**PM2.5 National Ambient Air Quality Standard Health Exceedances on July 4, 2025**

On Friday, July 4, 2025, there was one (1) site in New Jersey that exceeded the National Ambient Air Quality Standard (NAAQS) for PM2.5 (24-hour average of 35 micrograms/cubic meter, ug/$m^3$). A PM2.5 exceedance of the 24-hour NAAQS is measured when the concentration is 35.5 ug/$m^3$ or greater. The PM2.5 levels were impacted by fireworks from July 4$^{th}$ celebrations. See Table 1.

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

**Table 1. New Jersey PM2.5 Concentrations on 7/4/2025**

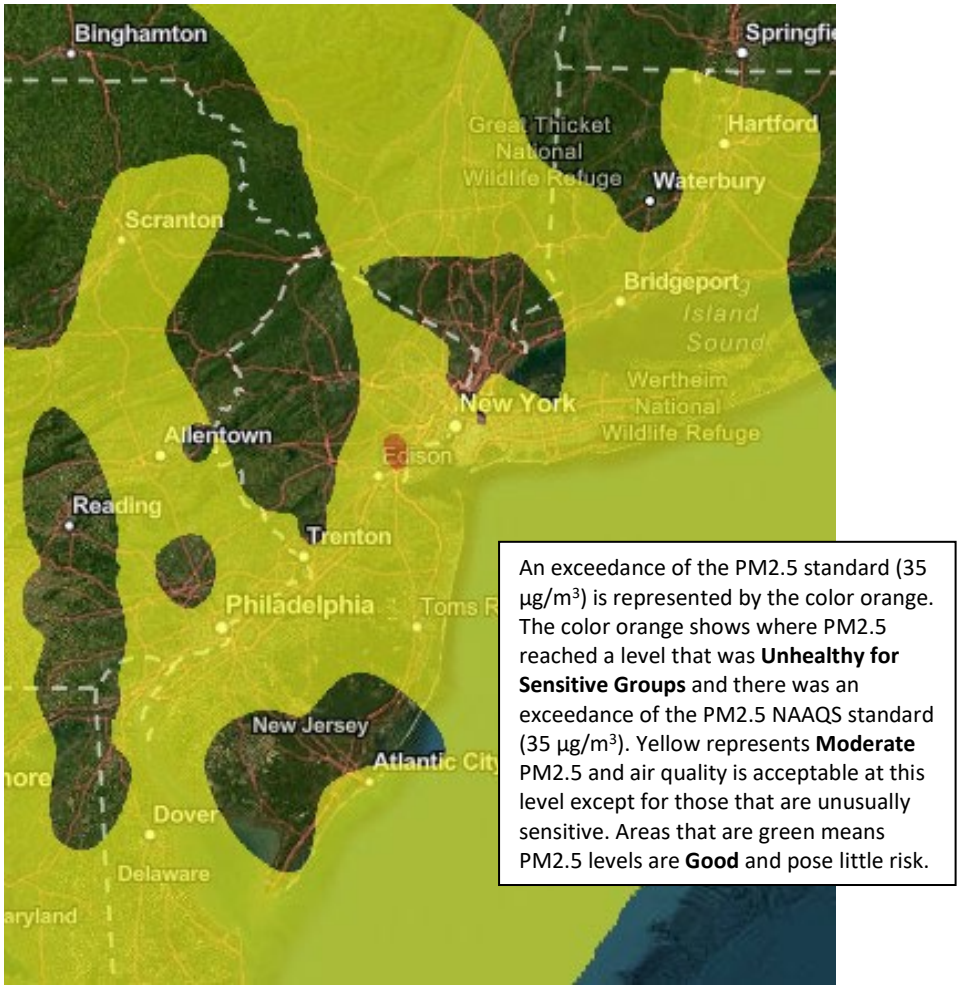
| STATION | 24-Hour Average (ug/$m^3$) |
|---|---|
| Atlantic City | 14 |
| Brigantine | 9.1 |
| Chester | 8.9 |
| Clarksboro | 15.1 |
| Columbia | 5.6 |
| Elizabeth Lab | 17.7 |
| Flemington | 9 |
| Fort Lee Near Road | 9.5 |
| Jersey City Firehouse | 14 |
| Millville | 10 |
| Paterson | 15.5 |
| Pennsauken | 16.2 |
| Rahway | 39.7 |
| Rider University | 10.9 |
| Rutgers University | 13.4 |
| South Camden | 14.6 |
| Toms River | 16 |
| Trenton | 21.3 |
| Union City High School | 15.2 |
| **TOTAL EXCEEDANCES** | **1** |

From the out-of-state stations adjacent to New Jersey, there were zero (0) exceedances of the PM2.5 NAAQS. See Table 2.

**Table 2. PM2.5 Concentrations at Out-of-State Monitoring Stations Adjacent to New Jersey on 7/4/2025**

| STATE | STATION | 24-Hour Average ($ug/m^3$) |
|---|---|---|
| CT | Bridgeport | 18 |
| CT | Danbury | 15.2 |
| CT | New Haven - Criscuolo Park | 22.5 |
| CT | Waterbury | 11.1 |
| DE | KILLENS (Kent Co.) | 15.5 |
| DE | LUMS 2 (New Castle Co.) | 12 |
| DE | MLK (New Castle Co.) | 16.8 |
| DE | Rte 9 Del City | 12.3 |
| DE | SEAFORD (Sussex Co.) | 14.2 |
| MD | Fair Hill | 10.5 |
| NY | Bklyn - PS274 | 16.3 |
| NY | CCNY | 11.8 |
| NY | Division Street | ND |
| NY | Eisenhower Park | ND |
| NY | Fresh Kills | 14.5 |
| NY | Holtsville | 23.2 |
| NY | Manhattan/IS143 | 8.1 |
| NY | Maspeth | 11.3 |
| NY | Queens | 13.6 |
| NY | Queens Near-Road | ND |
| NY | White Plains | 5.3 |
| PA | Allentown | 19.3 |
| PA | Chester | 15.3 |
| PA | Freemansburg | 11.6 |
| PA | Marcus Hook | 13.9 |
| PA | New Garden | 10.6 |
| PA | Norristown | 11 |
| PA | FAB (Philadelphia Co.) | 14.3 |
| PA | MON (Philadelphia Co.) | ND |
| PA | NEW (Philadelphia Co.) | 22.5 |
| PA | RIT (Philadelphia Co.) | 16.9 |
| PA | TOR (Philadelphia Co.) | 15.1 |
| | **TOTAL EXCEEDANCES** | **0** |

**Figure 1. PM2.5 Air Quality Index for July 4, 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

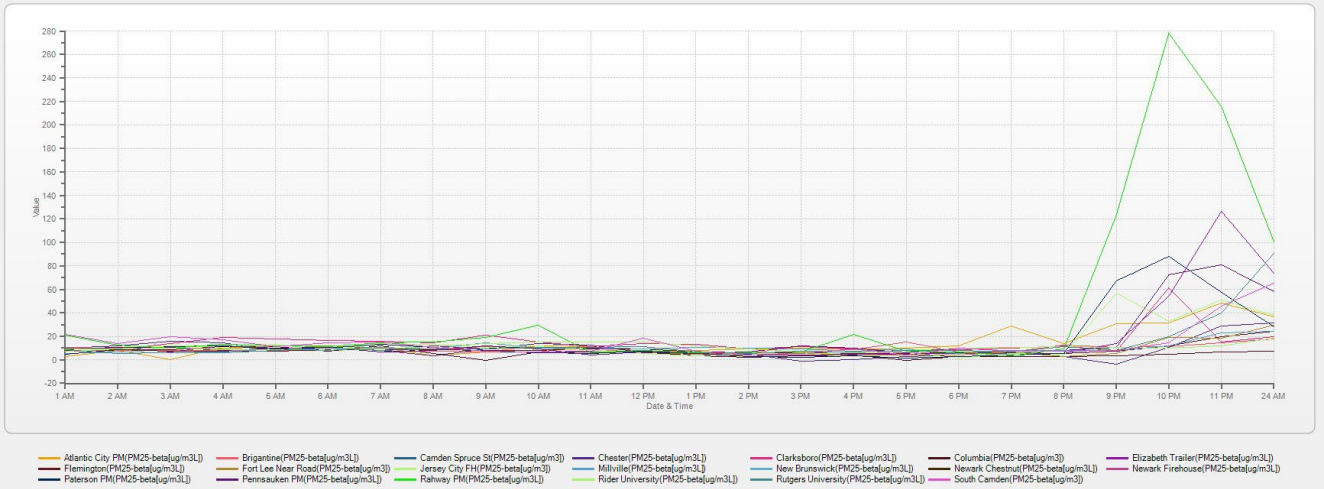
## Weather

Early on Friday July 4th, 2025, a cold front began to pull away from the region, with high pressure beginning to build in behind it. Following an unsettled weather pattern, the holiday weekend saw dry and seasonable conditions return to the region. Comfortable dewpoints and high temperatures in the low to mid 80s were observed throughout the area, along with light northwest to westerly winds during the daytime. As the evening progressed, winds began to calm, with little air movement and mixing present. As fireworks displays kicked off across the region, local PM2.5 levels began to rise. With the calm conditions, the air remained stagnant during the overnight hours and PM2.5 levels were able to reach the unhealthy for sensitive groups (USG) category at one monitor in Rahway, New Jersey. Additionally, low levels of diffuse smoke from Canadian wildfires were noted across the region leading into the July 4th holiday.

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

With the July 4th holiday, many firework displays were observed throughout the New York City metropolitan area in the evening and into the overnight hours. Limited atmospheric ventilation as a result of high pressure and light winds allowed smoke from the firework displays to hover near the surface and aloft. Figure 2 shows that hourly PM2.5 concentrations peaked around 10PM and gradually came down by the next morning.

**Figure 2. PM2.5 1-hr Concentrations for July 4, 2025**




Figures 3, 4, and 5 show the back trajectories of different wind heights for the monitored exceedance(s) on this day. The figures illustrate where the air came from during the 48 hours preceding the 24-hour PM2.5 exceedances. A transport analysis is provided with each figure shown below along with a map of the National Air Quality Index for the previous day (Figure 6). The monitoring station(s) that were chosen to model back trajectories are listed in Table 3.

**Table 3. Monitoring Stations with a 24-hr PM2.5 Exceedance that were selected to Run 48-hr Back Trajectories**

| STATE | STATION | Daily Maximum 24-Hr Average (ug/m$^3$) |
|---|---|---|
| NJ | Rahway | 39.7 |

**Figure 3. 48-hour Back Trajectories for July 4, 2025 at 10 meters**

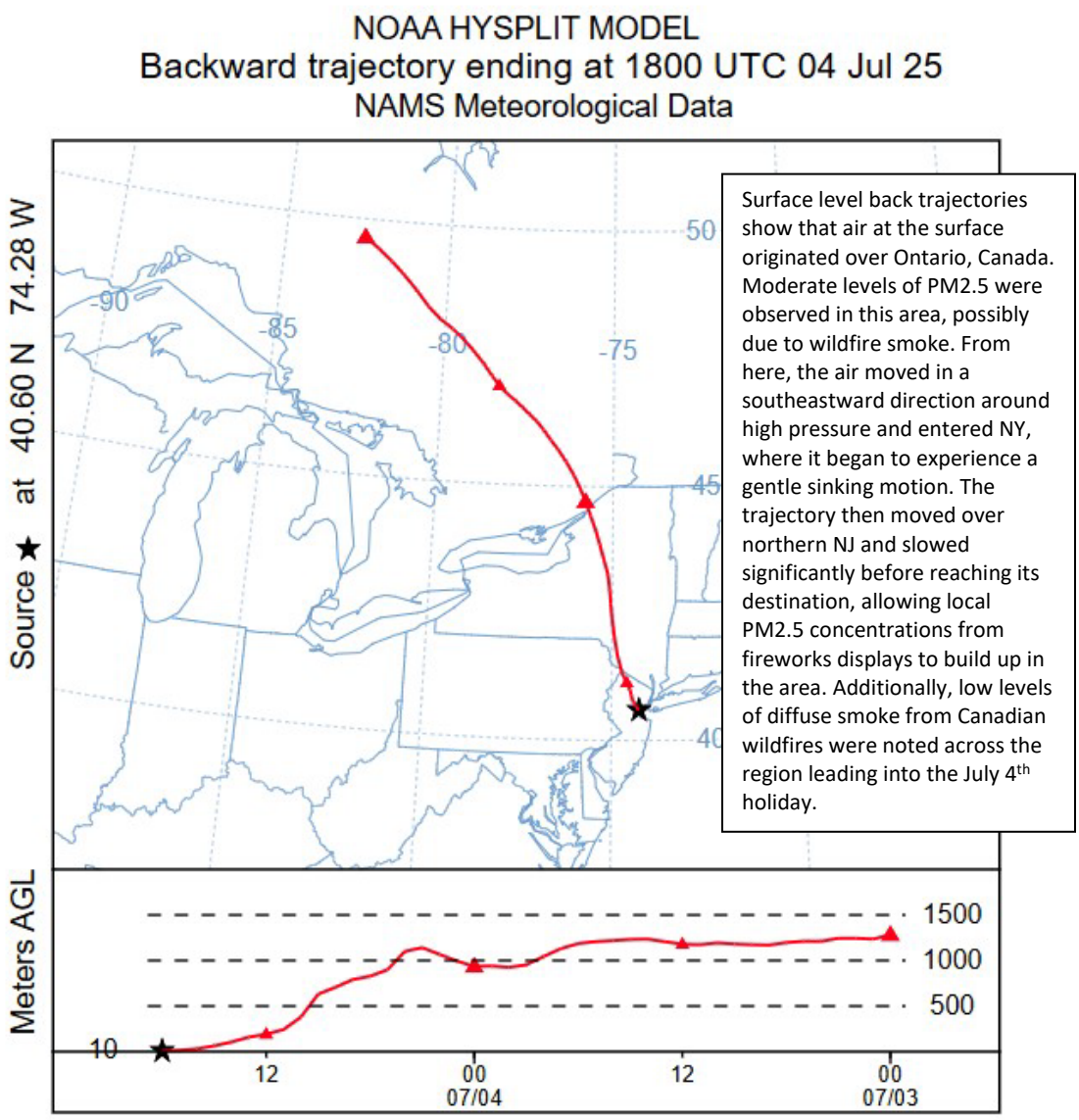


**Figure 4. 48-hour Back Trajectories for July 4, 2025 at 500 meters**

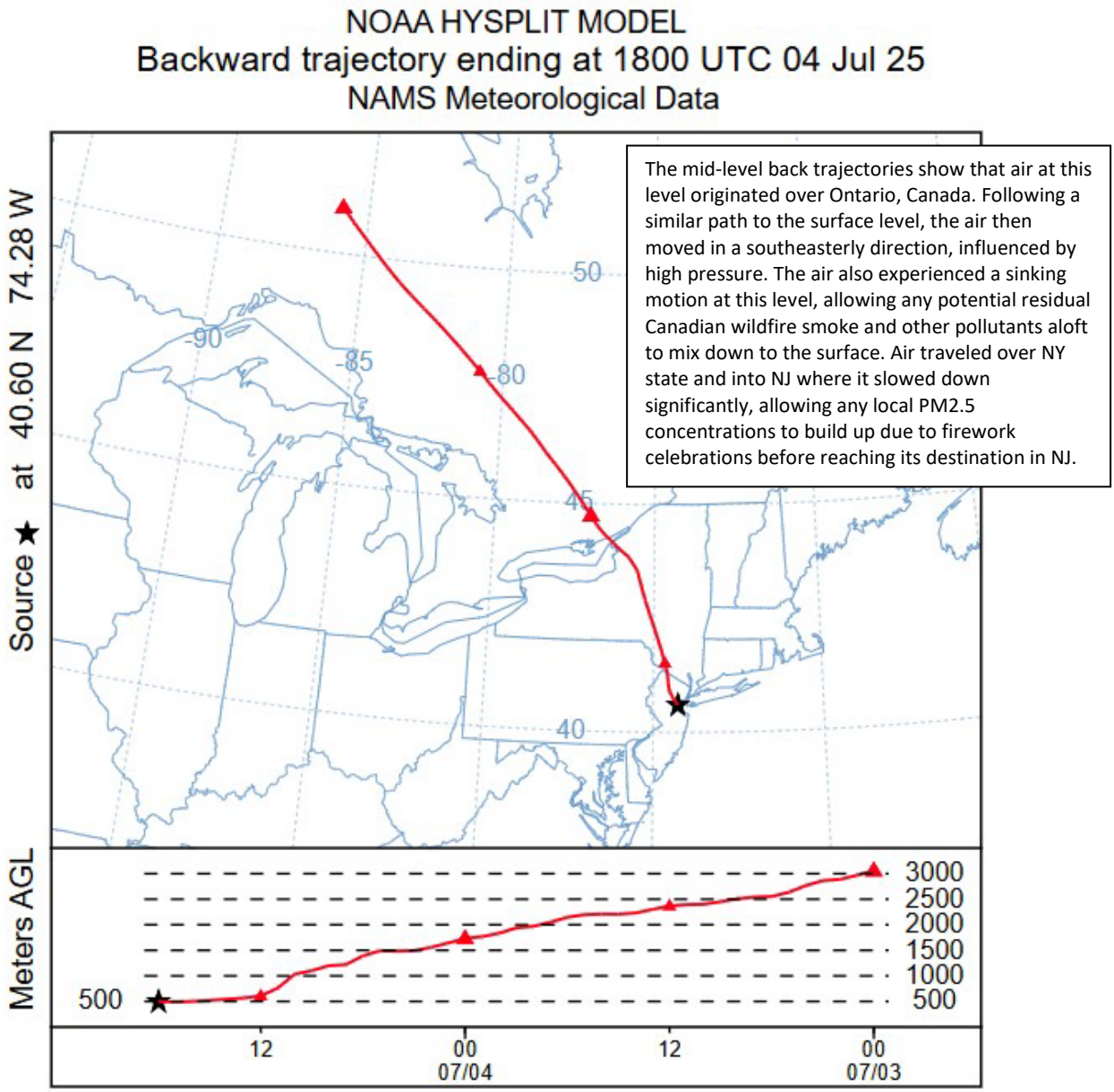


**Figure 5. 48-hour Back Trajectories for July 4, 2025 at 1500 meters**

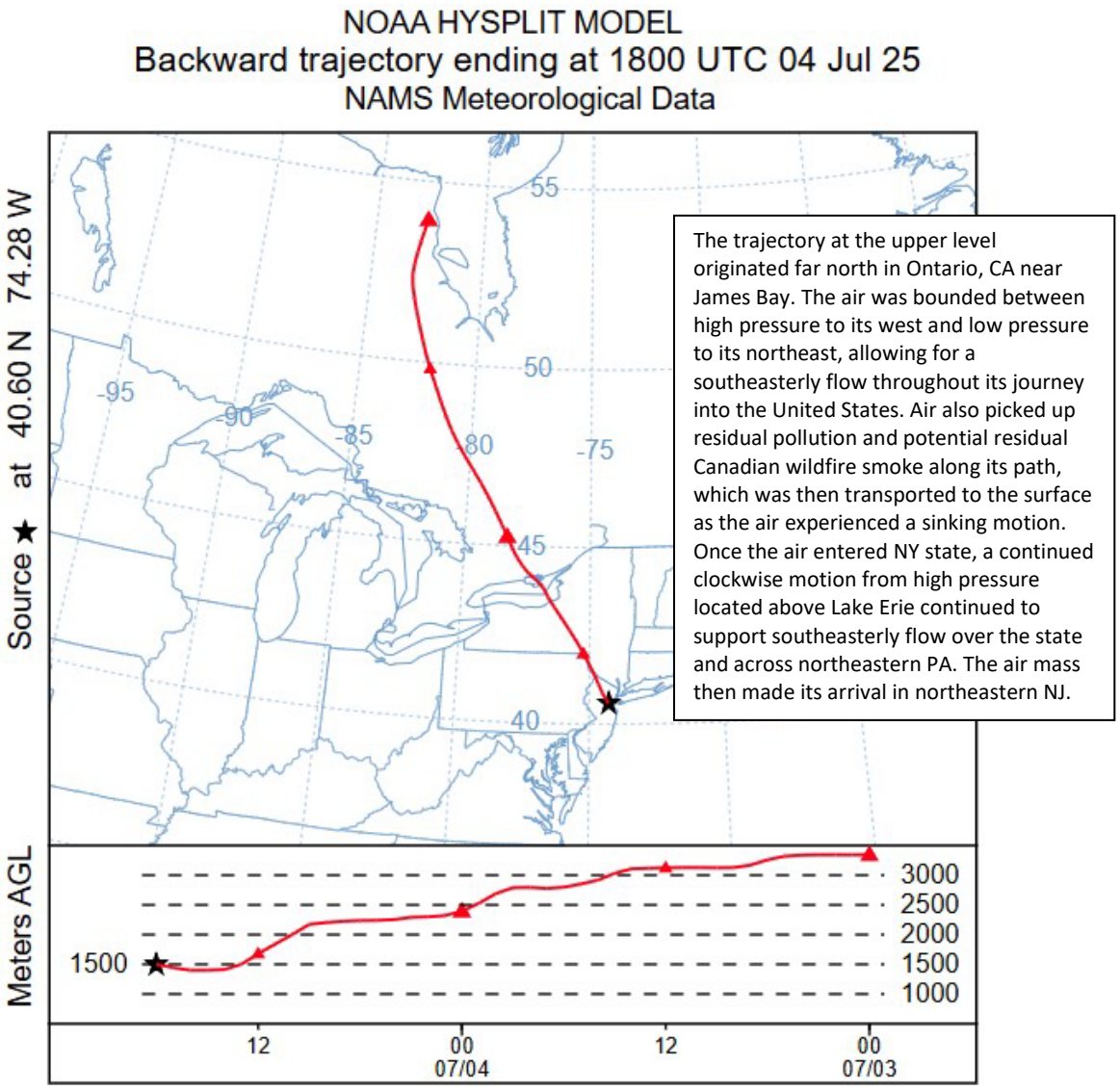
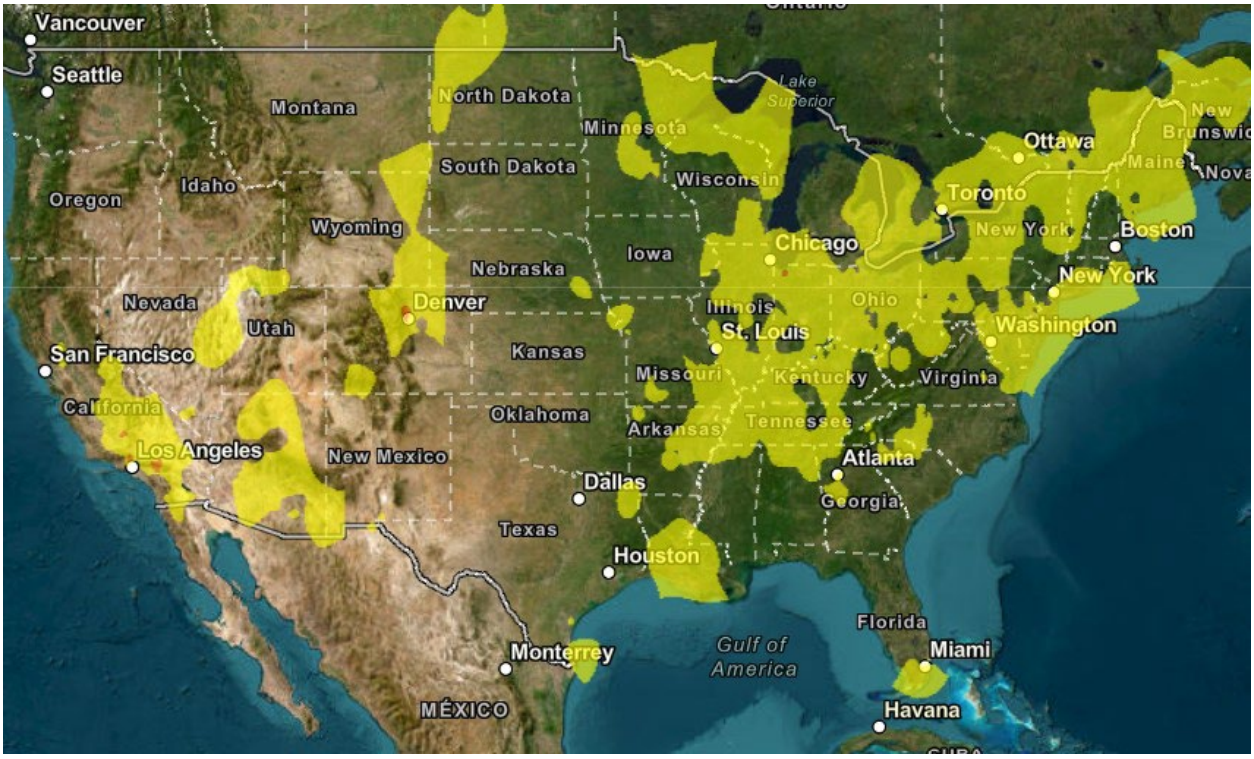


**Figure 6. Air Quality Index for the United States on July 3, 2025**




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/ .