PM2.5 National Ambient Air Quality Standard Health Exceedances on June 14, 2025

On Saturday, June 14, 2025, there were two (2) exceedances of the National Ambient Air Quality Standard (NAAQS) for PM2.5 (24-hour average of 35 micrograms/cubic meter, ug/m^3) in New Jersey due to wildfires. A PM2.5 exceedance of the 24-hour NAAQS is measured when the concentration is 35 ug/m^3 or greater.

Note, all of NJ is in attainment for the PM2.5 annual and 24-hour NAAQS and there are no downwind nonattainment areas from NJ.

Table 1. Preliminary New Jersey PM2.5 Concentrations on 6/14/25

STATION	**24-Hour Average (ug/m^3)**
Atlantic City	10.4
Brigantine	11.2
Chester	16
Clarksboro	52.6
Columbia	16.5
Elizabeth Lab	17.4
Flemington	17.5
Fort Lee Near Road	15.7
Jersey City Firehouse	14
Millville	44.5
Paterson	14.7
Pennsauken	14.4
Rahway	17.4
Rider University	15.6
Rutgers University	23.2
South Camden	11.4
Toms River	13.4
Trenton	13.7
Union City High School	13.8
TOTAL EXCEEDANCES	**2**

From the out-of-state stations adjacent to New Jersey, there were exceedances of the PM2.5 NAAQS in Delaware, Maryland, and Pennsylvania due to wildfires. See Table 2.

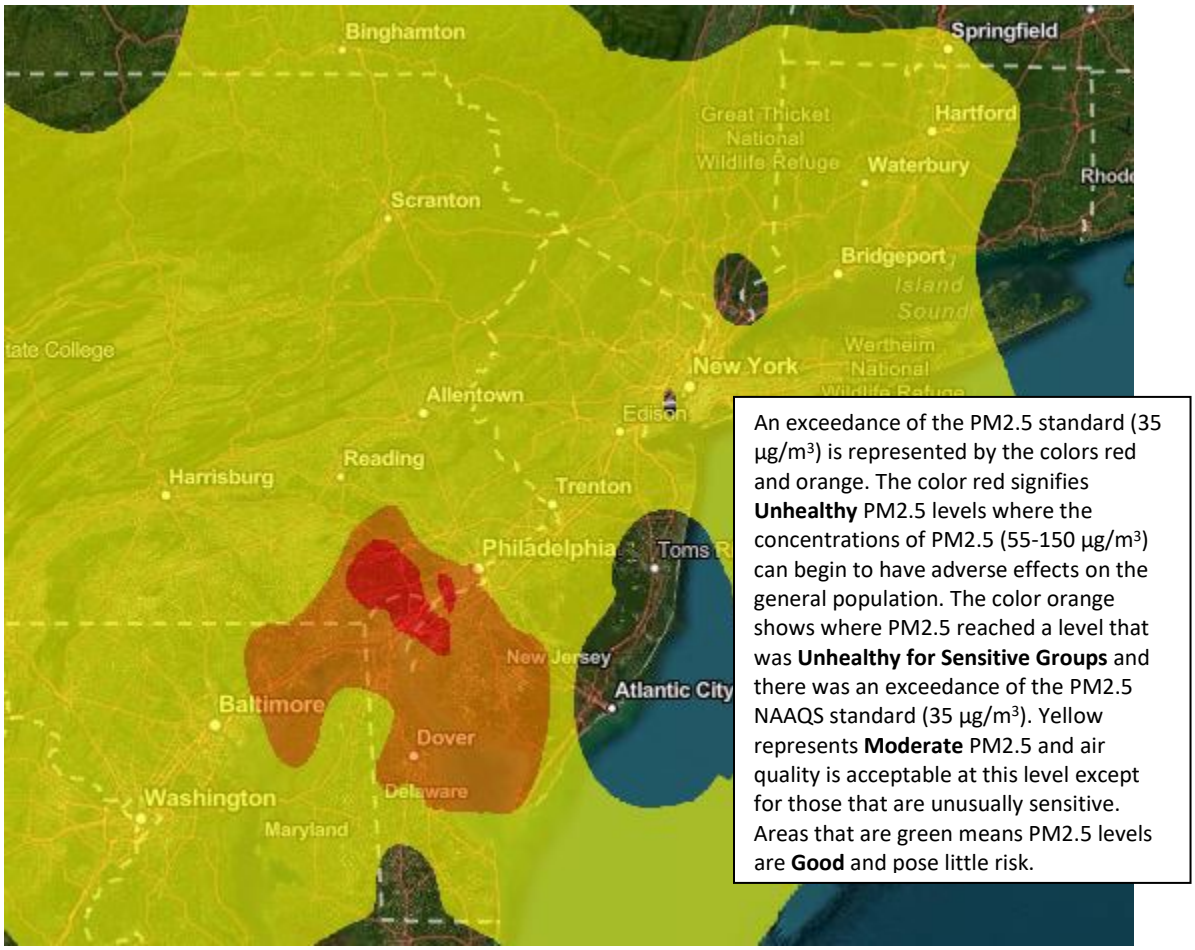
Table 2. Preliminary PM2.5 Concentrations at Out-of-State Monitoring Stations Adjacent to New Jersey on 6/14/25

STATE	STATION	24-Hour Average (ug/m^3)
CT	Bridgeport	13.9
CT	Danbury	15.8
CT	New Haven – Criscuolo Park	12.9
CT	Waterbury	13.2
DE	KILLENS (Kent Co.)	35.3
DE	LUMS 2 (New Castle Co.)	41.5
DE	MLK (New Castle Co.)	62.4
DE	Rte 9 Del City	43.3
DE	SEAFORD (Sussex Co.)	10.7
MD	Fair Hill	40.8
NY	Bklyn – PS274	19.4
NY	CCNY	17.5
NY	Division Street	ND
NY	Eisenhower Park	ND
NY	Fresh Kills	17.2
NY	Holtsville	14.5
NY	Manhattan/IS143	13.4
NY	Maspeth	12.2
NY	Queens	17.9
NY	Queens Near-Road	ND
NY	White Plains	11.4
PA	Allentown	ND
PA	Chester	58.7
PA	Freemansburg	16.3
PA	Marcus Hook	49.2
PA	New Garden	63.2
PA	Norristown	14.7
PA	FAB (Philadelphia Co.)	20.4
PA	MON (Philadelphia Co.)	ND
PA	NEW (Philadelphia Co.)	17
PA	RIT (Philadelphia Co.)	37.5
PA	TOR (Philadelphia Co.)	ND
	TOTAL EXCEEDANCES	**8**

Table 3. Number of Days PM2.5 NAAQS was Exceeded in NJ's Nonattainment Areas in 2025.

STATE	# of Days NAAQS was Exceeded January 1 – June, 2025 NAAQS = 35 ug/m^3
Connecticut	0
Delaware	2
Maryland	1
New Jersey	2
New York	0
Pennsylvania	2

Figure 1. PM2.5 Air Quality Index for June 14, 2025



Source: www.airnow.gov

For PM2.5 terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: https://www.nj.gov/dep/airmon/glossary.html

Weather

Starting on Friday, June 13th, a frontal boundary moved through the region and stalled over Maryland and Delaware. Easterly flow set up over the region, bringing cooler temperatures and increased cloud cover with it. Early Friday morning, a wildfire in Wharton State Forest was reported and as the fire grew, PM2.5 concentrations began to increase in areas downwind. Winds remained light throughout the day as well, and little mixing was present in the atmosphere. These conditions allowed PM2.5 concentrations to rise further, especially during the overnight hours into Saturday morning when an inversion was present. By Saturday morning, winds shifted out of the northeast, shifting PM2.5 concentrations with it. Eventually progress in the containment of the wildfire by Saturday afternoon, as well as increased dispersion and scattered rain showers, contributed to a decrease in PM2.5 concentrations.

Where Did the Air Pollution that Caused PM2.5 Come From?

Forest Fire Service Personnel were notified by a private aircraft of a large column of smoke coming from a very remote area with limited access in Wharton State Forest at approximately 5:00 am on June 13th. PM2.5 levels rapidly increased overnight and into the early morning hours of June 14th at monitors in New Jersey, Pennsylvania, Delaware, and Maryland located downwind of the fire. By evening hours on June 14th, levels gradually decreased back down to moderate levels. Average PM2.5 concentrations reached the Unhealthy category in Pennsylvania and Delaware for June 14th. While New Jersey did experience some 1-hour average concentration values in the Unhealthy category, the 24-hour average concentrations were determined to be in the Unhealthy for Sensitive Groups (USG) category. According to the latest Situation Report from 12:00 pm on June 15th, the fire is currently at 5750 acres and is 80% contained. Also, moderate levels of PM2.5 were present throughout the region on both Friday and Saturday due to the presence of Canadian wildfire smoke aloft.

Light northeasterly winds and as well as a temperature inversion allowed for minimal dispersion of the smoke plume. Due to the close proximity, elevated fine particulate levels at the Clarksboro and Millville monitors led to an exceedance. Figure 2 below shows the 1-hr average concentrations of PM2.5 at the Clarksboro and Millville monitors on June 13th and June 14th. Elevated levels were experienced during the overnight hours into the next day before dropping by the evening hours after the inversion finally broke.

Figure 2. PM2.5 1-hr Concentrations for June 13 & 14, 2025

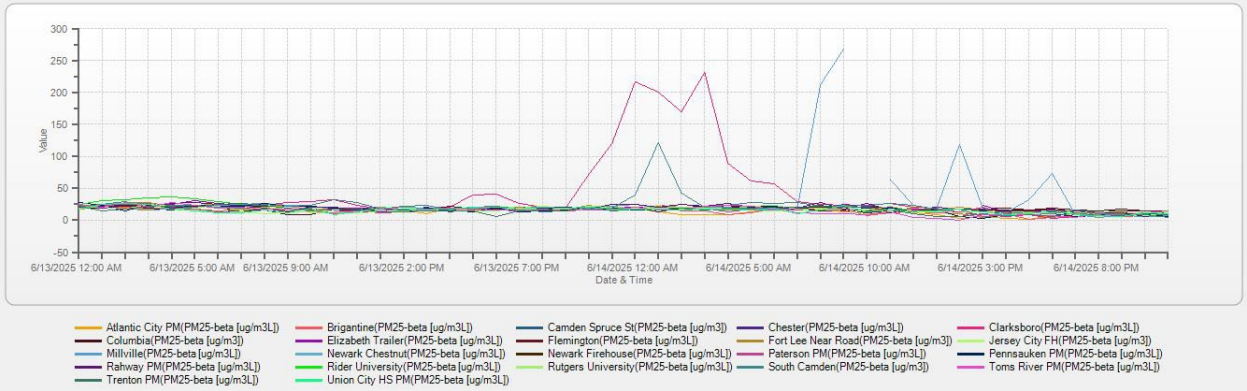
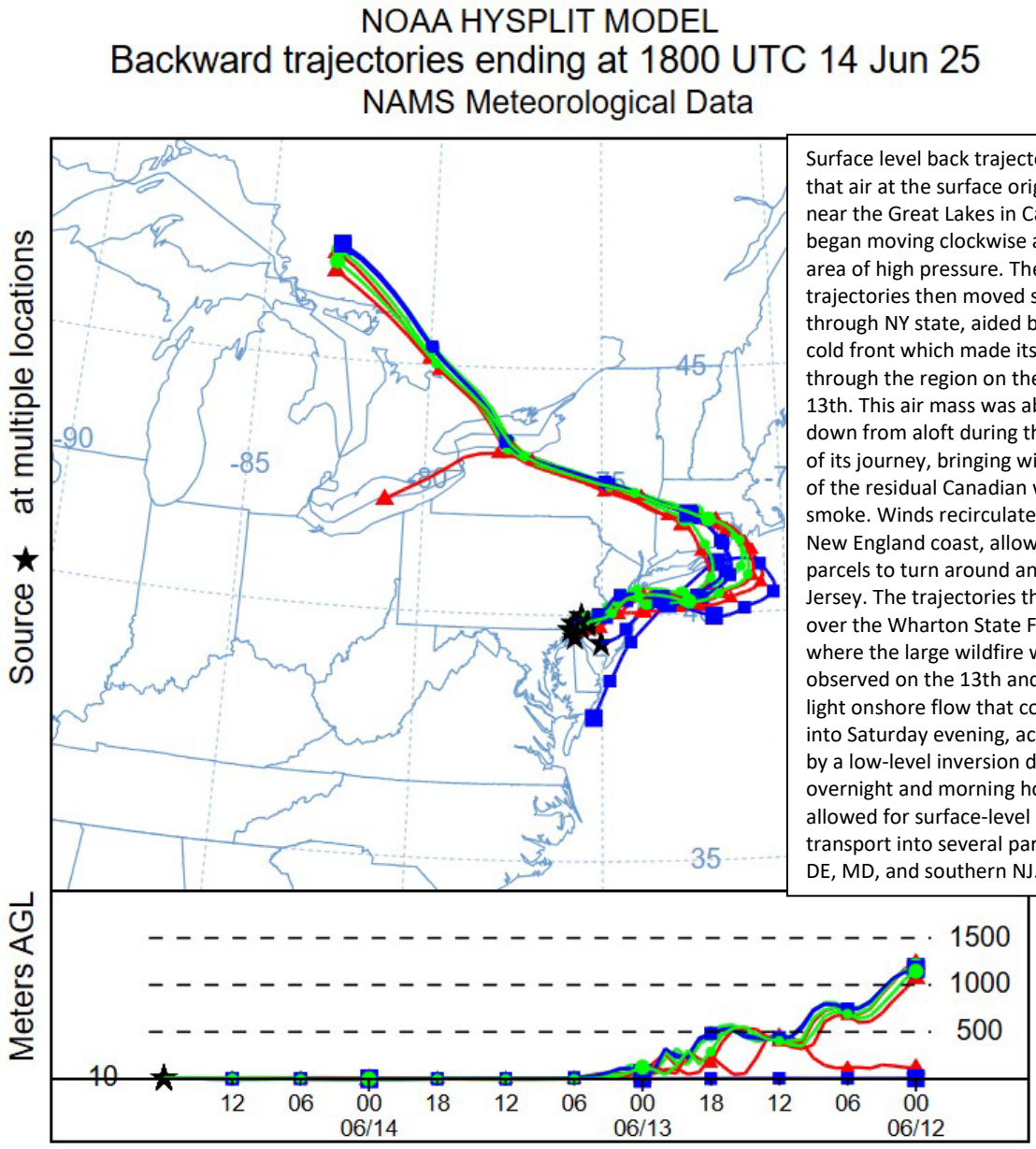


Figure 3 shows the surface-level back trajectory at 10 meters for the monitored exceedance(s) on this day. The figure illustrates where the air came from during the 12 hours preceding the 24-hour PM2.5 exceedance. A transport analysis is provided with the trajectory shown below along with a map of the National Air Quality Index for the previous day (Figure 4). The monitoring stations chosen to model the back trajectory are listed in Table 3.

Table 3. Monitoring Stations with a 24-hr PM2.5 Exceedance that were selected to Run 72-hr Back Trajectories

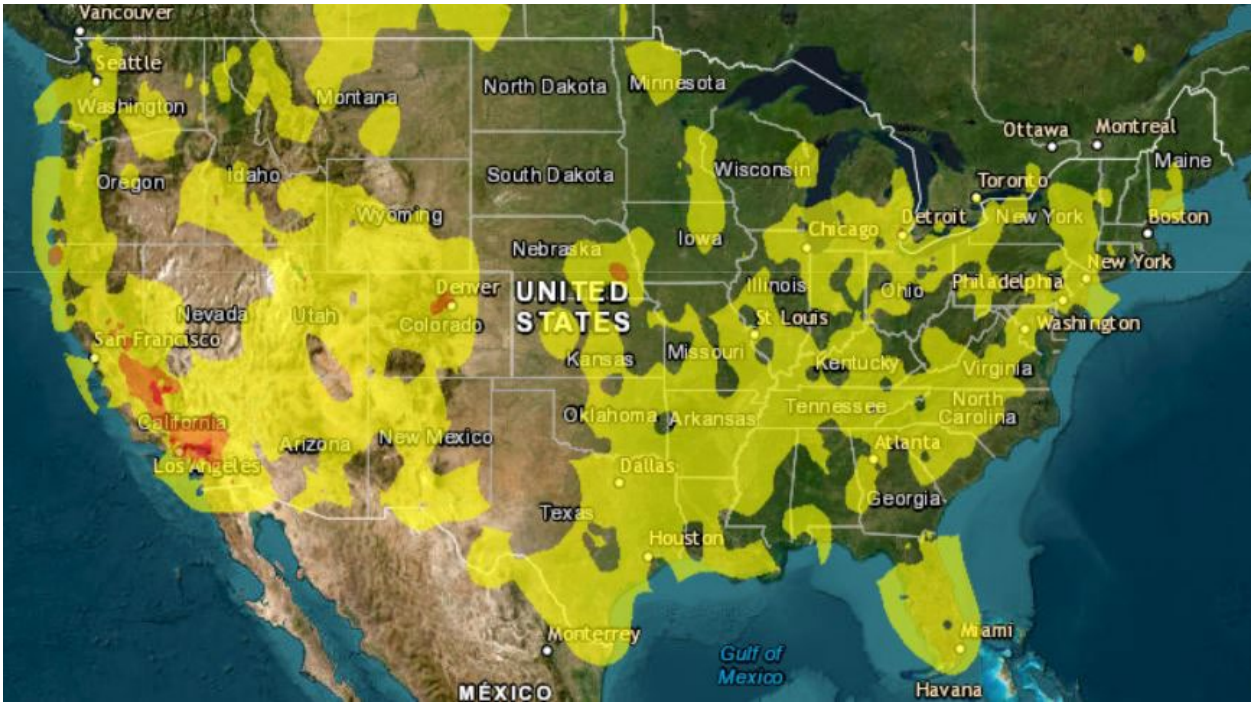
STATE	STATION	Daily Maximum 24-Hr Average (ug/m^3)
NJ	Clarksboro	52.6
NJ	Millville	44.5
DE	KILLENS (Kent Co.)	35.3
DE	LUMS 2 (New Castle County)	41.5
DE	MLK (New Castle Co.)	62.4
MD	Fair Hill	40.8
PA	Chester	58.7
PA	Marcus Hook	49.2
PA	New Garden	63.2

Figure 3. 72-hour Back Trajectories for June 14, 2025 at 10 meters



Surface level back trajectories show that air at the surface originated near the Great Lakes in Canada and began moving clockwise around an area of high pressure. The trajectories then moved southeast through NY state, aided by a leading cold front which made its way through the region on the 12th and 13th. This air mass was able to mix down from aloft during this portion of its journey, bringing with it some of the residual Canadian wildfire smoke. Winds recirculated off the New England coast, allowing the parcels to turn around and into New Jersey. The trajectories then passed over the Wharton State Forest, where the large wildfire was observed on the 13th and 14th. A light onshore flow that continued into Saturday evening, accompanied by a low-level inversion during the overnight and morning hours, allowed for surface-level smoke to transport into several parts of PA, DE, MD, and southern NJ.

Figure 4. Air Quality Index for the United States on June 13, 2025



Source: www.airnow.gov

Find Out About Air Quality Every Day

Learn more about your local PM2.5 air quality forecast by visiting the "What's Your Air Quality Today?" page at https://dep.nj.gov/airplanning/aqi-today/ .