



2015 Air Quality Index Summary

New Jersey Department of Environmental Protection

WHAT IS THE AIR QUALITY INDEX (AQI)?

The Air Quality Index (AQI) is a nationwide air quality rating system based on the National Ambient Air Quality Standards (NAAQS). An AQI value of 100 is equal to the primary, or health-based, NAAQS for each pollutant. This allows for a direct comparison of each of the pollutants used in the AQI. These pollutants are ozone, particulate matter, carbon monoxide, sulfur dioxide, and nitrogen dioxide. Although air concentrations of pollutants have been dropping over the years, the U.S. Environmental Protection Agency (USEPA) must periodically review the NAAQS in response to new research to make sure that they continue to be protective of public health. The ozone NAAQS was just revised in October 2015.

Every morning an air pollution forecast for the current and following day is prepared by the New Jersey Department of Environmental Protection (NJDEP) using the AQI format. The forecast is provided to USEPA, and is disseminated through the Enviroflash system to subscribers who sign up to receive air quality forecast and alert emails or texts (www.enviroflash.info). Anyone can view the forecast and current air quality conditions at USEPA's AirNow website (www.airnow.gov) or on NJDEP's air monitoring webpage (www.njaqinow.net/).

In an effort to make the AQI easier to understand, a color code and descriptive interpretation are assigned to the numerical ratings (see Table 1). Table 2 contains USEPA's suggested actions to take to protect public health in correspondence with AQI levels. For more details on the AQI, visit USEPA's web site at www.airnow.gov.

Table 1
Air Quality Index Levels and Associated Health Impacts

AQI Level of Health Concern	Numerical Value	Meaning	Color Code
Good	0 to 50	Air quality is considered satisfactory, and air pollution poses little or no risk.	Green
Moderate	51 to 100	Air quality is acceptable; however, for some pollutants there may be a moderate health concern for a very small number of people who are unusually sensitive to air pollution.	Yellow
Unhealthy for Sensitive Groups	101 to 150	Members of sensitive groups may experience health effects. The general public is not likely to be affected.	Orange
Unhealthy	151 to 200	Everyone may begin to experience health effects; members of sensitive groups may experience more serious health effects.	Red
Very Unhealthy	201 to 300	Health warnings of emergency conditions. The entire population is more likely to be affected.	Purple
Hazardous	301 to 500	Health alert: everyone may experience more serious health effects.	Maroon

Table 2
AQI Value Suggested Actions to Protect Health

Air Quality Index Level	AQI Value Actions to Protect Your Health
Good (1-50)	None
Moderate (51-100)	Unusually sensitive people should consider reducing prolonged or heavy exertion.
Unhealthy for Sensitive Groups (101-150)	The following groups should reduce prolonged or heavy outdoor exertion : People with lung disease, such as asthma; Children and older adults; People who are active outdoors.
Unhealthy (151-200)	The following groups should avoid prolonged or heavy outdoor exertion : People with lung disease, such as asthma; Children and older adults; People who are active outdoors. Everyone else should limit prolonged outdoor exertion.
Very Unhealthy (201-300)	The following groups should avoid all outdoor exertion : People with lung disease, such as asthma; Children and older adults; People who are active outdoors. Everyone else should limit outdoor exertion.

Table 3 shows the pollutant-specific ranges for the AQI categories. These are set according to the corresponding NAAQS. The table includes the ranges for the 2015 revised ozone NAAQS.

Table 3
AQI Pollutant-Specific Ranges

Category	AQI	O ₃	O ₃ (new)*	PM _{2.5}	CO	SO ₂	NO ₂
		(ppm) 8-hour	(ppm) 8-hour	(µg/m ³) 24-hour	(ppm) 8-hour	(ppm) 1-hour	(ppm) 1-hour
Good	0-50	0.000-0.059	0.000-0.054	0.0-12.0	0.0-4.4	0-0.035	0-0.053
Moderate	51-100	0.060-0.075	0.055-0.070	12.1-35.4	4.5-9.4	0.036-0.075	0.054-0.100
Unhealthy for Sensitive Groups	101-150	0.076-0.095	0.071-0.085	35.5-55.4	9.5-12.4	0.076-0.185	0.101- 0.360
Unhealthy	151- 200	0.096-0.115	0.086-0.115	55.5-150.4	12.5-15.4	0.186-0.304	0.361-0.649

*Ozone ranges as of October 2015.

Pollutants:

O₃ – Ozone

PM_{2.5} – Fine particulate matter

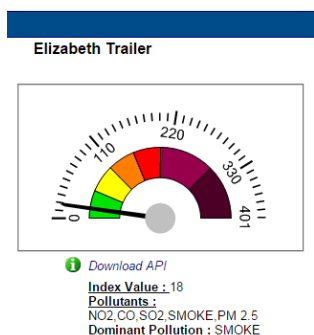
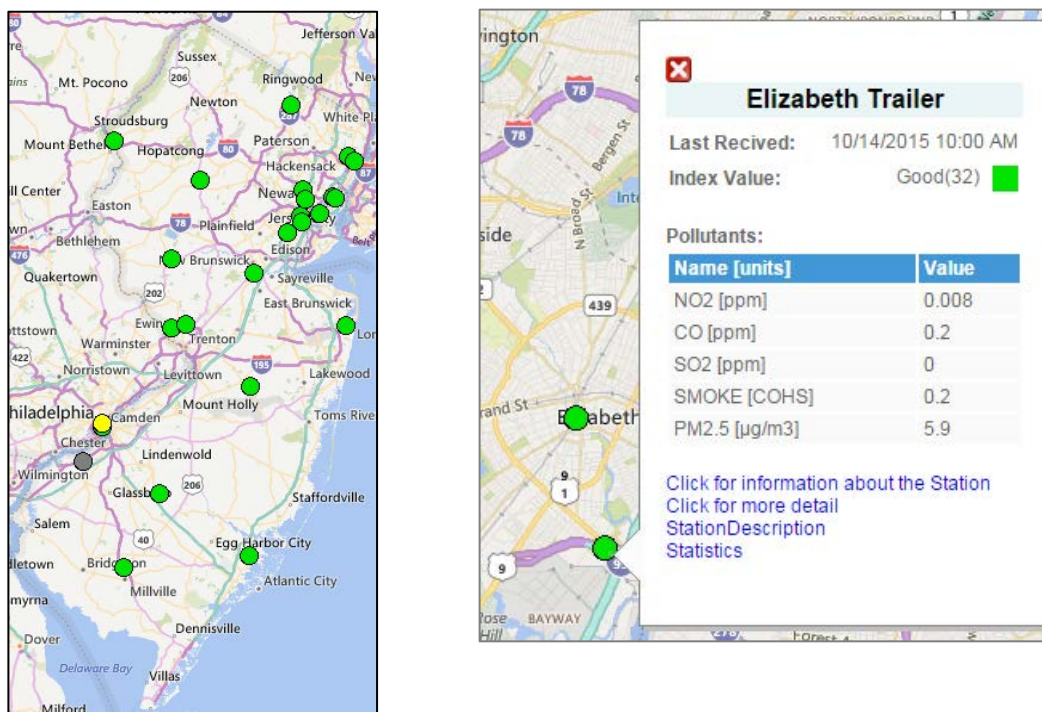
CO – Carbon monoxide

SO₂ – Sulfur dioxide

NO₂ – Nitrogen dioxide

On days when the air quality is expected to reach the “Unhealthy for Sensitive Groups” range or above, cautionary statements similar to those in Table 1 are provided as part of the forecast. These air quality alerts are issued through Enviroflash emails, are displayed on the AirNow and NJDEP air monitoring websites, and can also be viewed on the National Weather Service page (<http://airquality.weather.gov/>). Maps, charts, site photos, and other air quality information are also available on the NJDEP air monitoring web site, as shown in Figure 1 below.

Figure 1
Examples of Information Available on NJDEP’s Air Monitoring Website

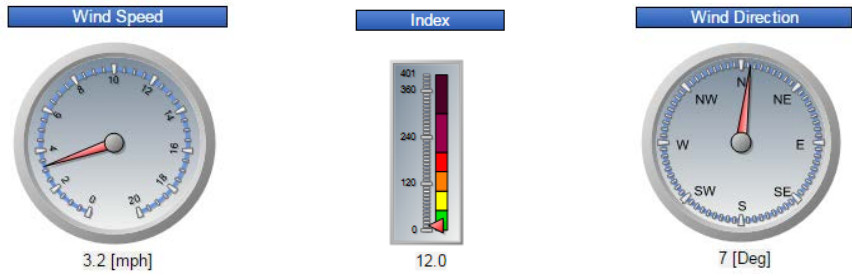


ViewStationInfo

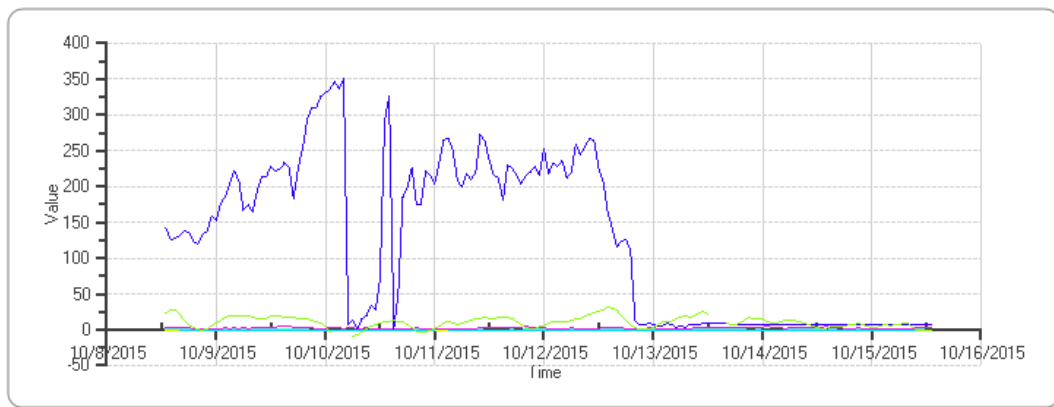
Monitors		
<input checked="" type="checkbox"/>	Monitor	Value
<input checked="" type="checkbox"/>	CO[ppm]	0.2
<input checked="" type="checkbox"/>	SMOKE[COHS]	0.19
<input checked="" type="checkbox"/>	SO2[ppm]	0.000
<input checked="" type="checkbox"/>	NO2[ppm]	0.008
<input checked="" type="checkbox"/>	NO[ppm]	0.010
<input checked="" type="checkbox"/>	WSPD[mph]	3.3
<input checked="" type="checkbox"/>	WDIR[Deg]	8
<input checked="" type="checkbox"/>	PM2.5[ug/m3]	1.7

Figure 1 (continued)
 Examples of Information Available on NJDEP's Air Monitoring Website

Real Time Condition:Elizabeth Trailer Last Received:10/14/2015 1:00 PM Current Monitor:All Monitors



Change Grid / Graph



CO[ppm] SMOKE[COHS] SO2[ppm] NO2[ppm]
 NO[ppm] WSPD[mph] WDIR[Deg] PM2.5[ug/m3]

2015 AQI SUMMARY

Not all monitoring sites have 365 valid days of reported air quality index values. Certain ozone monitors only operate during “ozone season,” from April through October. Table 4 shows which pollutants measured at New Jersey’s monitoring stations are used to determine the daily AQI.

Table 4
Pollutants Monitored at Each Air Quality Index Monitoring Site
in New Jersey in 2015

	Monitoring Site	Ozone	Particulate Matter	Sulfur Dioxide	Nitrogen Dioxide	Carbon Monoxide
1	Ancora State Hospital	√ (s)				
2	Bayonne	√		√	√	
3	Brigantine	√	√	√		
4	Camden Spruce St.	√	√	√	√	√
5	Chester	√		√	√	
6	Clarksboro	√ (s)				
7	Colliers Mills	√ (s)				
8	Columbia WMA	√	√	√	√	
9	East Orange				√	√
10	Elizabeth			√		√
11	Elizabeth Lab		√	√	√	√
12	Ewing		√			
13	Flemington	√	√			
14	Fort Lee Near Road		√		√	√
15	Jersey City			√	√	√
16	Jersey City Firehouse		√			
17	Leonia	√ (s)				
18	Millville	√	√		√	
19	Monmouth University	√ (s)				
20	New Brunswick		√			
21	Newark Firehouse	√	√	√	√	√
22	Rahway		√			
23	Ramapo	√ (s)				
24	Rider University	√	√			
25	Rutgers University	√	√		√	
26	South Camden		√			

(s) – Seasonal operation only (April 1 through October 31)

A summary of the AQI ratings for New Jersey in 2015 is presented in the pie chart in Figure 3 below. There were 190 “Good” days, 150 days were “Moderate,” 25 were rated “Unhealthy for Sensitive Groups,” zero were considered “Unhealthy,” and zero were rated “Very Unhealthy.” This indicates that air quality in New Jersey is considered good or moderate most of the time, but that pollution is still bad enough to adversely affect some people on about one day in fourteen. This is worse than last year, when one in twenty-four days was unhealthy for sensitive groups. It is, however, the third year in a row to have no days exceed the “Unhealthy” limit for the general population.

Figure 2
2015 Air Quality Summary by Days

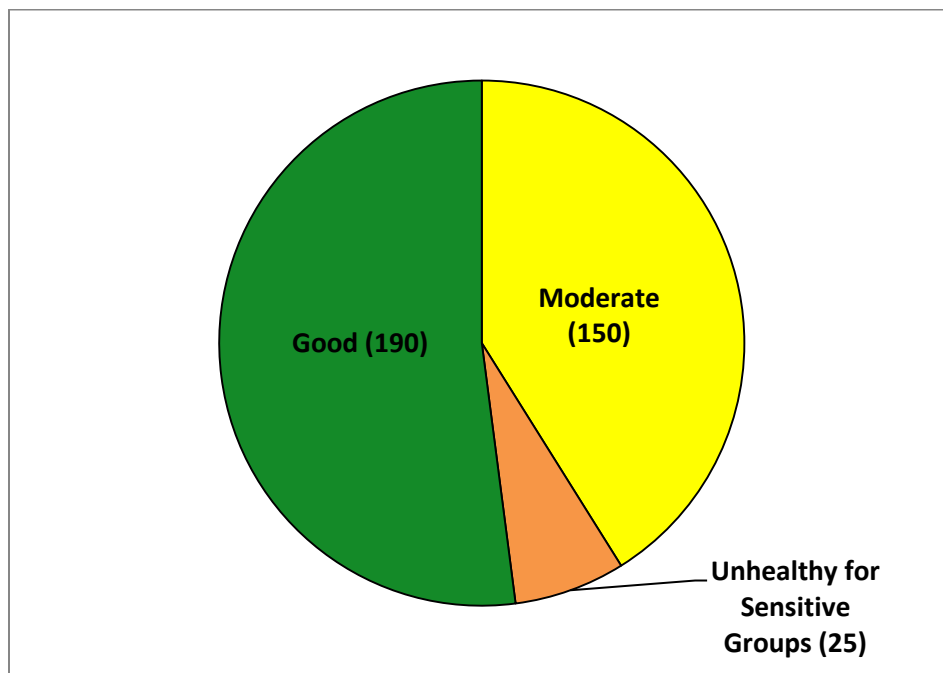


Table 5 below lists the dates when the AQI reached the “Unhealthy for Sensitive Groups” threshold at any monitoring location, and shows which pollutant or pollutants were in that range or higher.

Table 5
AQI Days Over 100 in New Jersey During 2015

Day	Date	Location	AQI Value	Pollutant	Rating
1	2/25/2015	Fort Lee Near Road	111	NO ₂	USG
2	3/10/2015	Elizabeth Trailer	107	NO ₂	USG
3	5/5/2015	Colliers Mills	103	O ₃	USG
4	5/8/2015	Columbia	101	O ₃	USG
5	6/11/2015	Bayonne	101	O ₃	USG
	6/11/2015	Camden Spruce St.	134	O ₃	USG
	6/11/2015	Colliers Mills	113	O ₃	USG
	6/11/2015	Clarksboro	113	O ₃	USG
	6/11/2015	Flemington	101	O ₃	USG
	6/11/2015	Leonia	106	O ₃	USG
	6/11/2015	Monmouth University	127	O ₃	USG
	6/11/2015	Rider University	120	O ₃	USG
6	6/12/2015	Ramapo	112	O ₃	USG
7	6/14/2015	Leonia	101	O ₃	USG
8	7/2/2015	Bayonne	119	NO ₂	USG
9	7/5/2015	Camden Spruce St.	106	O ₃	USG
10	7/12/2015	Camden Spruce St.	101	O ₃	USG
11	7/25/2015	Monmouth University	106	O ₃	USG
12	7/28/2015	Bayonne	110	O ₃	USG
	7/28/2015	Camden Spruce St.	120	O ₃	USG
	7/28/2015	Clarksboro	108	O ₃	USG
13	7/29/2015	Leonia	110	O ₃	USG
	7/29/2015	Rider University	108	O ₃	USG
	7/29/2015	Rutgers University	115	O ₃	USG
14	8/15/2015	Bayonne	101	O ₃	USG
	8/15/2015	Camden Spruce St.	101	O ₃	USG
15	8/17/2015	Bayonne	106	O ₃	USG
16	8/23/2015	Camden Spruce St.	115	O ₃	USG
17	9/1/2015	Camden Spruce St.	108	O ₃	USG
	9/1/2015	Clarksboro	101	O ₃	USG
	9/1/2015	Colliers Mills	101	O ₃	USG
	9/1/2015	Rutgers University	113	O ₃	USG

Continued on next page.

Table 5 (continued)
 AQI Days Over 100 in New Jersey During 2015

Day	Date	Location	AQI Value	Pollutant	Rating
18	9/2/2015	Camden Spruce St.	106	O ₃	USG
	9/2/2015	Clarksboro	106	O ₃	USG
	9/2/2015	Rutgers University	101	O ₃	USG
19	9/3/2015	Bayonne	115	O ₃	USG
	9/3/2015	Brigantine	101	O ₃	USG
	9/3/2015	Colliers Mills	134	O ₃	USG
	9/3/2015	Monmouth University	108	O ₃	USG
	9/3/2015	Rutgers University	106	O ₃	USG
	9/3/2015	Rahway	103	PM _{2.5}	USG
20	9/8/2015	Bayonne	101	O ₃	USG
	9/8/2015	Leonia	103	O ₃	USG
	9/8/2015	Rutgers University	101	O ₃	USG
21	9/16/2015	Ancora State Hospital	103	O ₃	USG
	9/16/2015	Camden Spruce St.	106	O ₃	USG
22	9/17/2015	Ancora State Hospital	103	O ₃	USG
	9/17/2015	Bayonne	138	O ₃	USG
	9/17/2015	Brigantine	106	O ₃	USG
	9/17/2015	Camden Spruce St.	110	O ₃	USG
	9/17/2015	Leonia	113	O ₃	USG
	9/17/2015	Monmouth University	103	O ₃	USG
	9/17/2015	Rider University	103	O ₃	USG
	9/17/2015	Rutgers University	103	O ₃	USG
23	9/18/2015	Ramapo	122	O ₃	USG
24	12/6/2015	Camden Spruce St.	113	PM _{2.5}	USG
	12/6/2015	South Camden	104	PM _{2.5}	USG
25	12/7/2015	Camden Spruce St.	102	PM _{2.5}	USG

Pollutants

NO₂ – Nitrogen dioxide

O₃ – Ozone

PM_{2.5} – Fine particulate matter

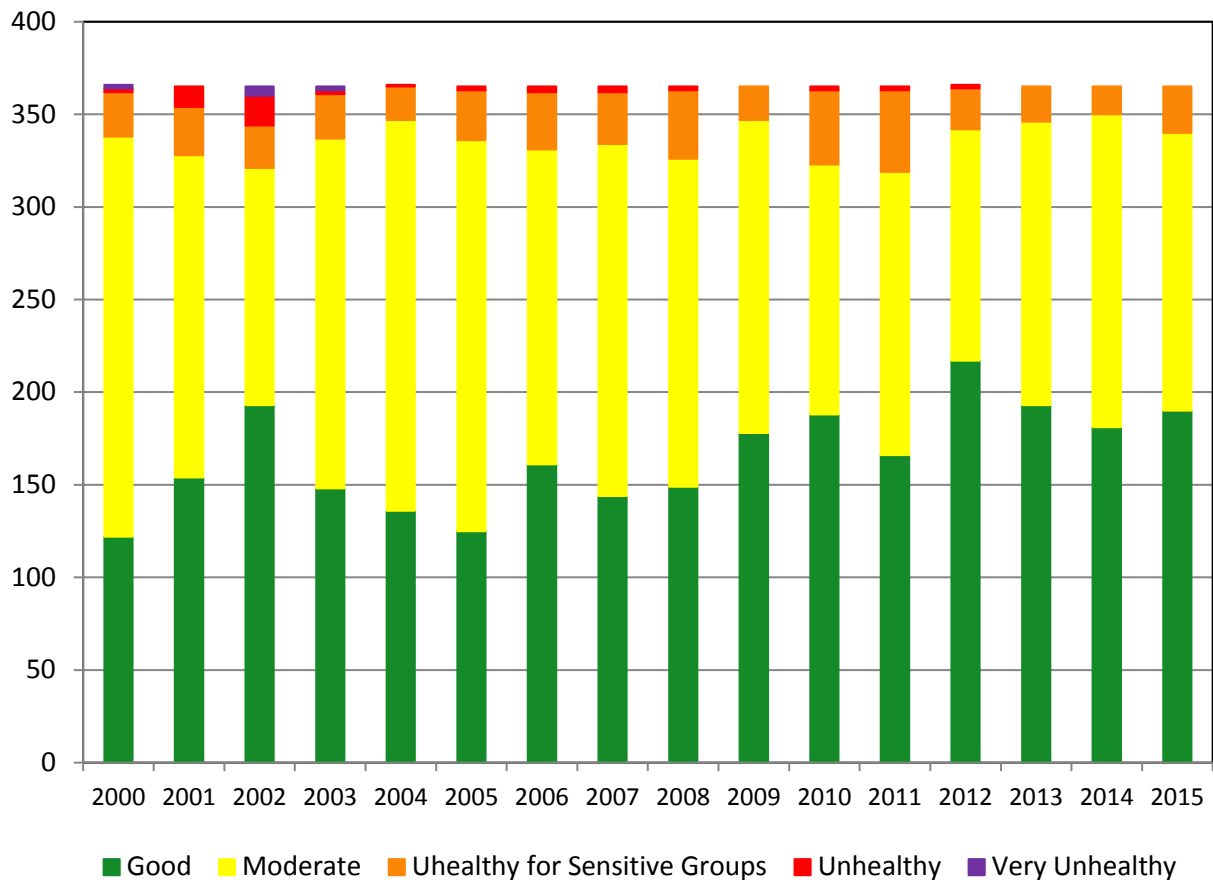
Ratings

USG – Unhealthy for Sensitive Groups

Figure 3 shows the distribution of AQI days since 2000. It should be noted that AQI ranges change whenever the NAAQS is revised (so far, always to be more stringent) for a specific pollutant. So even though improvement in AQI days appears to be somewhat erratic, to see how things have really improved refer to the concentration trend graphs in the individual criteria pollutant reports.

New Jersey has not been in the “Very Unhealthy” range since 2003, when the range was reached because of high ozone levels. Only ozone, particulate matter and nitrogen dioxide have been responsible for AQI days above the moderate range since at least the year 2000.

Figure 3
Number of Days in Each AQI Category Since 2000



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“Air Quality Index Reporting, Appendix G.” Title 40 *Code of Federal Regulations*, Part 58. 2016 ed. <http://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&SID=3b421c7ca640647158c90279e577c578&mc=true&n=pt40.6.58&r=PART&ty=HTML#sp40.6.58.g>