.

New Jersey is getting close to meeting the ozone NAAQS, and will continue to implement emission control strategies while pursuing emissions reductions in upwind states that affect New Jersey's air. Because ozone is formed in the presence of sunlight and high temperatures, it can reach significant levels in the summer months. It also has been found to have serious health effects at lower levels than previously thought. In response, the United States Environmental Protection Agency (USEPA) periodically revises and lowers the NAAQS. USEPA lowered the ozone standard to 0.070 ppm in 2016.

The sharp increase and subsequent decrease in sulfur dioxide (SO₂) concentrations in New Jersey shown in Figure 1-2 are attributable to a coal-burning facility across the river in Pennsylvania. NJDEP established the Columbia Wildlife Management Area monitoring station in 2010 to determine the facility's impact on New Jersey's air quality. Exceedances of the SO₂ NAAQS were recorded that same year. Since the plant ceased operations under a court agreement, SO₂ levels in New Jersey have again fallen below the standard.

Nitrogen dioxide (NO₂) is a reactive gas emitted primarily from motor vehicles. It is known to cause serious health problems, especially for sensitive individuals such as children, the elderly, and people with asthma. New Jersey has long been in compliance with the NAAQS for NO₂.

Particulate air pollution less than 2.5 micrometers in diameter is referred to as fine particulate or PM_{2.5}. These small particles can be inhaled deep into the lungs, and are known to have a greater impact on public health than larger particles, which were the focus of previous ambient air quality standards. Monitoring data in New Jersey shows a steady decline in PM_{2.5} levels that are now in compliance with the NAAQS.

Outdoor concentrations of carbon monoxide can affect people with cardiovascular problems. Levels in New Jersey have been below the NAAQS for over twenty years.

Figure 1-1
 Ozone Design Value* Trend in New Jersey, 1997-2016
 *3-Year Average of 4th-Highest Daily Maximum 8-Hour Average Concentration
 in Parts per Million (ppm)

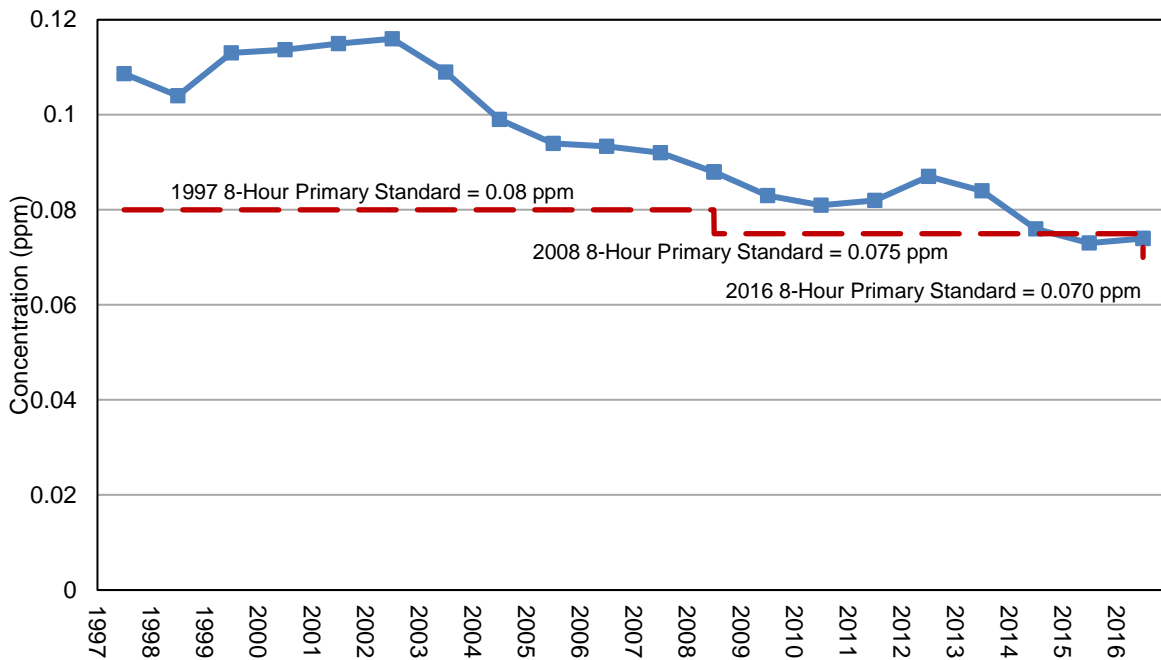


Figure 1-2
 Sulfur Dioxide (SO₂) Design Value* Trend in New Jersey, 2000-2016
 *3-Year Average of the 99th Percentile of Daily Maximum 1-Hour Average Concentration
 in Parts per Million (ppm)

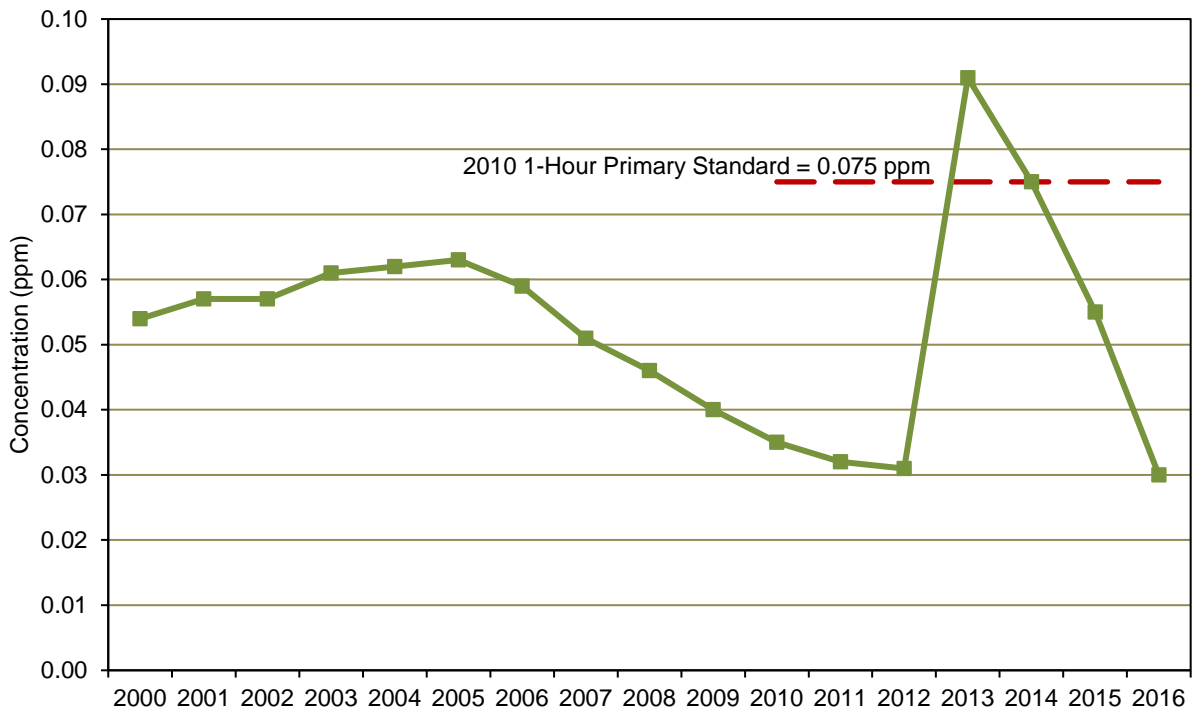


Figure 1-3
 Nitrogen Dioxide (NO₂) Design Value* Trend in New Jersey, 2000-2016
 *3-Year Average of the 98th Percentile Daily Maximum 1-Hour Average Concentration
 in Parts per Million (ppm)

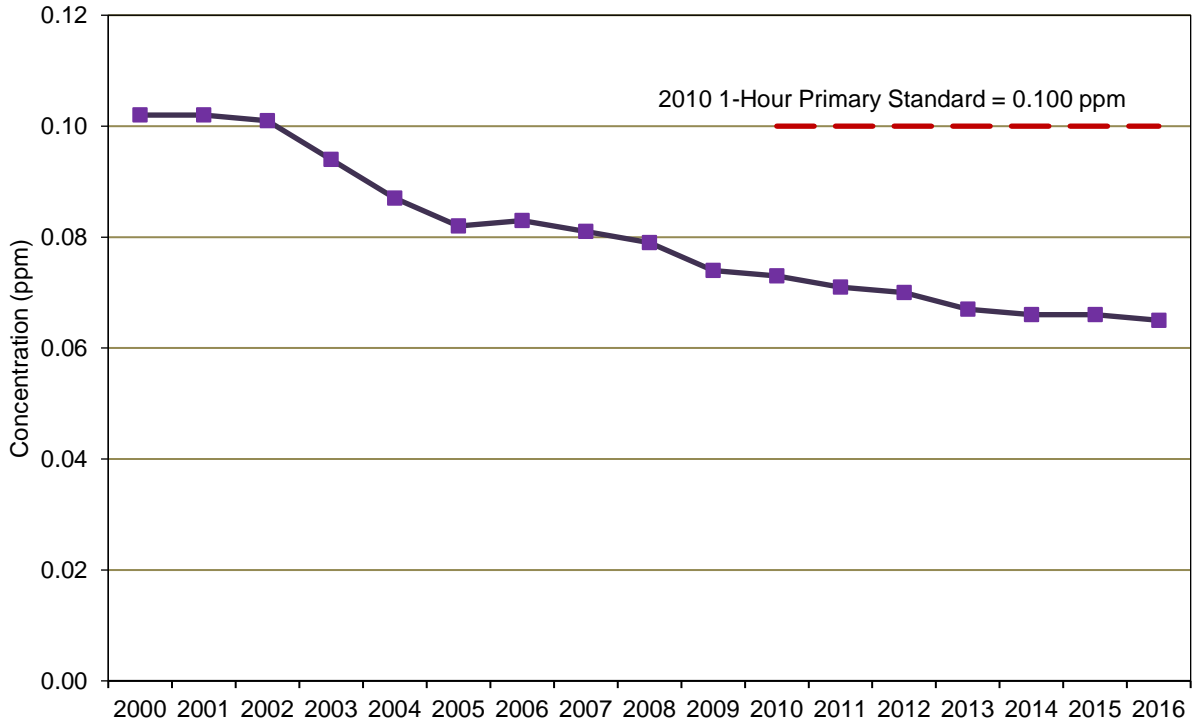


Figure 1-4
 Fine Particulate (PM_{2.5}) 24-Hour Design Value* Trend in New Jersey, 2001-2016
 *3-Year Average of the 98th Percentile 24-Hour Average Concentration
 in Micrograms per Cubic Meter (µg/m³)

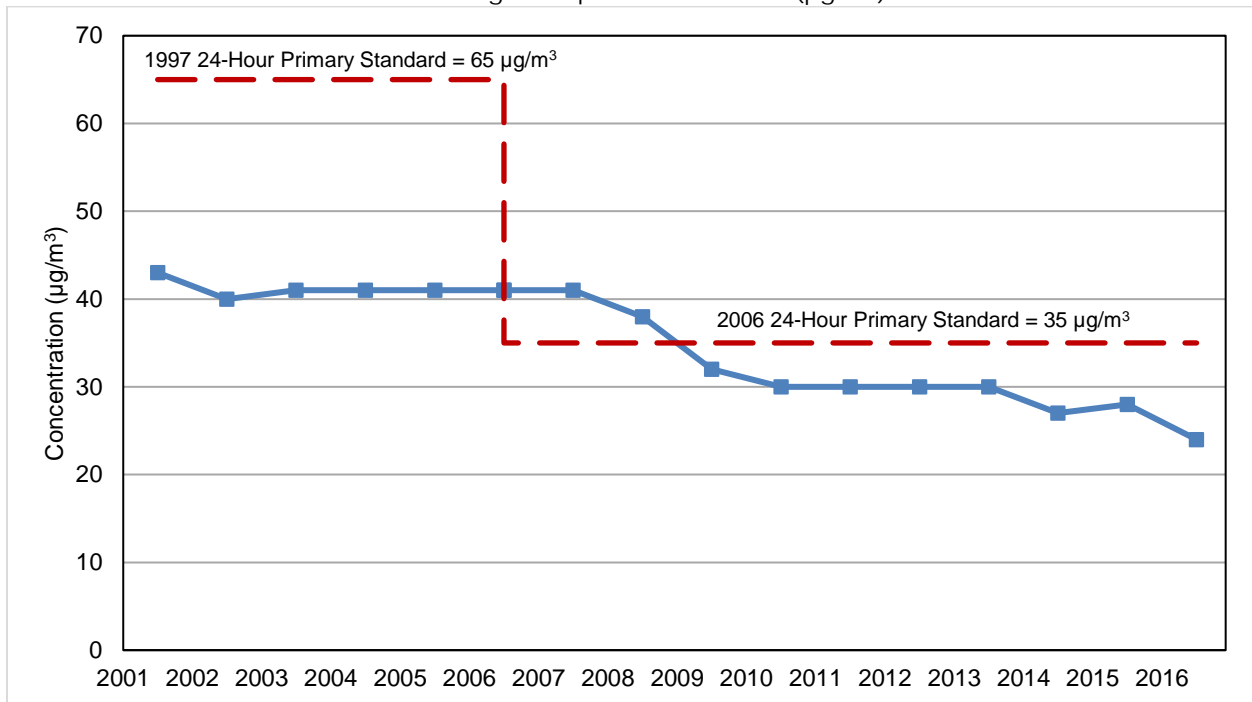


Figure 1-5
Carbon Monoxide (CO) Design Value* Trend in New Jersey, 1990-2016
*2nd-Highest 8-Hour Average Concentration
in Parts per Million (ppm)

