



# 2016 Air Quality Index

New Jersey Department of Environmental Protection

## WHAT IS THE AIR QUALITY INDEX (AQI)?

The Air Quality Index (AQI) is a national air quality rating system based on the National Ambient Air Quality Standards (NAAQS). An index 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 past few years, the U.S. Environmental Protection Agency (USEPA) periodically reviews the NAAQS to make sure that they are protective of public health, and adjusts them accordingly in response to new research. The latest NAAQS revision (for ozone) occurred 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](http://www.enviroflash.info)). Anyone can view the forecast and current air quality conditions at USEPA's AirNow website ([www.airnow.gov](http://www.airnow.gov)) or at NJDEP's air monitoring webpage ([www.njaqinow.net/](http://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 3-1). Table 3-2 contains suggested actions to take to protect public health for different AQI levels. For more information on the AQI, visit EPA's web site at [www.airnow.gov](http://www.airnow.gov).

**Table 3-1**  
**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 3-2**  
**AQI Value Suggested Actions to Protect Health**

Air Quality Index Level	AQI Value Actions to Protect Your Health
<b>Good (1-50)</b>	None
<b>Moderate (51-100)</b>	Unusually sensitive individuals should consider limiting prolonged outdoor exertion.
<b>Unhealthy for Sensitive Groups (101-150)</b>	Children, active adults, and people with respiratory disease such as asthma should limit prolonged outdoor exertion.
<b>Unhealthy (151-200)</b>	Children, active adults, and people with respiratory disease such as asthma should avoid prolonged outdoor exertion: Everyone else should limit prolonged outdoor exertion.
<b>Very Unhealthy (201-300)</b>	Children, active adults, and people with respiratory disease such as asthma should avoid outdoor exertion. Everyone else should limit outdoor exertion.
<b>Hazardous (301-500)</b>	Everyone should avoid all physical activity outdoors.

Table 3-3 shows the pollutant-specific ranges for the AQI categories. These are set according to the corresponding NAAQS.

**Table 3-3**  
**AQI Pollutant-Specific Ranges**

Category	AQI	O <sub>3</sub>	PM <sub>2.5</sub>	CO	SO <sub>2</sub>	NO <sub>2</sub>
		(ppm) 8-hour	(µg/m <sup>3</sup> ) 24-hour	(ppm) 8-hour	(ppm) 1-hour	(ppm) 1-hour
Good	0-50	0.000-0.054	0.0-12.0	0.0-4.4	0-0.035	0-0.053
Moderate	51-100	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	0.071-0.085	35.5-55.4	9.5-12.4	0.076-0.185	0.101- 0.360
Unhealthy	151- 200	0.086-0.105	55.5-150.4	12.5-15.4	0.186-0.304	0.361-0.649
Very Unhealthy	201-300	0.106-0.200	150.5-250.4	15.5-30.4	0.305-0.604	0.605-1.249
Hazardous	301-500	>0.200	250.5-500.4	30.5-100.4	0.605-1.004	1.250-2.049

Pollutants:

- O<sub>3</sub> – Ozone
- PM<sub>2.5</sub> – Fine particulate matter
- CO – Carbon monoxide
- SO<sub>2</sub> – Sulfur dioxide
- NO<sub>2</sub> – 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 Tables 3-1 and 3-2 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 for the Philadelphia/Mount Holly area (<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 3-1 below.

**Figure 3-1**  
**Examples of Information Available on NJDEP’s Air Monitoring Website**  
[www.njaqinow.net](http://www.njaqinow.net)

**Current Air Quality**



**Figure 3-1 (continued)**  
**Examples of Information Available on NJDEP's Air Monitoring Website**

Monitors		
<input checked="" type="checkbox"/>	Monitor	Value
<input checked="" type="checkbox"/>	CO[ppm]	0.0
<input checked="" type="checkbox"/>	O3[ppm]	--
<input checked="" type="checkbox"/>	NO[ppm]	0.001
<input checked="" type="checkbox"/>	NO2[ppm]	0.003
<input checked="" type="checkbox"/>	NOX[ppm]	0.005
<input checked="" type="checkbox"/>	SO2[ppm]	0.000
<input checked="" type="checkbox"/>	WSPD[mph]	6.2
<input checked="" type="checkbox"/>	WDIR[Deg]	168
<input checked="" type="checkbox"/>	TEMP[DegF]	72
<input checked="" type="checkbox"/>	RH[%]	48.3
<input checked="" type="checkbox"/>	BP[in Hg]	29.97
<input checked="" type="checkbox"/>	RAIN[in]	0.000
<input checked="" type="checkbox"/>	PM25[ug/m3(L)]	5.6

**Camden Spruce St**

Last Received: 8/30/2017 12:00 PM

Index Value: Good(24) ■

Pollutants:

Name [units]	Value
NO2 [ppm]	0.003
CO [ppm]	0
SO2 [ppm]	0
PM2.5 [ug/m3(L)]	5.6

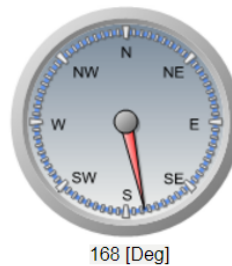
[Click for information about the Station](#)  
[Click for more detail](#)  
[StationDescription](#)  
[Statistics](#)

**Real Time Condition:Camden Spruce St Last Received:8/30/2017 12:00 PM Current Monitor:All Monitors**

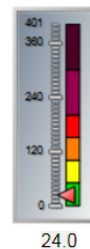
**Wind Speed**



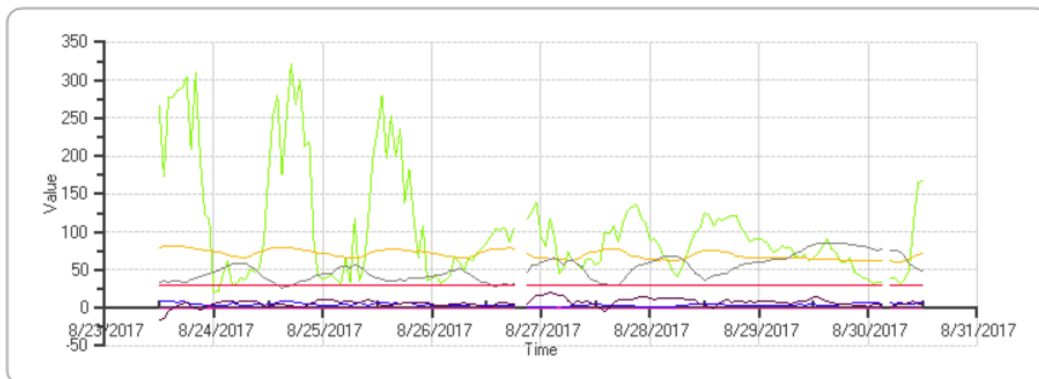
**Wind Direction**



**Index**

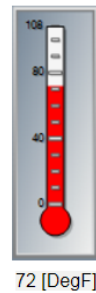


**Change Grid / Graph**



- CO[ppm]
- O3[ppm]
- NO[ppm]
- NO2[ppm]
- NOX[ppm]
- SO2[ppm]
- WSPD[mph]
- WDIR[Deg]
- TEMP[DegF]
- RH[%]
- BP[in Hg]
- RAIN[in]
- PM25[ug/m3(L)]

**Temperature**



## 2016 AQI SUMMARY

Not all of New Jersey's 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 3-4 shows which pollutants are used to determine the daily AQI at different monitoring stations.

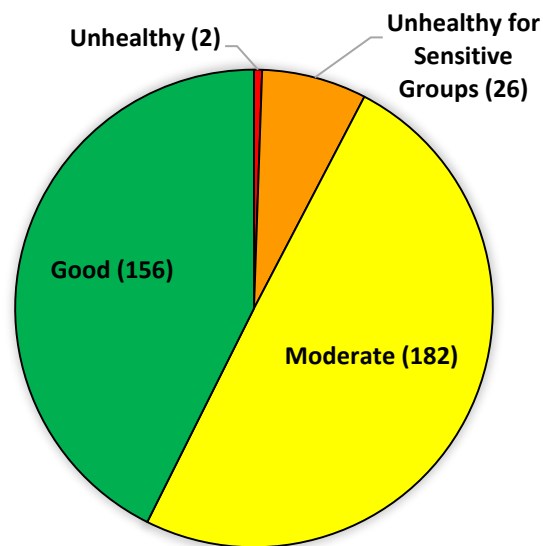
**Table 3-4**  
**Pollutants Monitored at Each Air Quality Index Monitoring Site**  
**in New Jersey in 2016**

	Monitoring Site	Ozone	Particulate Matter	Carbon Monoxide	Sulfur Dioxide	Nitrogen Dioxide
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	Flemington	√	√			
13	Fort Lee Near Road		√	√		√
14	Jersey City			√	√	√
15	Jersey City Firehouse		√			
16	Leonia	√ (s)				
17	Millville	√	√			√
18	Monmouth University	√ (s)				
19	Newark Firehouse	√	√	√	√	√
20	Rahway		√			
21	Ramapo	√ (s)				
22	Rider University	√	√			
23	Rutgers University	√	√			√

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

A summary of the AQI ratings for New Jersey in 2016 is presented in the pie chart in Figure 3-2 below. In 2016, there were 156 “Good” days, 183 were “Moderate,” 25 were rated “Unhealthy for Sensitive Groups,” 2 were considered “Unhealthy.” None 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 thirteen. This is similar to last year when one in fourteen was unhealthy for sensitive groups. It is, however, the first year in the last four to have any days exceed the unhealthy limit for the general population. Table 5 lists the dates when the AQI reached the “Unhealthy for Sensitive Groups” or “Unhealthy” threshold at any monitoring location, and shows the responsible pollutants and their concentrations.

**Figure 3-2**  
**2016 Air Quality Summary by Days**



New Jersey ozone concentrations on May 25 and 26, 2016, were unusually high because they were impacted by emissions from a large wildfire in Alberta, Canada. Every ozone monitor in the state except Bayonne recorded exceedances of the NAAQS on May 25. Two sites even went into the “Unhealthy” range. The next day, ten sites exceeded the ozone standard. In May 2017, NJDEP submitted a report to USEPA demonstrating that the emissions from the wildfire influenced New Jersey’s air quality on May 25 and May 26, 2016, and requested that the data from the ozone monitors on those days be excluded from determining New Jersey’s compliance with the ozone NAAQS and other regulatory actions. USEPA has agreed that ozone exceedances for this day will not be included in calculating New Jersey’s 2016 design values because of the influence of the fire. Some neighboring states have also requested that exceedances on those days be excluded from their compliance determinations. More information about these ozone concentrations and how they affect regulatory issues can be found in the NJDEP 2016 Ozone Summary.

**Table 3-5  
AQI “Unhealthy” or “USG” Days in New Jersey During 2016**

Day	Date	Location	AQI Value	Pollutant	Rating	Concentration	Units
1	3/9/2016	Fort Lee Near Road	110	PM <sub>2.5</sub>	USG	39.3	ug/m <sup>3</sup>
2	5/12/2016	Colliers Mills	104	O <sub>3</sub>	USG	72	ppb
3	5/25/2016*	Ancora	118	O <sub>3</sub>	USG	76	ppb
		Brigantine	129	O <sub>3</sub>	USG	79	ppb
		Camden Spruce St.	125	O <sub>3</sub>	USG	78	ppb
		Chester	143	O <sub>3</sub>	USG	83	ppb
		Clarksboro	143	O <sub>3</sub>	USG	83	ppb
		Colliers Mills	158	O <sub>3</sub>	Unhealthy	90	ppb
		Columbia	118	O <sub>3</sub>	USG	76	ppb
		Flemington	143	O <sub>3</sub>	USG	83	ppb
		Leonia	153	O <sub>3</sub>	Unhealthy	86	ppb
		Millville	136	O <sub>3</sub>	USG	81	ppb
		Monmouth University	136	O <sub>3</sub>	USG	81	ppb
		Newark Firehouse	136	O <sub>3</sub>	USG	81	ppb
		Ramapo	129	O <sub>3</sub>	USG	79	ppb
		Rider University	139	O <sub>3</sub>	USG	82	ppb
Rutgers University	146	O <sub>3</sub>	USG	84	ppb		
Washington Crossing**	143	O <sub>3</sub>	USG	83	ppb		
4	5/26/2016*	Bayonne	118	O <sub>3</sub>	USG	76	ppb
		Chester	153	O <sub>3</sub>	Unhealthy	86	ppb
		Columbia	108	O <sub>3</sub>	USG	73	ppb
		Flemington	154	O <sub>3</sub>	Unhealthy	88	ppb
		Leonia	150	O <sub>3</sub>	USG	85	ppb
		Newark Firehouse	122	O <sub>3</sub>	USG	77	ppb
		Ramapo	136	O <sub>3</sub>	USG	81	ppb
		Rider University	139	O <sub>3</sub>	USG	82	ppb
		Rutgers University	153	O <sub>3</sub>	Unhealthy	86	ppb
		Washington Crossing**	153	O <sub>3</sub>	Unhealthy	86	ppb
5	5/27/2016	Ramapo	103	O <sub>3</sub>	USG	71	ppb
		Rutgers University	115	O <sub>3</sub>	USG	75	ppb
		Washington Crossing**	111	O <sub>3</sub>	USG	74	ppb
6	5/28/2016	Leonia	122	O <sub>3</sub>	USG	77	ppb
		Rutgers University	108	O <sub>3</sub>	USG	73	ppb
		Washington Crossing**	111	O <sub>3</sub>	USG	74	ppb
7	6/1/2016	Chester	104	O <sub>3</sub>	USG	72	ppb
		Columbia	104	O <sub>3</sub>	USG	72	ppb
		Flemington	111	O <sub>3</sub>	USG	74	ppb
		Ramapo	104	O <sub>3</sub>	USG	72	ppb
		Washington Crossing**	103	O <sub>3</sub>	USG	71	ppb

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**Table 3-5 (continued)**  
**AQI “Unhealthy” or “USG” Days in New Jersey During 2016**

Day	Date	Location	AQI Value	Pollutant	Rating	Concentration	Units
8	6/11/2016	Camden Spruce St.	118	O <sub>3</sub>	USG	76	ppb
		Clarksboro	111	O <sub>3</sub>	USG	74	ppb
		Colliers Mills	108	O <sub>3</sub>	USG	73	ppb
		Monmouth University	108	O <sub>3</sub>	USG	73	ppb
		Rutgers University	104	O <sub>3</sub>	USG	72	ppb
9	6/15/2016	Colliers Mills	103	O <sub>3</sub>	USG	71	ppb
		Rider University	103	O <sub>3</sub>	USG	71	ppb
		Rutgers University	103	O <sub>3</sub>	USG	71	ppb
10	6/19/2016	Leonia	111	O <sub>3</sub>	USG	74	ppb
		Rutgers University	108	O <sub>3</sub>	USG	73	ppb
11	6/20/2016	Camden Spruce St.	115	O <sub>3</sub>	USG	75	ppb
		Clarksboro	122	O <sub>3</sub>	USG	77	ppb
		Flemington	108	O <sub>3</sub>	USG	73	ppb
		Ramapo	129	O <sub>3</sub>	USG	79	ppb
		Rutgers University	111	O <sub>3</sub>	USG	74	ppb
		Washington Crossing**	104	O <sub>3</sub>	USG	72	ppb
12	6/24/2016	Flemington	125	O <sub>3</sub>	USG	78	ppb
		Washington Crossing**	111	O <sub>3</sub>	USG	74	ppb
13	6/26/2016	Washington Crossing**	111	O <sub>3</sub>	USG	74	ppb
14	7/6/2016	Bayonne	111	O <sub>3</sub>	USG	74	ppb
		Monmouth University	104	O <sub>3</sub>	USG	72	ppb
15	7/8/2016	Camden Spruce St.	111	O <sub>3</sub>	USG	74	ppb
		Clarksboro	118	O <sub>3</sub>	USG	76	ppb
16	7/16/2016	Leonia	108	O <sub>3</sub>	USG	73	ppb
17	7/21/2016	Leonia	103	O <sub>3</sub>	USG	71	ppb
		Rider University	111	O <sub>3</sub>	USG	74	ppb
		Rutgers University	111	O <sub>3</sub>	USG	74	ppb
18	7/22/2016	Camden Spruce St.	136	O <sub>3</sub>	USG	81	ppb
		Clarksboro	111	O <sub>3</sub>	USG	74	ppb
		Flemington	108	O <sub>3</sub>	USG	73	ppb
		Leonia	115	O <sub>3</sub>	USG	75	ppb
		Rider University	104	O <sub>3</sub>	USG	72	ppb
		Rutgers University	125	O <sub>3</sub>	USG	78	ppb
		Washington Crossing**	104	O <sub>3</sub>	USG	72	ppb
19	7/25/2016	Camden Spruce St.	103	O <sub>3</sub>	USG	71	ppb
20	7/27/2016	Camden Spruce St.	125	O <sub>3</sub>	USG	78	ppb
		Clarksboro	103	O <sub>3</sub>	USG	71	ppb

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**Table 3-5 (continued)  
AQI “Unhealthy” or “USG” Days in New Jersey During 2016**

Day	Date	Location	AQI Value	Pollutant	Rating	Concentration	Units
21	7/28/2016	Newark Firehouse	103	O <sub>3</sub>	USG	71	ppb
22	7/29/2016	Rutgers University	118	O <sub>3</sub>	USG	76	ppb
23	8/24/2016	Leonia	104	O <sub>3</sub>	USG	72	ppb
		Rider University	118	O <sub>3</sub>	USG	76	ppb
		Rutgers University	115	O <sub>3</sub>	USG	75	ppb
24	8/31/2016	Camden Spruce St.	104	O <sub>3</sub>	USG	72	ppb
25	9/14/2016	Colliers Mills	103	O <sub>3</sub>	USG	71	ppb
26	9/23/2016	Ancora	118	O <sub>3</sub>	USG	76	ppb
		Camden Spruce St.	125	O <sub>3</sub>	USG	78	ppb
		Clarksboro	129	O <sub>3</sub>	USG	79	ppb
		Colliers Mills	122	O <sub>3</sub>	USG	77	ppb
		Flemington	125	O <sub>3</sub>	USG	78	ppb
		Washington Crossing**	115	O <sub>3</sub>	USG	75	ppb
27	11/11/2016	Camden Spruce St.	103	SO <sub>2</sub>	USG	0.081	ppm
28	11/21/2016	Camden Spruce St.	142	SO <sub>2</sub>	USG	0.167	ppm

Rating

USG – Unhealthy for sensitive groups

Pollutants

PM<sub>2.5</sub> – Fine particulate matter

O<sub>3</sub> – Ozone

SO<sub>2</sub> – Nitrogen dioxide

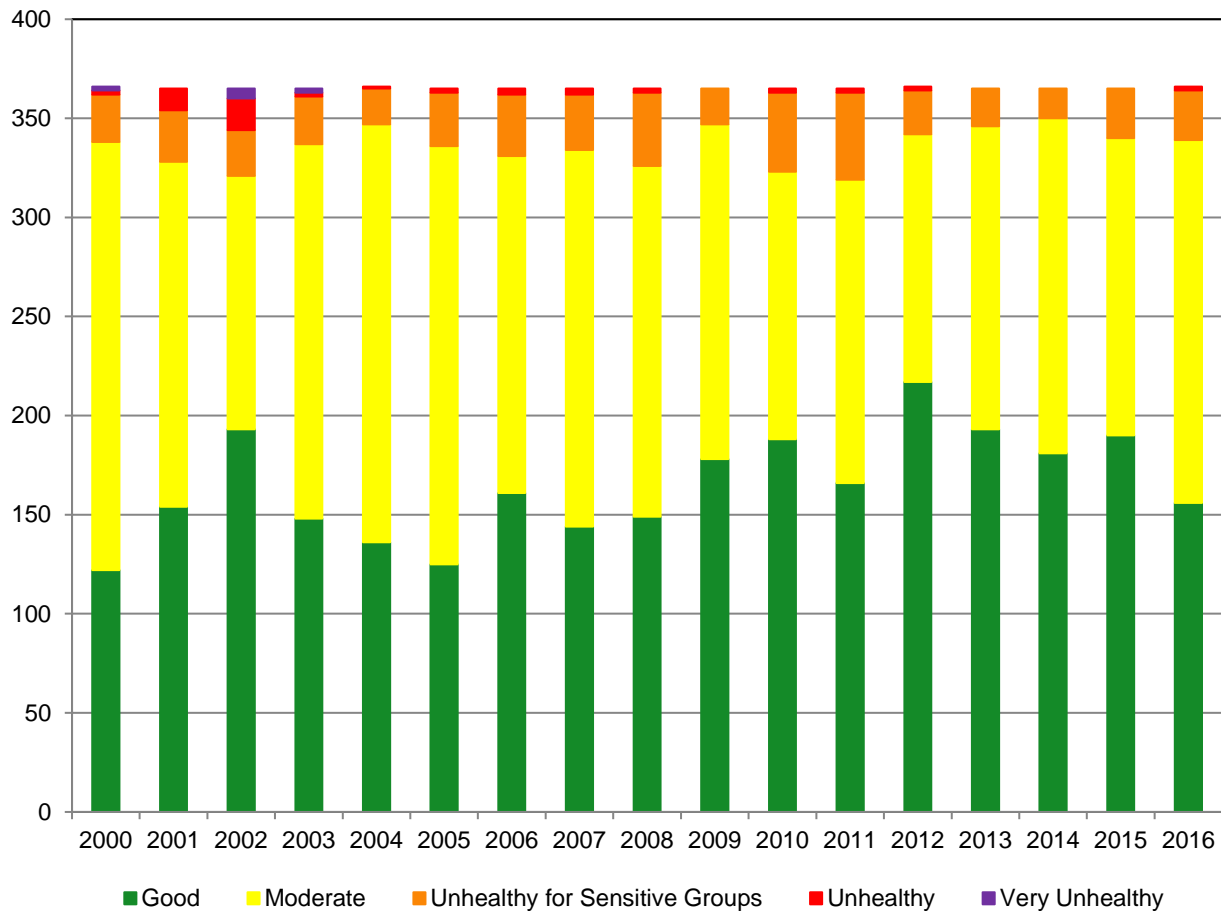
\*USEPA has determined that ozone exceedances for this day will not be included in calculating New Jersey’s 2016 design values because of the influence of a wildfire in Canada.

\*\* Washington Crossing air monitoring station is operated by USEPA. The site’s data is included in determining exceedances in New Jersey.

Figure 3-3 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.

Of all the criteria pollutants, ozone is predominantly responsible for AQI days above the moderate range in New Jersey.

**Figure 3-3**  
**Number of Days in Each AQI Category Since 2000**



## REFERENCES

American Lung Association. Air Quality Index: Using Air Quality information to Protect Yourself from Outdoor Air Pollution. <http://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/air-quality-index.html>. Accessed 11/30/2017.

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