



EPA'S 2024 PM2.5 STANDARD: PLANNING AND PERMITTING

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PLANNING

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PLANNING OVERVIEW

- Designating areas for a new health-based standard
- Evaluating data from wildfire impacts
- Reviewing 2022 and 2023 data in Wisconsin



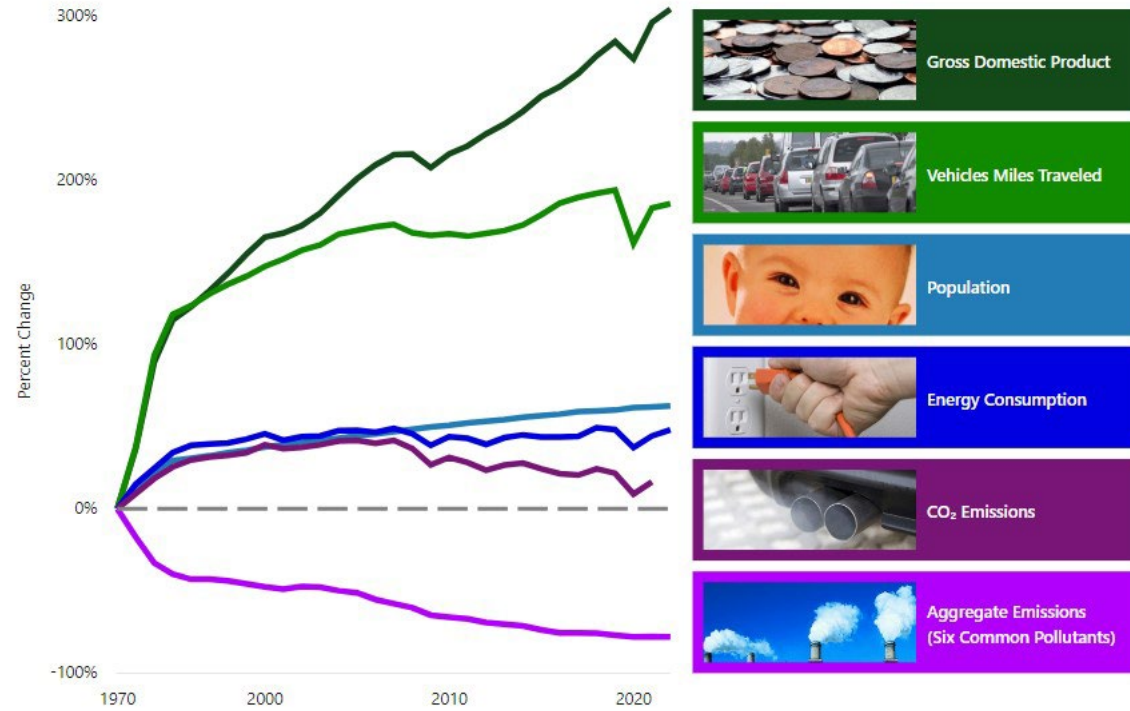
DESIGNATING AREAS FOR A NEW HEALTH-BASED STANDARD

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS)

- Ozone
- Particulate Matter (PM10, PM2.5)
- Sulfur Dioxide
- Lead
- Carbon Monoxide
- Nitrogen Dioxide

Comparison of Growth Areas and Declining Emissions
1970-2022

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ECONOMIC GROWTH AND DECLINING EMISSIONS

NAAQS PROCESS



EPA'S 2024 PM_{2.5} NAAQS

- In February 2024, EPA strengthened the level of the annual PM_{2.5} NAAQS from 12 to 9 $\mu\text{g}/\text{m}^3$.
- Health benefits in 2032 are expected to include up to 4,500 avoided premature deaths, 800,000 avoided cases of asthma symptoms, and 290,000 avoided lost workdays.

ADDITIONAL DETAILS ABOUT EPA'S 2024 PM_{2.5} NAAQS

- Also changing
 - Revised Air Quality Index (AQI) to improve public communication about risks from PM_{2.5} exposures
 - Revised monitoring network requirements
- Not changing
 - PM₁₀ standards
 - 24-hour PM_{2.5} standards
 - Secondary PM_{2.5} standards

REQUIREMENT FOR DESIGNATIONS

- Whenever EPA establishes a new NAAQS, the Clean Air Act (CAA) requires EPA to designate all areas of the country based on which areas are meeting or not meeting the NAAQS

TYPES OF AREA DESIGNATIONS

- Attainment
 - An area that meets the primary or secondary standard for a NAAQS
- Nonattainment
 - An area that does not meet the primary or secondary standard for a NAAQS
 - An area that contributes to air quality in a nearby area that does not meet the primary or secondary standard for a NAAQS
- Unclassifiable
 - An area that cannot be classified on the basis of available information

EPA'S FIVE FACTOR ANALYSIS

- Generally, where there is a violating monitor, there is a nonattainment designation
- The geographic extent or boundary of the area is determined using EPA's five factor analysis
 1. Air quality data
 2. Emissions and emissions-related data
 3. Meteorology
 4. Geography and topography
 5. Jurisdictional boundaries

THE DESIGNATIONS PROCESS

- States and tribes submit to EPA a list of areas (and associated boundaries) recommended as nonattainment, attainment, and unclassifiable
 - Deadline is one year from promulgation of a new or revised NAAQS
- EPA notifies states and tribes of EPA's intended modifications to their recommendations
 - Deadline is 120 days prior to final designations
- EPA makes final nonattainment designations

STATE IMPLEMENTATION PLANS (SIPS)

- February 2024 – EPA finalizes new PM NAAQS
- February 2025 – States submit designations recommendations
- February 2026 – EPA finalizes designations
- February 2027 – All states submit infrastructure SIPs
- Late 2028 – States with nonattainment areas submit nonattainment SIPs
- Early 2032 – Deadline to bring all areas into attainment

REQUIREMENTS OF PM NONATTAINMENT SIPS

- Attainment demonstration
- Existing sources in nonattainment areas
 - Reasonably Available Control Measures / Reasonably Available Control Technology
- New major sources or major modifications of existing sources
 - Nonattainment New Source Review
- And other elements
 - Emissions inventory, contingency measures, and other planning requirements

REDESIGNATIONS

- When all monitors in a nonattainment area have attained the NAAQS and a state meets the other requirements under CAA section 107(d)(3)(E), an air agency may request that EPA redesignate the area to attainment.
- When a geographic area is in attainment for all NAAQS, the applicable permitting scheme is Prevention of Serious Deterioration (PSD).

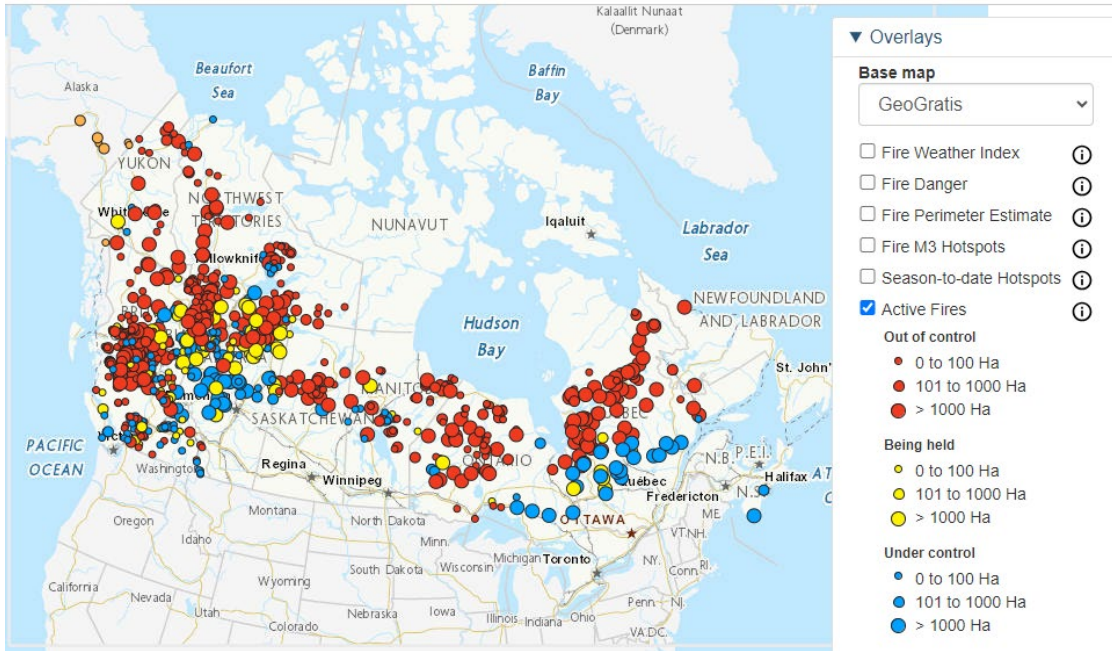
NAAQS PROCESS





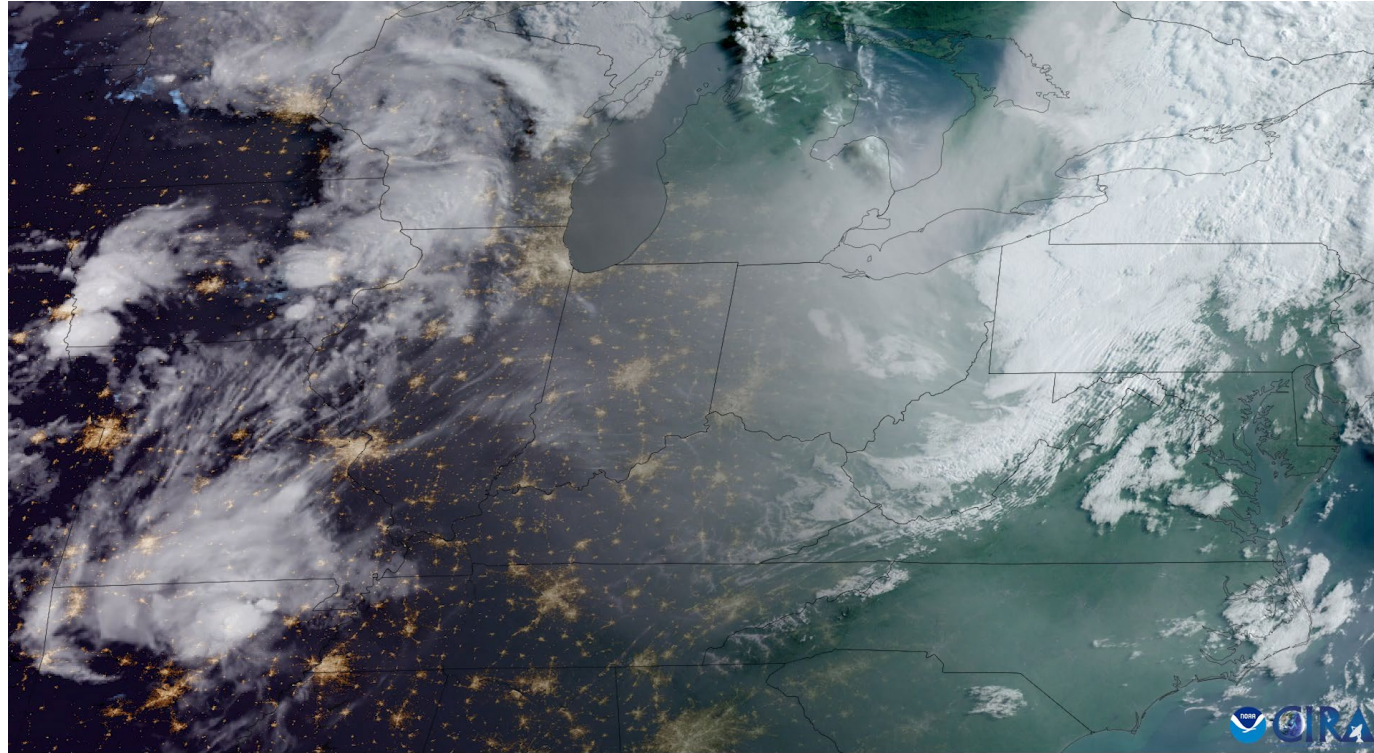
EVALUATING DATA FROM WILDFIRE IMPACTS





	2023 (to date)	10-yr avg (to date)
Number	6,623	5,597
Area (ha)	18,401,197	2,751,161

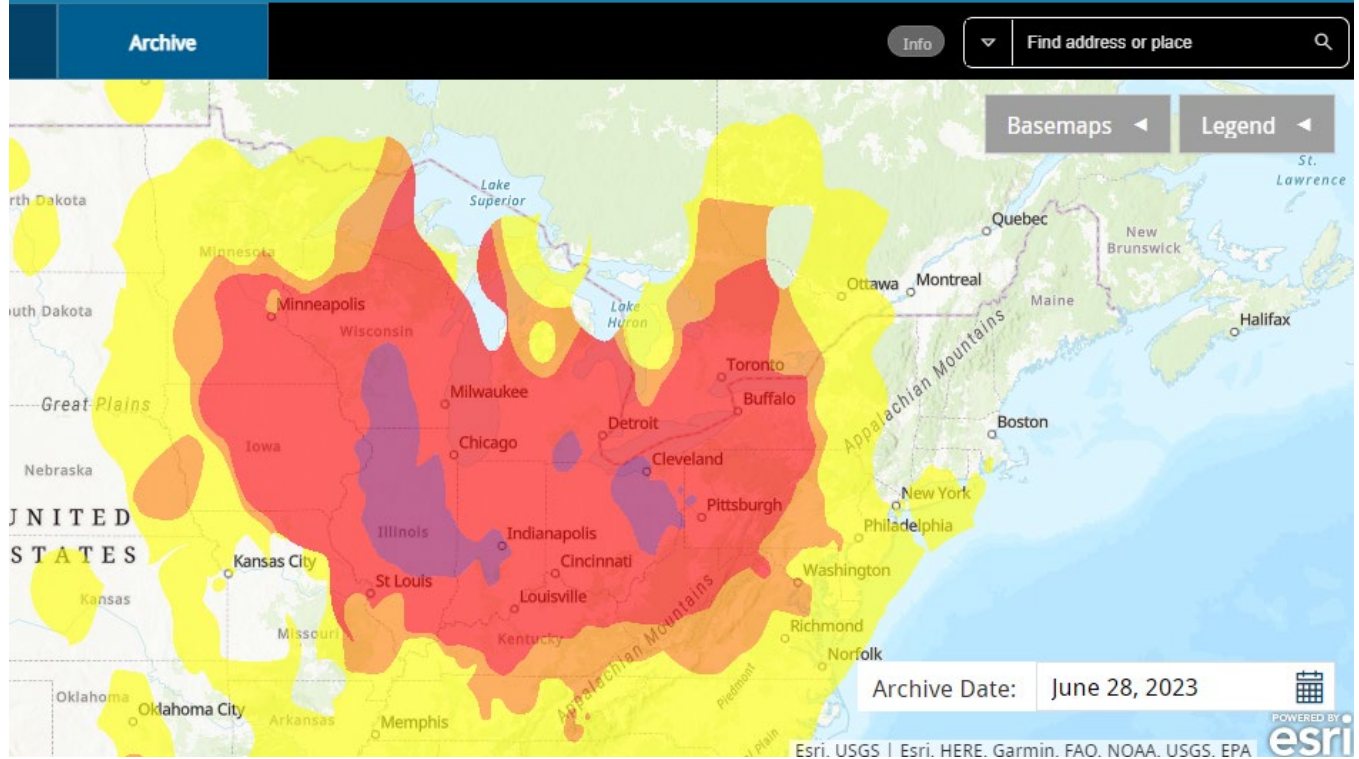
2023 FIRES IN CANADA



06-28-2023 | 11:31:17 UTC | GOES-16 | GeoColor

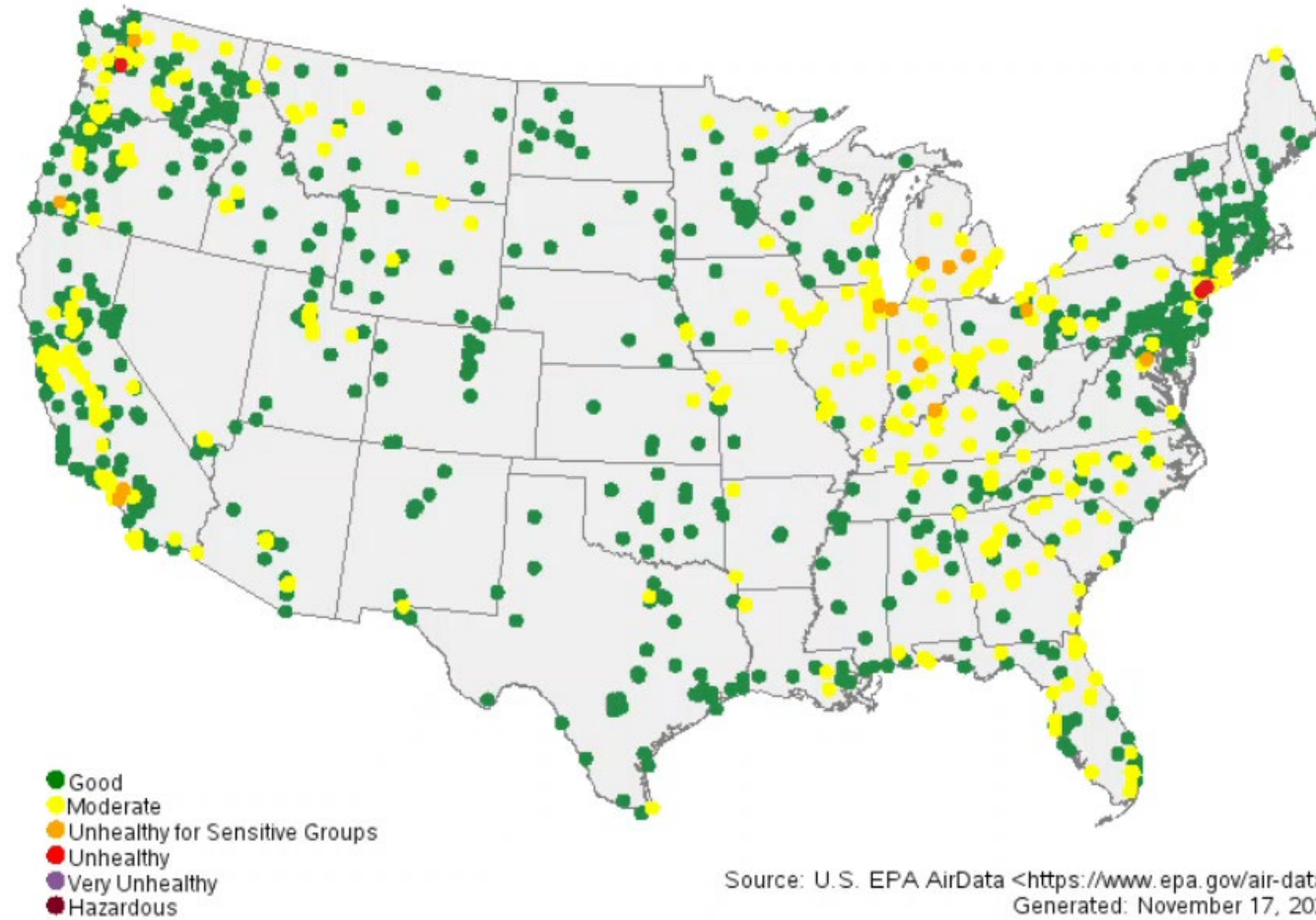
VISIBLE SMOKE IN THE MIDWEST

Interactive Map of Air Quality



SMOKE IMPACTS ON MONITORS

PM2.5 AQI Values by site on 07/04/2023



2006 REVISIONS TO THE CLEAN AIR ACT ESTABLISHED THE EXCEPTIONAL EVENTS PROCESS

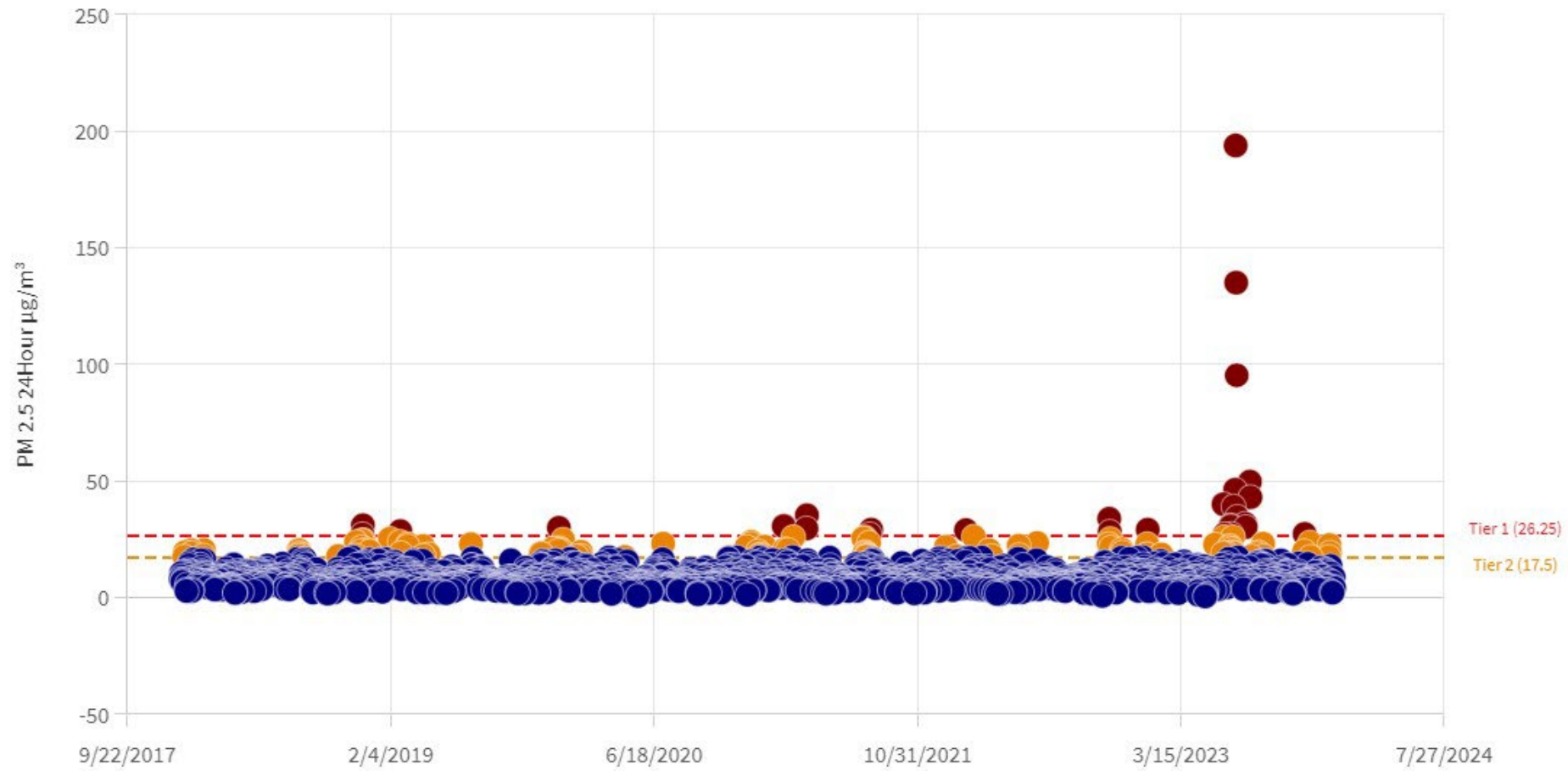
- **CAA 319(b)(3)(B)**
- Regulations promulgated under this section shall, at a minimum, provide that —
 - the occurrence of an exceptional event must be **demonstrated** by reliable, accurate data that is promptly produced and provided by Federal, State, or local government agencies;
 - a **clear causal relationship** must exist between the measured exceedances of a national ambient air quality standard and the exceptional event to demonstrate that the exceptional event caused a specific air pollution concentration at a particular air quality monitoring location;
 - there is a **public process** for determining whether an event is exceptional; and
 - there are criteria and procedures for the Governor of a State to petition the Administrator to exclude air quality monitoring data that is directly due to exceptional events from use in determinations by the Administrator with respect to exceedances or violations of the national ambient air quality standards.

TREATMENT OF DATA QUALIFYING FOR THE EXCEPTIONAL EVENTS PROCESS

- Qualifying events
 - Not reasonably controllable or preventable
 - Examples include wildfires, high wind dust events, structural fires, terrorist attacks
- Treatment of data
 - Data is excluded from use in regulatory determinations

NEW TOOLS CREATE A STREAMLINED EXCEPTIONAL EVENTS PROCESS

AQS Site ID 551330027



TWO-YEAR TIMELINE TO DESIGNATIONS

- February 2024 – EPA sets new PM NAAQS
- February 2025 – States submit designations recommendations
- February 2026 – EPA finalizes designations

TWO-YEAR TIMELINE TO DESIGNATIONS

- February 2024 – EPA sets new PM NAAQS
- February 2025 – States submit designations recommendations (2021-2023 data)
 - Exceptional events demonstrations for 2022-2023 data due February 2025
- February 2026 – EPA finalizes designations (2022-2024 data)
 - Exceptional events demonstrations for 2024 data due October 2025



REVIEWING 2022 AND 2023 DATA IN WISCONSIN

2022 DATA SHOWS ONLY MILWAUKEE EXCEEDING THE STANDARD

State Name	County Name	State FIPS	County FIPS	EPA Region	AQS Site ID	2020-2022 Annual Design Value ($\mu\text{g}/\text{m}^3$) [1,2]	CBSA Name
Wisconsin	Milwaukee	55	079	5	550790010	9.4	Milwaukee-Waukesha-West Allis, WI
Wisconsin	Waukesha	55	133	5	551330027	9.2	Milwaukee-Waukesha-West Allis, WI
Wisconsin	Dane	55	025	5	550250047	8.8	Madison, WI
Wisconsin	Grant	55	043	5	550430009	8.7	Platteville, WI
Wisconsin	Eau Claire	55	035	5	550350014	8.1	Eau Claire, WI
Wisconsin	Outagamie	55	087	5	550870009	8.0	Appleton, WI
Wisconsin	Dodge	55	027	5	550270001	7.9	Beaver Dam, WI
Wisconsin	Kenosha	55	059	5	550590019	7.9	Chicago-Naperville-Elgin, IL-IN-WI
Wisconsin	La Crosse	55	063	5	550630012	7.9	La Crosse-Onalaska, WI-MN
Wisconsin	Brown	55	009	5	550090005	7.8	Green Bay, WI
Wisconsin	Sauk	55	111	5	551110007	7.7	Baraboo, WI
Wisconsin	Taylor	55	119	5	551198001	6.7	
Wisconsin	Forest	55	041	5	550410007	5.9	
Wisconsin	Ashland	55	003	5	550030010	5.6	
Wisconsin	Vilas	55	125	5	551250001	5.3	



PERMITTING

DAN WOLSKI U.S. EPA REGION 5 AIR & RADIATION DIVISION

IMPLEMENTATION TIMELINE

- February 7, 2024 – USEPA promulgated the rule to revise the National Ambient Air Quality Standards (NAAQS) for PM_{2.5} by lowering the annual PM_{2.5} standard from 12µg/m³ to 9.0µg/m³.
- May 6, 2024 – the revised standard (9.0µg/m³) became effective.

IMPLEMENTATION TIMELINE – PERMIT APPLICABILITY

- Prevention of Significant Deterioration (PSD)
 - PSD applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is in attainment or unclassifiable with the NAAQS.
 - Requires installation of “Best Available Control Technology” (BACT); an air quality analysis, additional impacts analysis, and public involvement.
 - **On or after the effective date, May 6, 2024**, any permit issued under the PSD program will need to demonstrate that the proposed emissions would not cause or contribute to a violation of the revised standard.

IMPLEMENTATION TIMELINE – PERMIT APPLICABILITY

- Nonattainment New Source Review (NNSR)
 - NNSR applies to new major sources or major modifications at existing sources for pollutants where the area the source is located is not in attainment with the NAAQS
 - NNSR requirements are customized for the nonattainment area, but all NNSR programs have to require 1) the installation of the lowest achievable emission rate (LAER), 2) emission offsets, and 3) opportunity for public involvement
 - NNSR applies in areas designated nonattainment for the pollutant, which includes any areas newly designated nonattainment **at/after the effective date of nonattainment designations.**

EXISTING SOURCES

- The revised standard does not impact sources with existing operating permits (Title V), unless the area falls into non-attainment
- If a source with existing operating permits is in an area that is redesignated non-attainment, RACM/RACT (SIP action) may apply

PERMITTING UNDER A NEW NAAQS

- CAA construction permits are issued by state and local agencies and, in rare cases, by EPA
- Process offers a menu of choices and options to ensure that we have both clean air and economic growth
 - How to plan, construct and modify facilities
 - What types of controls to install and
 - How to manage emissions
- Air permitting is conducted on a case-by-case basis and considers many project specific variables

MOVING PERMITS FORWARD

- State permitting authorities carry out the permitting process, with as needed consultation from EPA
- EPA can work with permit applicants and state permitting authorities to:
 - Identify where flexibilities and discretion exists under the existing regulations and policies,
 - Clarify the best ways to use key tools and guidance, and
 - Engage early in the permitting process to ensure solution-based approaches.

PERMITTING SCENARIOS

- A facility has a permit in process when the new standard takes effect
 - Compare current air quality modeling results to the new standard level, working with permit authority
 - Evaluate if additional air pollution emission reductions are needed
- Plans for building a new facility or expanding an existing one
 - Work with permitting authority to estimate how much PM pollution will be emitted and choose best available air pollution control technology
 - Demonstrate compliance with CAA requirements

PERMITTING SCENARIOS

- Plans for building new facility or expanding one in an area not meeting the new standard (permit needed after EPA designations process is completed – likely in or after 2026)
 - Work with permitting authority to estimate how much PM pollution will be emitted and chose pollution controls with lowest achievable emission rate
 - Demonstrate compliance with CAA requirements

UPDATED PM_{2.5} SILS FOR PSD PERMITTING

- Significant Impact Levels (SILs) are screening tools used to determine whether the ambient impact of a particular pollutant (once it is determined to be emitted in significant amounts) is significant enough to warrant a complete source impact analysis involving modeling the collective impacts of the proposed project and emissions from other existing sources.
- Given the strengthening of the annual PM_{2.5} NAAQS, EPA updated the SILs value corresponding with the new level of the standard and updated technical analysis with more recent design value data.

UPDATED PM_{2.5} SILS FOR PSD PERMITTING

- On April 30, 2024, EPA released a Supplement to the 2018 Guidance and Supporting Documents on SILs for Ozone and PM_{2.5}.
 - Revised annual PM_{2.5} SILs
 - NAAQS: **0.13 ug/m³**
 - PSD increments Class I Areas: **0.03 ug/m³**, Class II and III Areas: **0.13 ug/m³**
 - Retained the Ozone and PM_{2.5} 24-hour SILs
 - Updated technical analysis using the same peer-reviewed approach based on inherent variability in monitored pollutant concentrations

MODELING PROCEDURES

SIL analysis (Impacts from the project/ new source)

Modeled impacts below SIL → Project is not expected to cause significant adverse effects on air quality

Modeled impacts above the SIL → Cumulative Analysis (NAAQS)

MODELING PROCEDURES

Cumulative NAAQS analysis (Project/ New Source +
Nearby Sources + Background)

Modeled impacts below NAAQS → source impacts are
expected not to adversely impact health-based standards

Modeled impacts above NAAQS → culpability analysis

MODELING PROCEDURES

Culpability Analysis- a look at the source's pollutant impact contribution at a violating receptor

Source modeled impact at violating receptor below SIL → OK

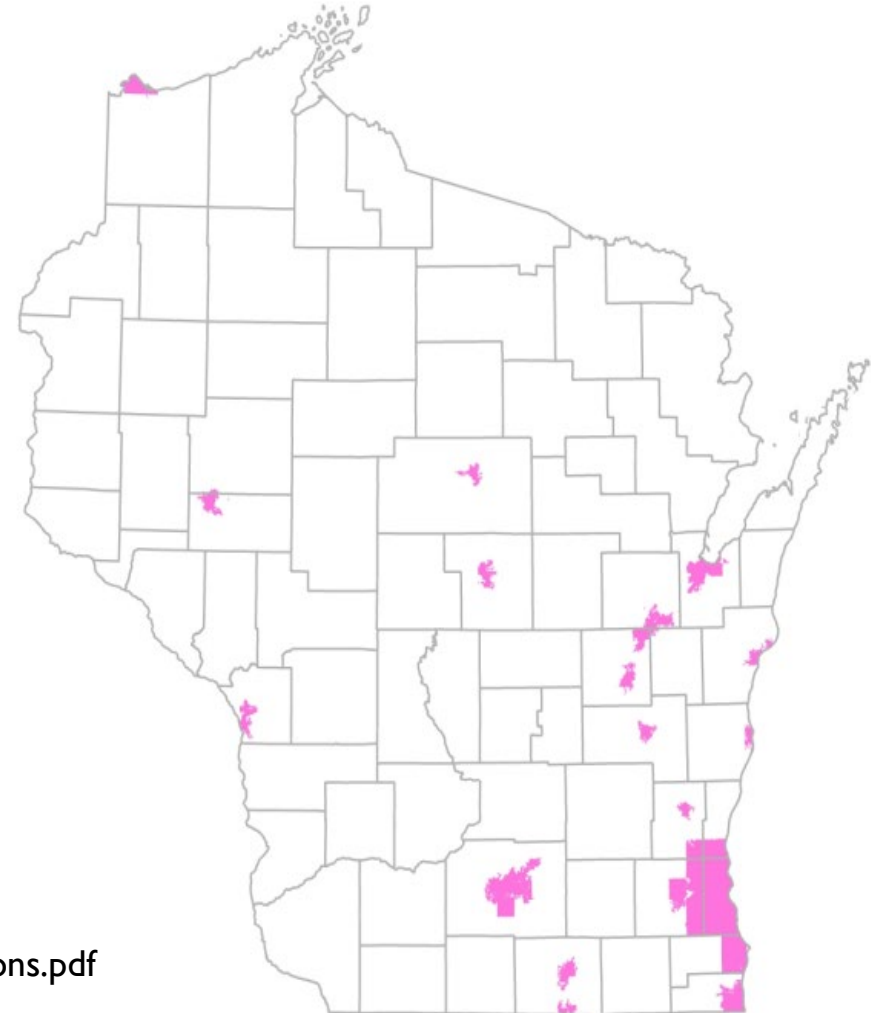
Source modeled impact at violating receptor above SIL → may need to take emission reductions, change operating scenarios to mitigate source/project impact

BACKGROUND CONCENTRATIONS AND MODELING

- The background concentration data is made up of ambient air monitoring, which represents the effects of regionally transported pollutants, natural sources, and smaller unidentified sources in the vicinity,
- Background concentrations can be provided by the state permitting authority and are added to the impact from the source in question to complete the cumulative NAAQS analysis.
 - WDNR provides guidance on background concentrations and background concentration values [online](#).

2021 Wisconsin High Background Concentration Areas

Wisconsin Background Concentrations (All Concentrations in $\mu\text{g}/\text{m}^3$)			
Pollutant	Time Period	High Value	Low Value
PM _{2.5}	24 Hour	20.8	18.0
	Annual	8.00	6.50
PM ₁₀	24 Hour	33.1	27.0
Pb	Quarterly	0.02	0.01
SO ₂	All Applicable	HROFDY & MONTH <i>(Download)</i>	HROFDY & MONTH <i>(Download)</i>
NO ₂	All Applicable	HROFDY & MONTH <i>(Download)</i>	HROFDY & MONTH <i>(Download)</i>
CO	1 Hour	1,196.0	494.7
	8 Hour	916.8	420.2



<https://dnr.wisconsin.gov/sites/default/files/topic/AirPermits/2021BackgroundConcentrations.pdf>

UNIFORM BACKGROUND CONCENTRATION MAY NOT BE APPROPRIATE IN ALL CASES

- Under PSD permitting, if the project source is a modification where the existing facility's emissions affect the ambient monitor(s), monitored values may be excluded from the design value calculation when the existing source is affecting the monitor.
- Data may also be modified or excluded from the ambient data record when the monitor is impacted by atypical activities (i.e., impacts that will not occur again in the future).
 - Examples of this may include but are not limited to construction, roadway repairs, forest fires, or unusual agricultural activities.

ADDITIONAL METHODS, DETERMINATIONS, AND ANALYSES TO MODIFY AIR QUALITY DATA BEYOND EXCEPTIONAL EVENTS (2019)

- Memo supplementing the 2016 revisions to the Exceptional Events Rule clarifying the types of actions for which EPA may consider certain modified (excluded, selected, or adjusted) air quality monitoring data.
- Pertains to certain modeling analyses including:
 - Preparing required air quality analyses for demonstrating compliance under the PSD permitting program

MONITORING DATA COULD QUALIFY FOR MODIFICATION IF...

- Data were already excluded under the Exceptional Events Rule or
- Ambient data are not representative to characterize background concentrations or base period concentrations in accordance with the Guideline on Air Quality Models which may impact a determinative value in a past or projected time period.
 - Applicant submits “EE like” justification for data modification to the state for approval

PERMITTING TOOLS FOR PM_{2.5} UNDER THE PSD PROGRAM

- Code of Federal Regulations
 - 40 CFR. 52.21 Prevention of Significant Deterioration of Air Quality
 - Additional and more recent guidance on NSR applicability and other NSR topics can be found at EPA's [New Source Review Policy and Guidance Document Database](#)
 - Appendix W to Part 51 - Air Quality Models
- Best Available Control Technology (BACT)
 - Top Down BACT procedure: Chapter B, [NSR Workshop Manual \(DRAFT Oct. 1990\)](#)
 - Cost Considerations in BACT analyses: [Air Pollution Control Cost Manual](#)

Flexibility in Permitting

- Project Emissions Accounting
 - A 2018 guidance and 2020 final rule affirmed there is flexibility for existing major sources to consider both emission increases and well as decreases from a proposed project at Step I of the NSR major modification applicability process*.
 - *Calculated emissions rates to determine PSD applicability are different than those used in the source impact analysis.
- Plantwide Applicability Limitation (PAL) flexibility
 - Once established, a PAL allows the source to manage physical and operational changes at the facility without triggering PSD permitting or conducting project-by-project applicability analyses, so long as overall emissions do not increase above the PAL.
 - PALs require the source to conduct monitoring, recordkeeping, and reporting of actual emissions of applicable NSR pollutant(s) on a 12-month rolling basis

SUMMARY

- New major sources or major modifications at existing sources must comply with the new standard as of May 6, 2024
- No immediate requirements for existing operating permits in attainment areas
- Early engagement with the state permitting authority and EPA is critical in identifying solutions for permitting
- Background concentrations impacted by wildfire smoke or other atypical activities may be able to be modified for modeling analyses
- PALs and project emissions accounting could offer flexibility in the permitting process