



# **Particulate Matter (PM) National Ambient Air Quality Standard (NAAQS) Revision and Next Steps**

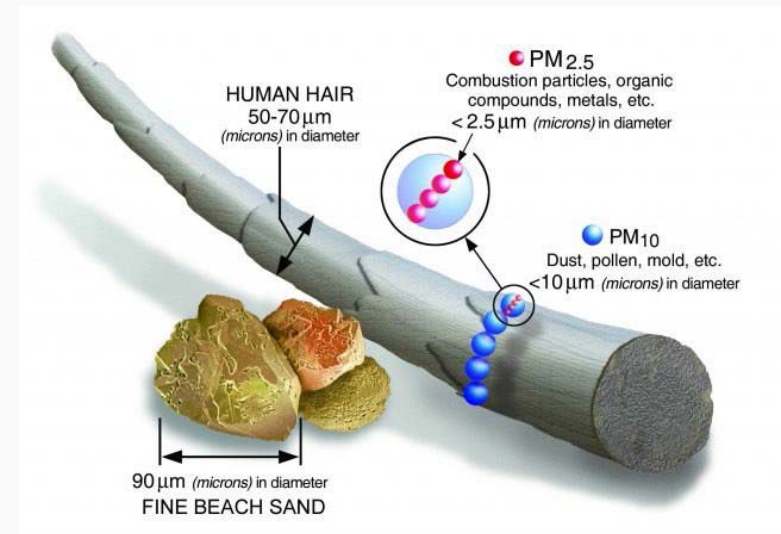
EPA Region 7  
March 26, 2024

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## Fine Particulate Matter (PM<sub>2.5</sub>)

- Fine Particulate Matter means particles less than 2.5 micrometers in diameter
- Fine particles pose serious health concerns due to ability to travel far in respiratory system
- EPA reconsidered the 2020 decision to retain the PM NAAQS, which were last strengthened in 2012, because the available scientific evidence and technical information indicate that the current standards may not be adequate to protect public health and welfare, as required by the Clean Air Act.
- PM<sub>2.5</sub> can be emitted directly or can be formed secondarily (via chemical reactions) in the atmosphere from precursor pollutants





## Key Aspects of Final Rule

- On February 7, 2024, the EPA announced a final rule to revise the primary (health-based) annual standard from  $12 \mu\text{g}/\text{m}^3$  to  $9 \mu\text{g}/\text{m}^3$
- The stronger PM NAAQS will advance environmental justice by leading reduction in particle pollution in vulnerable or overburdened communities
- EPA retained the 24-hour primary and secondary (welfare-based)  $\text{PM}_{2.5}$  standards, secondary annual  $\text{PM}_{2.5}$  and primary and secondary  $\text{PM}_{10}$  standards
- EPA also revised other key aspects related to the PM NAAQS, including revisions to the Air Quality Index (AQI) and monitoring requirements for the PM NAAQS (such as network design criteria to consider environmental justice).
- The final rule published March 6, 2024, with an effective date of May 6, 2024.



# Revisions to the Air Quality Index (AQI)

- The AQI is EPA's color-coded tool used by state and local governments to help inform the public about current and daily air quality and recommends steps that individuals can take to reduce their exposure to air pollution
- The AQI converts PM<sub>2.5</sub> concentrations to a number on a scale from 0 to 500
- EPA is updating some of the breakpoints to reflect the change to the annual standard and the newest scientific information
- AQI revisions are effective May 6, 2024

Final Revision to AQI for PM<sub>2.5</sub>

AQI Value	Current [ $\mu\text{g}/\text{m}^3$ ]	Revisions [ $\mu\text{g}/\text{m}^3$ ]
0, Good	0	0
50, Moderate	12	9
100, USG	35	35
150, Unhealthy	55	55
200, Very Unhealthy	150	125
300, Hazardous	250	225
500, Hazardous*	500	325

\*The 500 breakpoint is used in conjunction with the 300 breakpoint to calculate AQI values within the hazardous category. The approach does not use the 500 breakpoint to determine other breakpoints values.



## Modification of PM<sub>2.5</sub> Monitoring Network

- To enhance protection of air quality in communities subject to disproportionate air pollution risk, EPA is modifying the PM<sub>2.5</sub> monitoring network design criteria to include an environmental justice factor.
- This factor will account for proximity of populations at increased risk of PM<sub>2.5</sub>-related health effects to air pollution sources of concern.
- Specifically, for areas with additional required State or Local Air Monitoring Stations (SLAMS), a monitoring station is to be sited in an at-risk community where there are anticipated effects from sources in the area (for example: a major port, rail yard, airport, or industrial area).
- The network design change does not add a requirement for new monitors, rather it utilizes existing sites and ensures at risk communities are considered if sites need to move
- Note: Any new or moved monitors as a result of the modification in the PM NAAQS rule revision would not be in effect for the upcoming PM<sub>2.5</sub> designations



# Establishing and Meeting a NAAQS

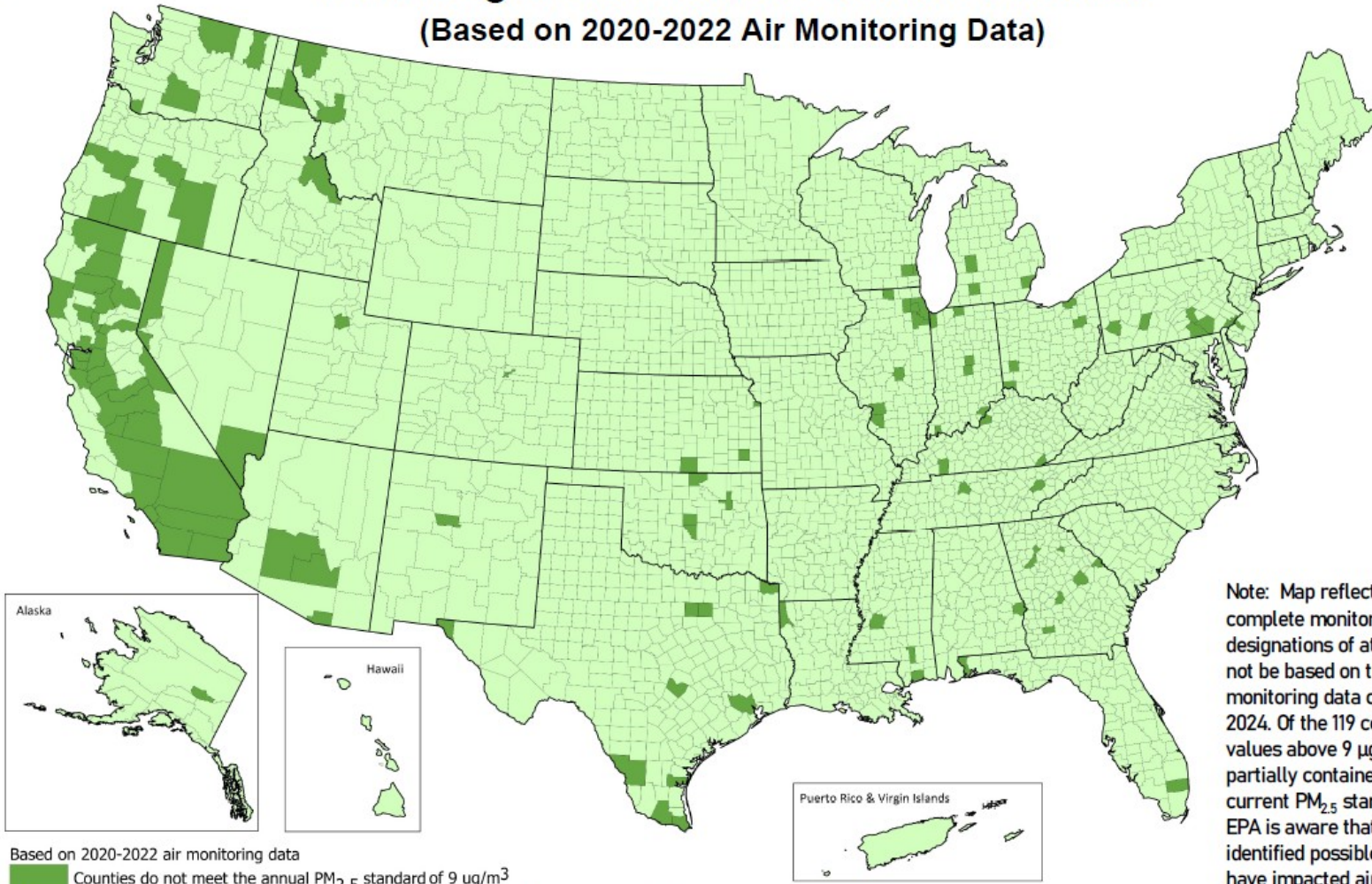
- A 2-Step Process:
  - Step 1: Setting the standards - Requires EPA to conduct an extensive scientific review to determine whether new standards are necessary to protect public health and welfare.
    - The Clean Air Act bars EPA from considering cost or attainability in setting the NAAQS.
  - Step 2: Implementing the standards - Requires states, and tribes where appropriate, to reduce harmful pollution to meet the standards.
    - The Clean Air Act specifies that cost, technical feasibility and the time needed to meet the standards are all factors that should be taken into account in this phase.
    - State and federal programs have a proven record of improving air quality while the economy grows. EPA will use long-standing provisions in the law to work with state, tribal and local partners to make sure any revised standards are implemented in a flexible and cost-effective way.

This final rule does not make any air quality attainment/nonattainment designations. Consistent with Clean Air Act timelines, EPA is required to designate areas as attainment or nonattainment within 2 years of the final rule.




## Most Counties with Monitors Already Meet the Strengthened Particle Pollution Standard

(Based on 2020-2022 Air Monitoring Data)



Note: Map reflects monitored counties with complete monitoring data. Future final designations of attainment/nonattainment will not be based on these data, but likely on monitoring data collected between 2022 and 2024. Of the 119 counties with 2020-2022 design values above  $9 \mu\text{g}/\text{m}^3$ , 59 counties are totally or partially contained in nonattainment areas for current  $\text{PM}_{2.5}$  standards. In years 2021 and 2022, EPA is aware that some states have already identified possible exceptional events that may have impacted air quality in the US and may be relevant to designations decisions.

Based on 2020-2022 air monitoring data

 Counties do not meet the annual  $\text{PM}_{2.5}$  standard of  $9 \mu\text{g}/\text{m}^3$

This information is provided for illustrative purposes only and is not intended to predict the outcome of any forthcoming designations process.



## Next Steps: Designations/Implementation Timeline

- February 2024 – Final Rule promulgated (published 3/6/24)
- Stationary source permitting
  - Prevention of Significant Deterioration (PSD) permitting applies with respect to a new standard in all areas of the U.S. upon the effective date of the revised standard (May 6, 2024)
- Designations timeline triggered by final NAAQS promulgation
  - State recommendations on area designations and boundaries due in 1 year (e.g. February 2025 likely based on 2021-2023 monitoring data)
  - EPA finalizes area designations within 2 years (e.g. February 2026 likely based on 2022-2024 monitoring data)
- Implementation and attainment deadlines triggered by effective date of designations (dates assume mid-2026 effective date of final designations)
  - Feb. 2027– Infrastructure SIP (including interstate transport) due 3 years from final NAAQS
  - Late 2027 – Moderate area attainment SIPs due (18 months after designation)
  - 2032 – Moderate area outermost attainment date (End of 6<sup>th</sup> calendar year after designations)
  - 2036 – Serious area outermost attainment date (End of 10<sup>th</sup> calendar year after designations)





## Designations Refresher

- When the EPA establishes a new or revised NAAQS, the Clean Air Act (CAA) requires the EPA to designate all areas of the country, including Indian Country, as to whether the areas are attainment, nonattainment, or unclassifiable.
- CAA section 107(d) governs the initial area designations
  - Identifies and defines the designations categories
  - Provides the process and schedule
  - Establishes roles for the EPA and states
- The EPA generally follows the same process and schedule for Tribes pursuant to CAA section 301(d) Tribal Authority and the Tribal Authority Rule (TAR)



# Clean Air Act Designations Categories

- Nonattainment Area – An area that does not meet or that contributes to a nearby area that does not meet the NAAQS
  - For PM<sub>2.5</sub>, the CAA provides that all initial areas are classified as “moderate.”
- Attainment Area – An area that is meeting the NAAQS and is not contributing to a nearby area that does not meet the NAAQS
  - For initial area designations, the EPA uses “Attainment/Unclassifiable” for this category.
- Unclassifiable Area – An area that cannot be designated based on available information as meeting or not meeting the NAAQS



## PM<sub>2.5</sub> Designations Available Resources

- EPA's Designations Memorandum
  - For nonattainment areas, EPA recommends air agencies base boundary recommendations on an evaluation of the following five factors, which are incorporated into the PM<sub>2.5</sub> Designations Mapping Tool:
    - Air quality data (e.g., design values, urban increment)
    - Emissions and emissions-related data (e.g., 2022 emissions modeling platform, county and gridded emissions for all PM components)
    - Meteorology (e.g., HYSPLIT)
    - Geography/topography
    - Jurisdictional boundaries
- Mapping tool available for visualization of the factors together

2024 PM<sub>2.5</sub> NAAQS Designations Memorandum, mapping tool and related resources are available here: <https://www.epa.gov/particle-pollution-designations/particle-pollution-designations-memorandum-and-data-2024-revised>



# Exceptional Events

- Initial area designations are an action of regulatory significance described in the EPA's "Treatment of Data Influenced by Exceptional Events" Final Rule (81 FR 68216; October 3, 2016)
- Air quality monitoring data affected by exceptional events may be excluded from use in area designations if the data meet the criteria for exclusion, as specified in the Exceptional Events Rule.
- The EPA is committed to ensuring a timely and efficient process for evaluating and making exceptional events determinations.
  - Tools and resources to assist air agencies developing PM-related exceptional events demonstrations and best practice materials can be found at the EPA's exceptional events website located at:  
<https://www.epa.gov/air-qualityanalysis/exceptional-events-analysis-and-visualization-tools>



## Draft Exceptional Events Implementation Tools

- Data Visualization and Comparison Tools
  - To help air agencies identify event-influenced PM2.5 data most likely to have regulatory significance.
- PM2.5 Wildland Fire Exceptional Events Tiering Document
  - Information on tiering wildland fire/PM events (similar to the tiering approach used for wildfire/ozone events) to help “right-size” demonstrations.
- Wildland Prescribed Fire Demonstration Document
  - EPA collaborated with the State of California, the Northern Sierra Air Quality Management District, Placer County Air Pollution Control District and the US Forest Service to develop an exceptional events demonstration for a prescribed fire on wildland that influenced PM2.5 concentrations.
  - This demonstration followed the exceptional events development and submission process.

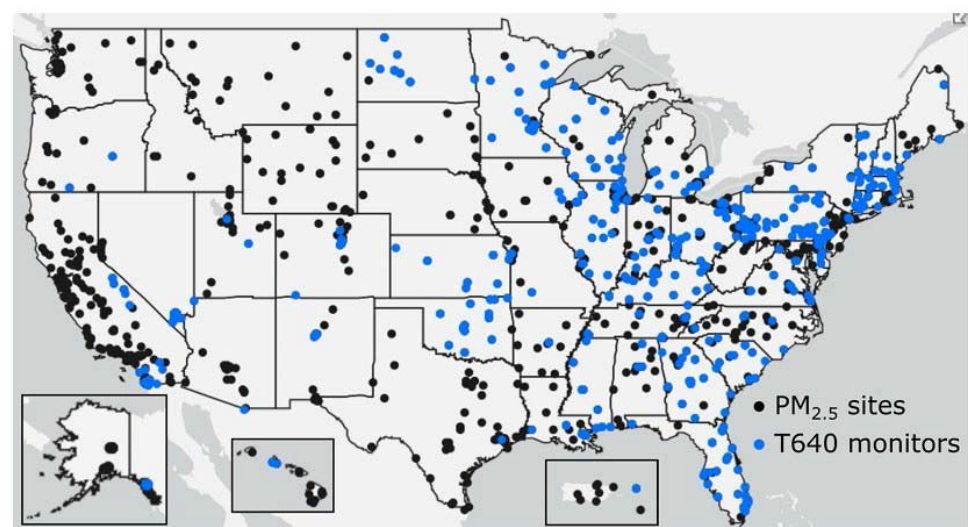
<https://www.epa.gov/air-quality-analysis/exceptional-events-analysis-and-visualization-tools>

Separate EPA presentation on these tools: <https://www.westar.org/wp-content/uploads/2024/03/1-EPA-Implementation-Tools.pdf>



# Proposed Update to PM<sub>2.5</sub> Data from T640/X PM Mass Monitors

- In February 2024, EPA published a notice of opportunity to comment on its proposed update to PM<sub>2.5</sub> data from T640/T640X PM Mass monitors
- This update would retroactively apply the approved modification for the Teledyne T640 and T640X PM mass monitors to all PM<sub>2.5</sub> data in the EPA's Air Quality System (AQS) that was reported prior to the manufacturer modification
- The update will be applied to the unmodified hourly PM<sub>2.5</sub> concentration data in AQS using collocated ambient temperature, when available
- This will result in more monitors meeting the bias measurement quality objectives



For more information:

<https://www.federalregister.gov/documents/2024/02/15/2024-02935/notice-of-opportunity-to-comment-on-proposed-update-of-pm25-data-from-t640t640x-pm-mass-monitors>

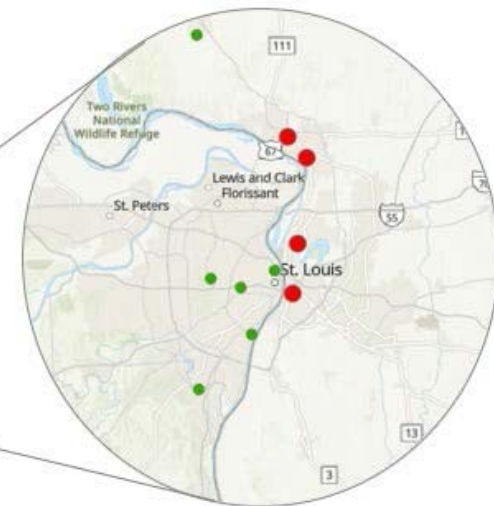
<https://www.epa.gov/system/files/documents/2024-02/teledyne-data-update-noa-supporting-documentation-2024.pdf>



# Region 7 Monitored Design Values (2020-2022)



St. Louis, MO-IL



EPA, USGS, Nebraska Game & Parks Commission, Esri, TomTom, Garmin, FAD, NOAA, USGS, EPA, USFWS

0 25 50 100 Miles





## Valid State Monitoring Data – 2020-2022

St. Louis, MO-IL Area			
State	County	Site	Annual Design Value ( $\mu\text{g}/\text{m}^3$ )
Illinois	Jersey	Jerseyville	8.0
Illinois	Madison	Alton Horace Mann School	9.1
Illinois	Madison	Firestation #1	10.0
Illinois	Madison	Water Plant	9.5
Illinois	Saint Clair	Iepa-Raps Trailer	10.0
Missouri	Jefferson	Arnold West	8.0
Missouri	Saint Louis	Ladue	7.0
Missouri	St. Louis City	South Broadway	7.3
Missouri	St. Louis City	Blair Street	8.6
Missouri	St. Louis City	Forest Park	8.9





Questions?