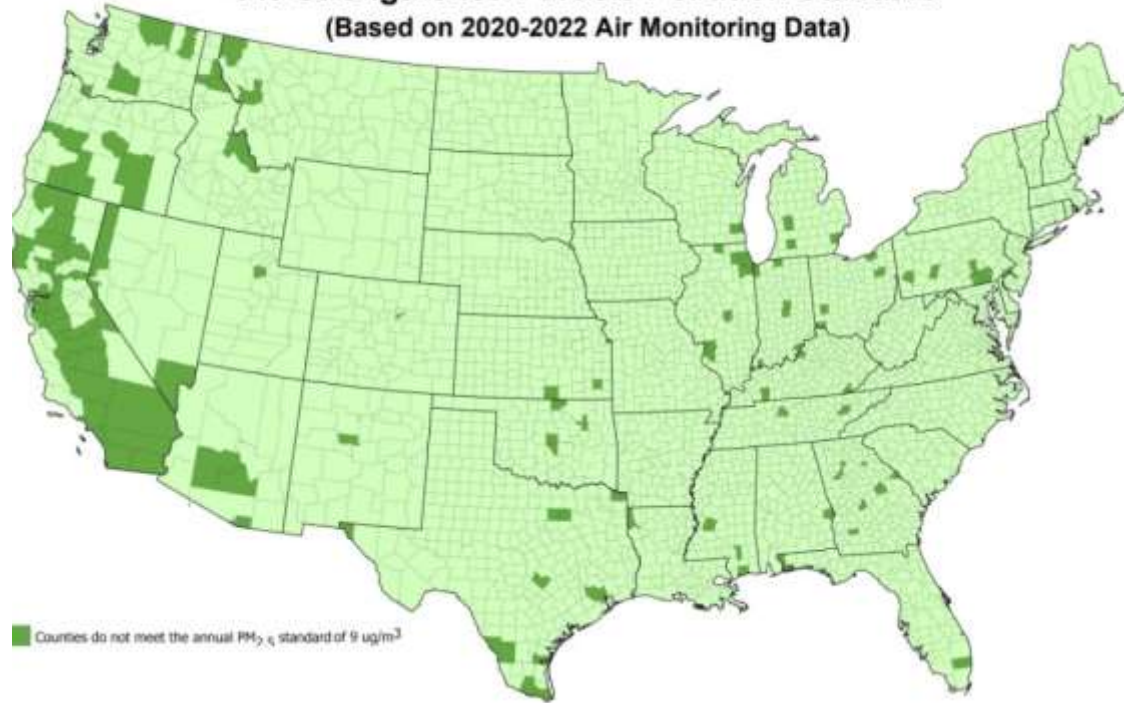


**Most Counties with Monitors Already Meet
the Strengthened Particle Pollution Standard**
(Based on 2020-2022 Air Monitoring Data)



2024 PM_{2.5} NAAQS and Implications

REGFORM Missouri Air Seminar

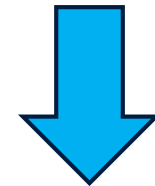
Jeff Bennett, Barr Engineering

November 6, 2024

High Level Summary – PM_{2.5} NAAQS



- *PM_{2.5} National Ambient Air Quality Standard reconsideration published in Federal Register on March 6, 2024*
 - *No changes to PM₁₀ or PM_{2.5} 24-hour NAAQS*
 - *PM_{2.5} Annual NAAQS reduced from 12 µg/m³ to 9 µg/m³*
- *Appeals of final rule filed by U.S. Chamber of Commerce (et al), 24 states, the state of Texas, Arizona Chamber of Commerce and Industry, and The Essential Minerals Association in the DC Circuit*



High Level Summary – PM_{2.5} NAAQS



- *The 2024 PM_{2.5} NAAQS update will have impacts on industrial operations/facilities*
 - *Potential nonattainment designation and post-designation requirements*
 - *New source review permitting (nonattainment, PSD, or minor) will become more difficult*
- *“Creative implementation” and monitoring*

PM_{2.5} NAAQS Recent History

- December 2020 PM NAAQS review
 - Concluded no change was necessary for PM_{2.5}
 - Annual average
 - Primary - 12 micrograms / cubic meter ($\mu\text{g}/\text{m}^3$)
 - Secondary – 15 $\mu\text{g}/\text{m}^3$
 - 24-hour average
 - Primary and secondary – 35 $\mu\text{g}/\text{m}^3$
- December 18, 2020 final rule
 - Followed by petitions for reconsideration

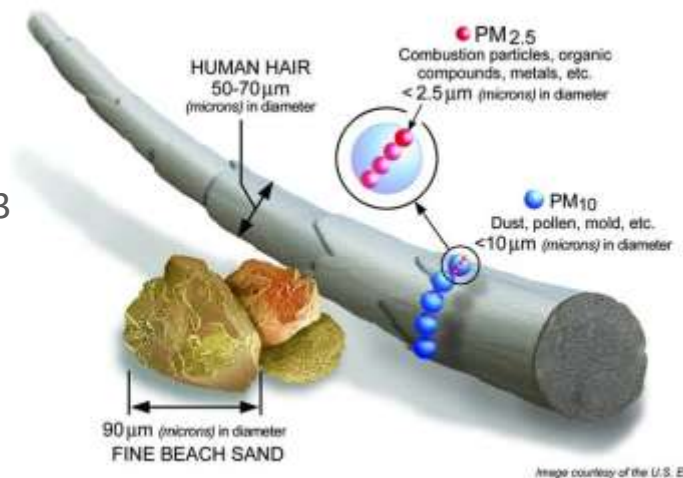


Image courtesy of the U.S. EPA

PM_{2.5} NAAQS Recent History

- Reconsideration announced June 2021
 - “Scientific information” used in the reconsideration was nearly identical to the 2020 decision

???

- EPA Proposed Rule January 2023
 - 24-hour NAAQS -- 35 $\mu\text{g}/\text{m}^3$ (comments to 30 $\mu\text{g}/\text{m}^3$)
 - Annual NAAQS – 9 -10 $\mu\text{g}/\text{m}^3$ (comments 8 -12 $\mu\text{g}/\text{m}^3$)

Final 2024 PM_{2.5} NAAQS

Pollutant	Primary/ Secondary	Averaging Time	Limit	Form
PM ₁₀	Both	24-hour	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
PM _{2.5}	Primary	Annual	9 µg/m³	Annual mean averaged over 3 years
	Secondary	Annual	15 µg/m ³	Annual mean averaged over 3 years
	Both	24-hour	35 µg/m ³	98 th percentile averaged over 3 years

Bold = change



Current appeal status

- Initial request for review provided by Petitioners on the day of final rule publication (March 6, 2024)
- Various briefs filed by petitioners and a response filed by EPA on August 19, 2024
 - With briefs from:
 - US Chamber of Commerce – et al (September 30, 2024) and October 15, 2024
 - 24 states on September 30, 2024

Petitioners' response briefs

- Petitioners argue (among other things):
 - EPA can't just "reconsider" NAAQS, need to go through revision with "a thorough review"
 - EPA's statutory process requires consideration of cost and attainability when deciding to revise a NAAQS
 - EPA didn't explain sufficiently why the annual PM_{2.5} NAAQS should be 9 µg/m³ instead of 10 µg/m³

EPA brief

- EPA argues (among other things):
 - We can use the most relevant information to complete a NAAQS revision and are not required to undertake “a thorough review”
 - As part of NAAQS revision, we are only required to consider health impacts (and not costs)
 - The Administrator “rationally exercised his judgement” in revising the annual NAAQS

What does a more stringent PM_{2.5} NAAQS mean? More nonattainment

- Tighter standard means more nonattainment areas
 - Designations - CAA Section 107(d)
 - After finalizing NAAQS (and Court challenges/stays), EPA has two years to finalize designations – March 6, 2026
 - States send recommendations within 1 year using most recent three years of monitor data – March 6, 2025

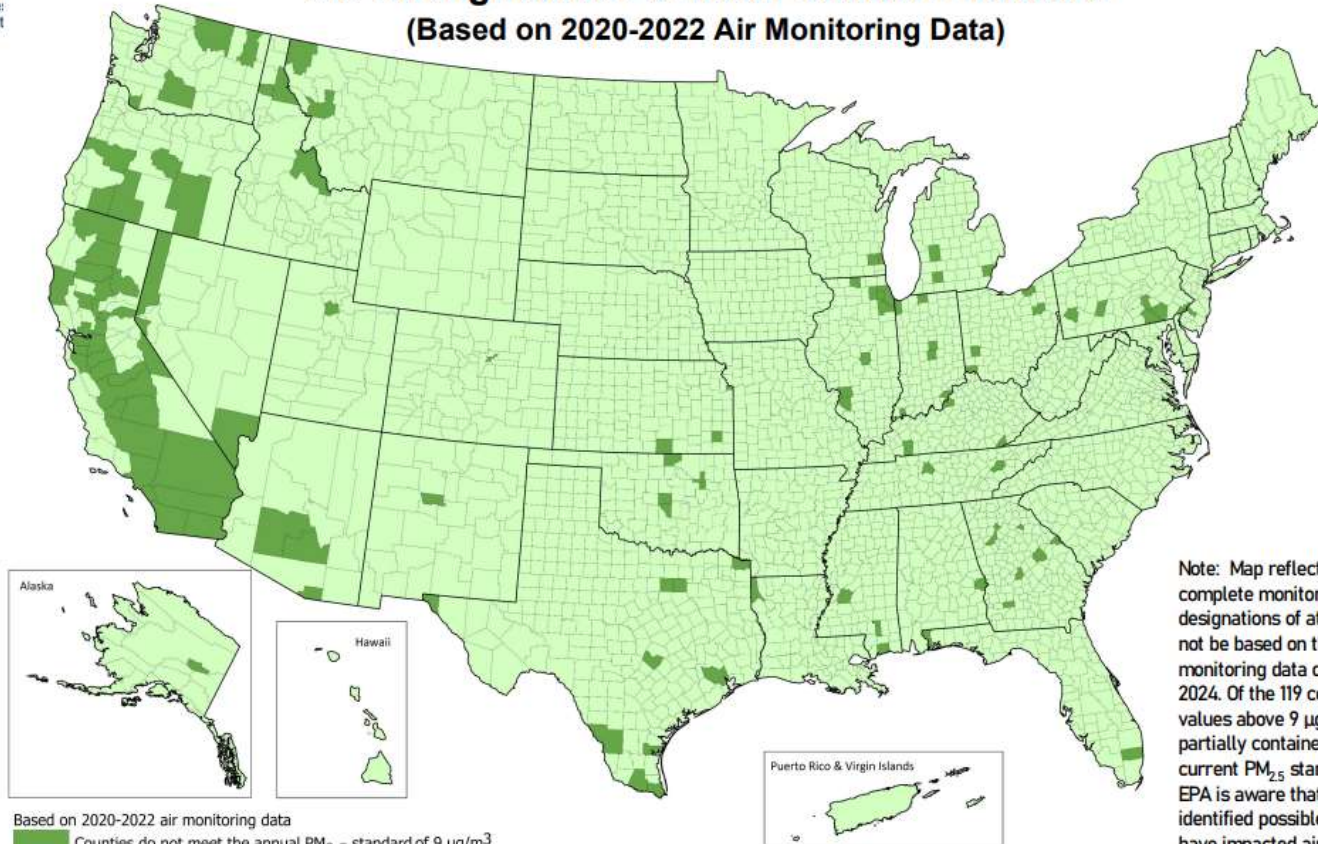
Five factors → Air Quality, Emissions, Meteorology, Geography/Topography, Jurisdictional Boundaries

Wrangling between EPA regional offices/headquarters


Current Monitors Exceeding 2024 NAAQS



Most Counties with Monitors Already Meet the Strengthened Particle Pollution Standard (Based on 2020-2022 Air Monitoring Data)



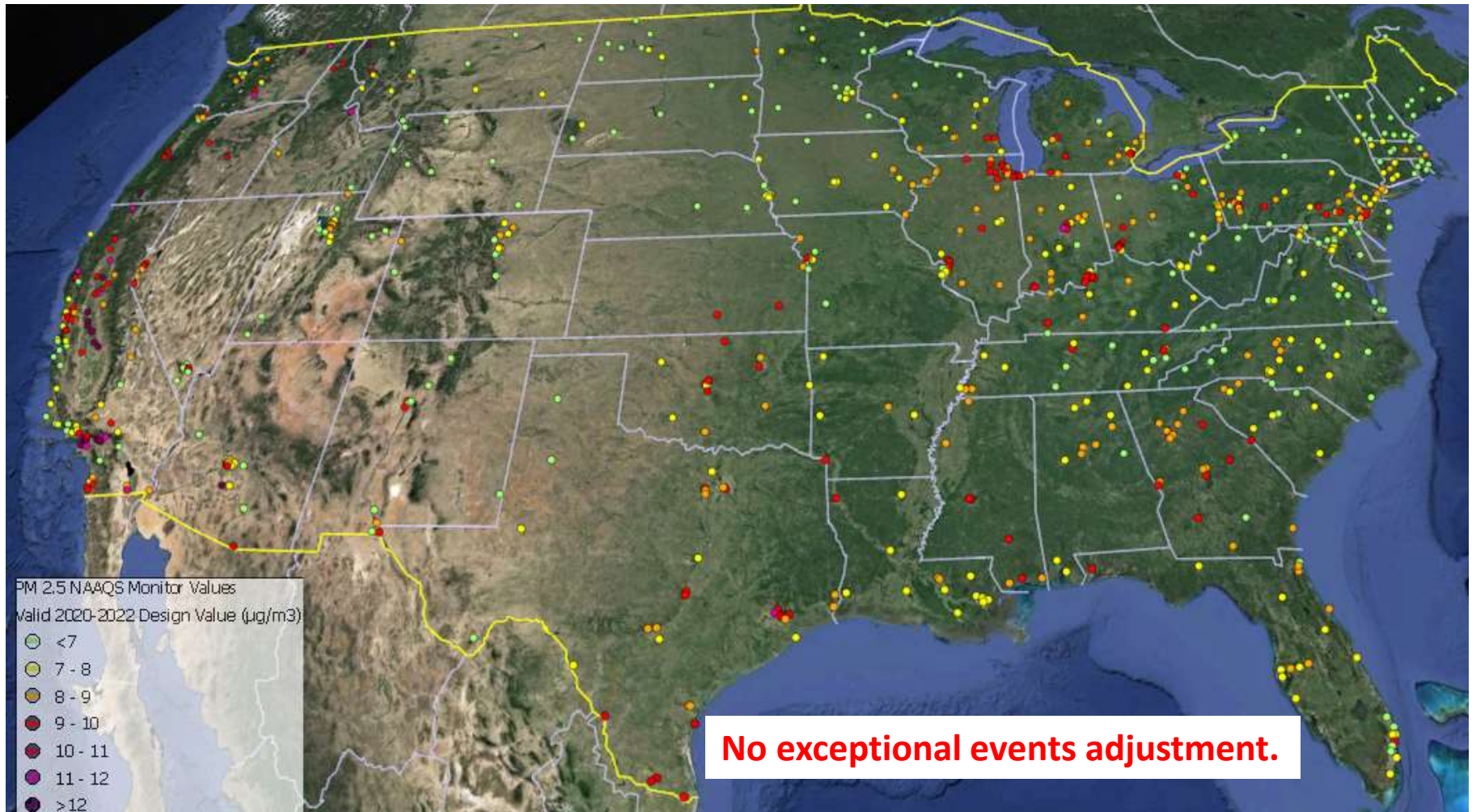
Based on 2020-2022 air monitoring data

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

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

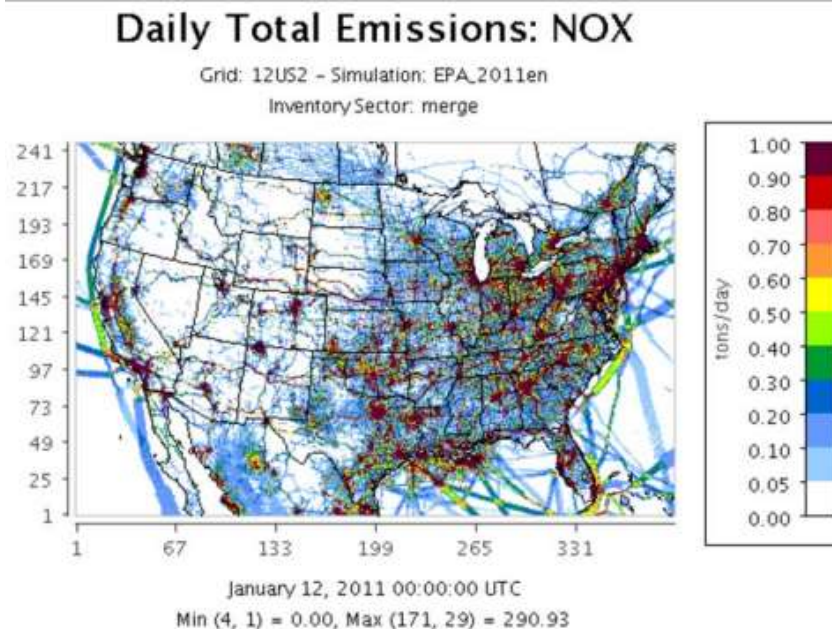
Note: Map reflects monitored counties with complete monitoring data. Future final designations of attainment/nonattainment will not be based on these data, but likely on monitoring data collected between 2022 and 2024. Of the 119 counties with 2020-2022 design values above $9 \mu g/m^3$, 59 counties are totally or partially contained in nonattainment areas for current $PM_{2.5}$ 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.

Annual PM_{2.5} Design Values (2020-22)



Nonattainment Requirements

- States have 18 months to prepare State Implementation Plans (SIPs)
 - Participation in (or being subject to) regional attainment demonstration modeling - base year inventory, future year inventory



Nonattainment SIP Requirements (EPA laundry list)

- SIP Narratives
- Infrastructure plans providing for general implementation of a NAAQS
- NAAQS-specific Part D Nonattainment Area Plans
- Maintenance plans (*two 10-year plans after redesignation*)
- Emissions Inventories (*base year and future years*)
- Monitoring Networks (*nearly impossible to change*)
- State Statutes submitted for the purposes of demonstrating legal authority
- Permitting programs (*very difficult*)
- Attainment Demonstration
- Transportation Control Measures (TCMs)
- Contingency Measures



Nonattainment SIP Requirement

- Major point sources in nonattainment areas (> 100 tpy emissions -- primary or precursor)
 - Reasonably Available Control Technology (RACT)
 - SCR, SNCR, and/or LNB
 - Wet scrubbers
 - Baghouses



Nonattainment Permitting Requirement

- Nonattainment New Source Review (NNSR) permitting for major modifications -- effective after designation
 - Offsets for regulated pollutants (SO_2 , NO_x , and $\text{PM}_{2.5}$)
 - Lowest Achievable Emission Rate (LAER)
 - Enhanced Public Participation
- Offsets = 1 ton new emissions must be accompanied by removal of 1 ton old emissions



Nonattainment take home message...

- Take all available steps to help your area/county avoid nonattainment designation
 - Work with others in your area and communicate / engage with the Air Program
 - Exceptional event treatment will remain important
- It likes a roller coaster that never lets people off...

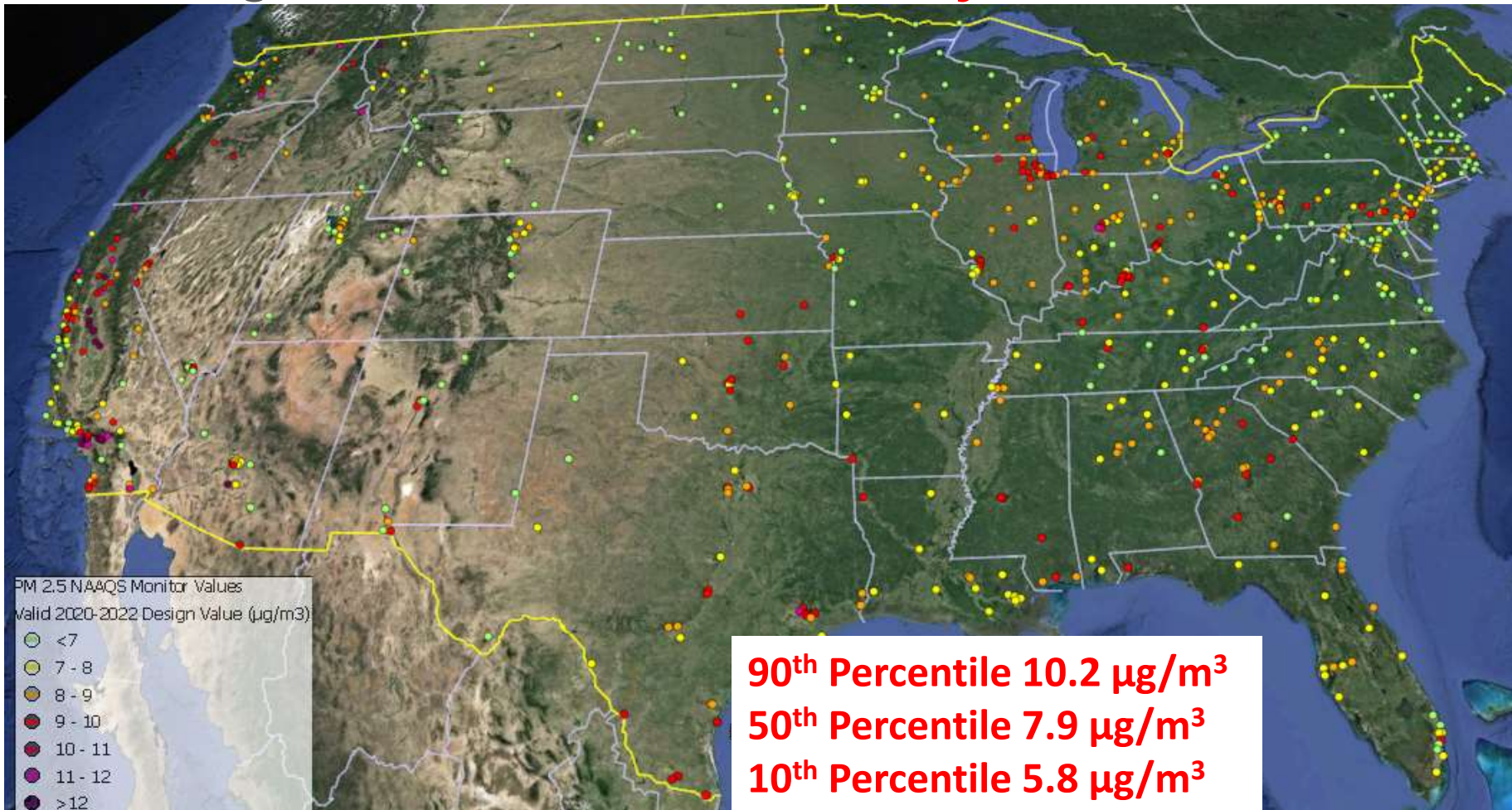


What does a more stringent PM_{2.5} NAAQS mean? Permit / modeling difficulties

- Permitting challenges
 - Prevention of Significant Deterioration applied with respect to a new standard since March 2024
 - Major source (PSD) permitting / modeling will be tougher
 - States with minor source modeling programs and/or requirements to check for NAAQS compliance have increased difficulty issuing permits

Modeled Background?

- Background concentrations are **very near** the NAAQS



Additional Guidance / New Requirements

- EPA has issued new Significant Impact Levels (SILs) and will likely update the PSD increment standard

Previous / 2024	Avg	NAAQS	Class II Increment	NAAQS / Class II SIL	Class I Increment	Class I SIL
Previous	Ann	12 $\mu\text{g}/\text{m}^3$	4 $\mu\text{g}/\text{m}^3$	0.2 $\mu\text{g}/\text{m}^3$ [1]	1 $\mu\text{g}/\text{m}^3$	0.05 $\mu\text{g}/\text{m}^3$
2024	Ann	9 $\mu\text{g}/\text{m}^3$	3 $\mu\text{g}/\text{m}^3$	0.13 $\mu\text{g}/\text{m}^3$[2]	1 $\mu\text{g}/\text{m}^3$	0.03 $\mu\text{g}/\text{m}^3$[2]
Prev/2024	24-hr	35 $\mu\text{g}/\text{m}^3$	9 $\mu\text{g}/\text{m}^3$	1.2 $\mu\text{g}/\text{m}^3$ [1]	2 $\mu\text{g}/\text{m}^3$	0.27 $\mu\text{g}/\text{m}^3$

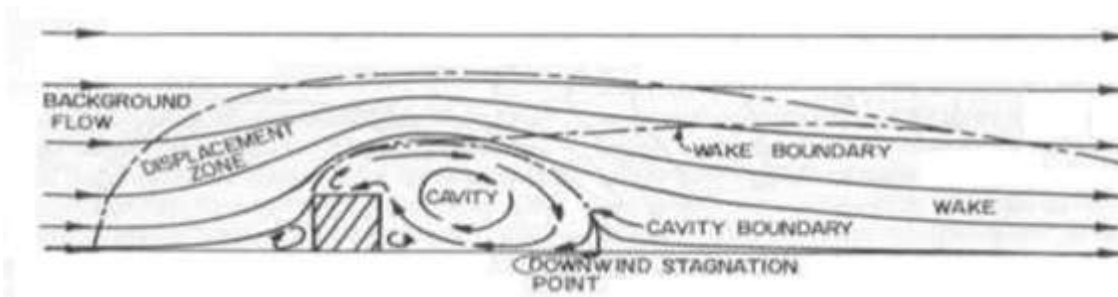
[1] Missouri 10 CSR 10-6.060(5)(F)(3) – Table 1 specifies current SIL

[2] [April 30, 2024 EPA Guidance](#)

- ***Italics*** = best guess (no guarantee)
- **Additional guidance and implementation requirements will follow. Stay tuned.**

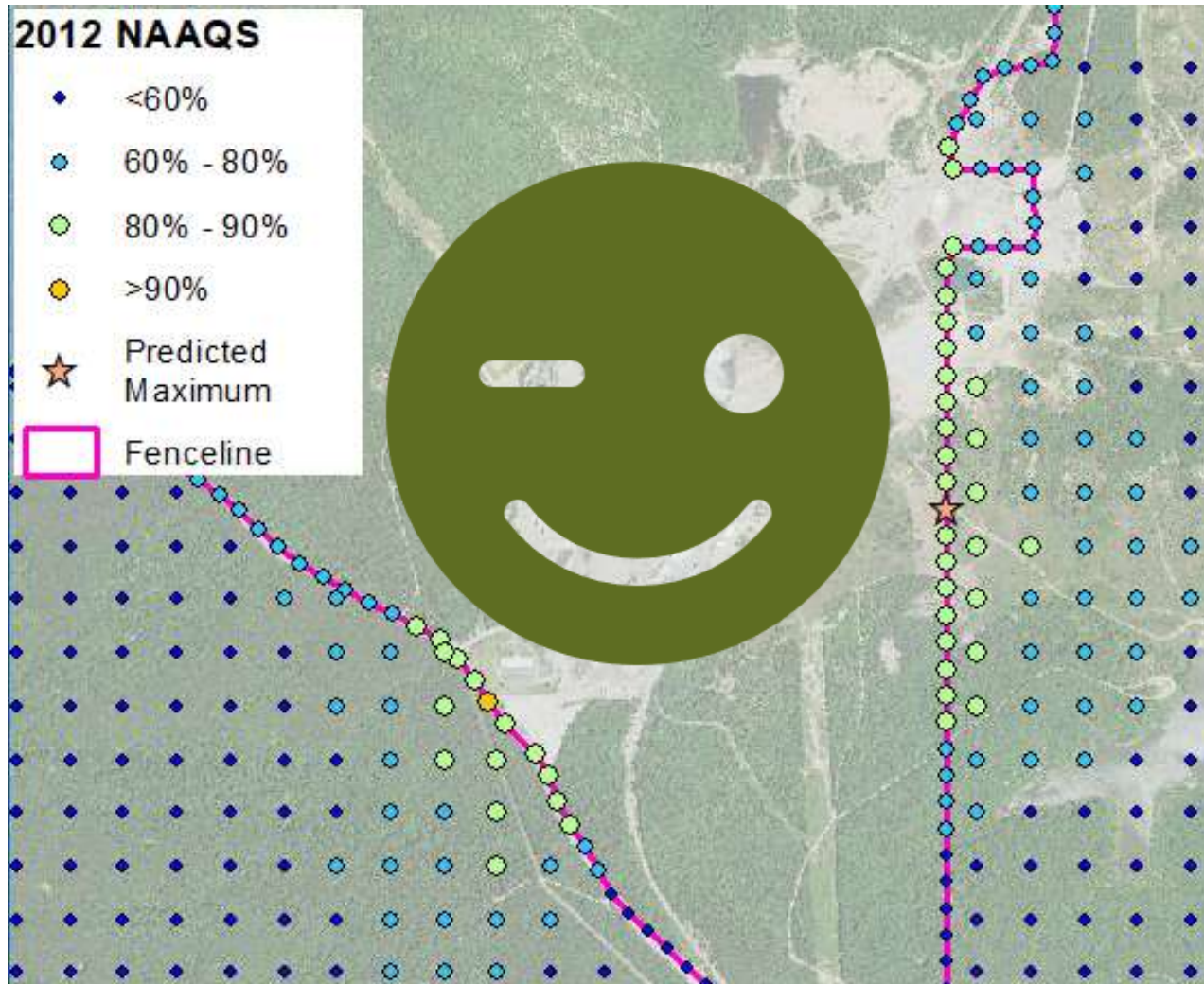
Project Example -- Permit $PM_{2.5}$ Modeling

- Initial modeling completed in late 2023

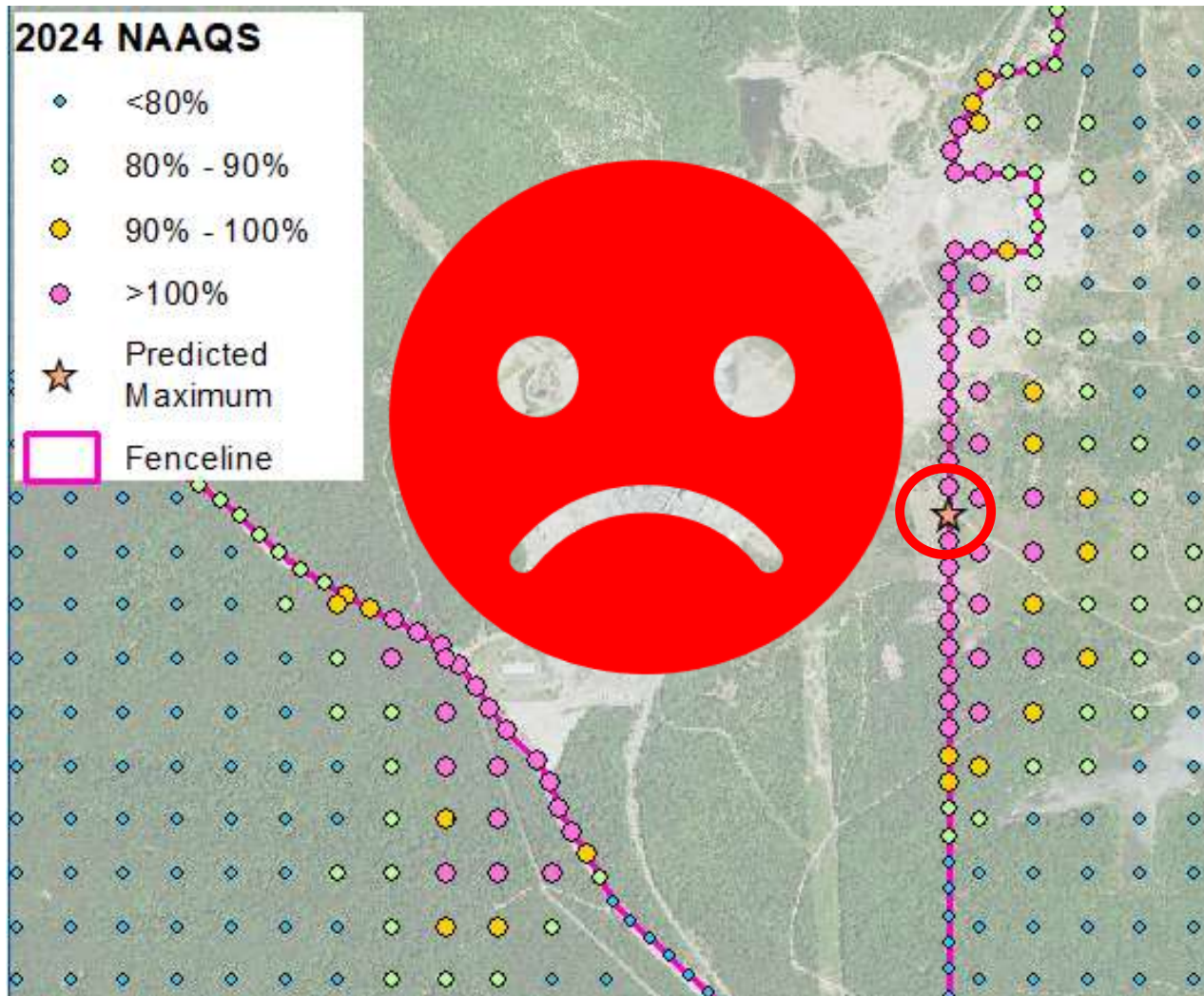


- Construction permit was drafted, but not be issued before effective date of updated NAAQS (May 6, 2024)
 - Agency requested updated modeling
- Results were good compared against 2012 NAAQS, but not 2024 NAAQS...

2023 Project Modeling (2012 Annual NAAQS)



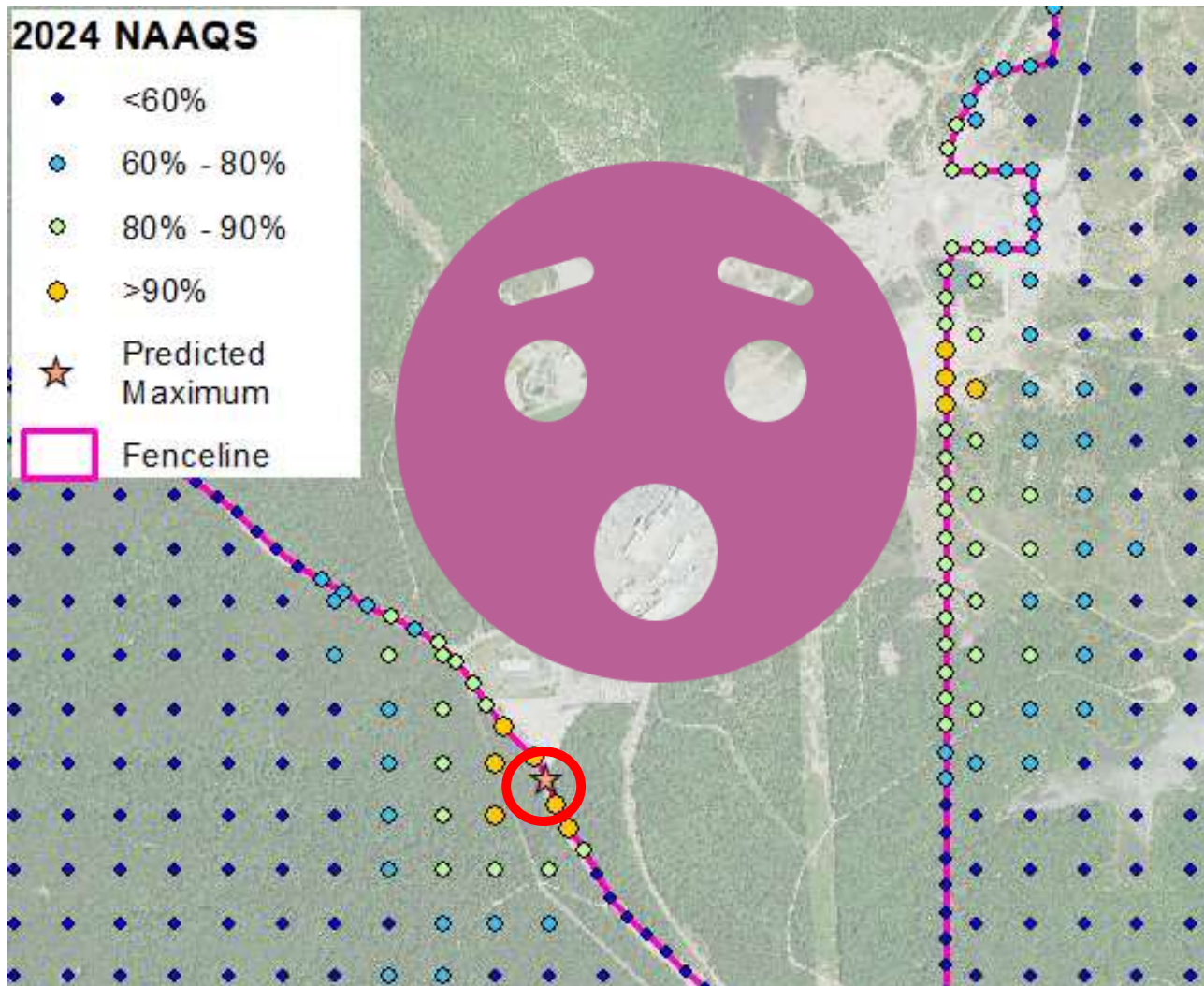
2023 Project Modeling (2024 Annual NAAQS)



PM_{2.5} Project Construction Permit

- Updated modeling was “successful”, but required:
 - multiple iterations, discussions between permittee and agency (more time),
 - additional refinement of background concentrations to exclude fire event days (more analyses),
 - annual throughput or seasonal limits for most impactful emission sources (more tracking/operational restrictions), and
 - commitment to conduct PM_{2.5} emissions testing of sources that were previously tested for total particulate to confirm particle size distribution (more expense, risk)

2024 Permit Modeling (2024 Annual NAAQS)



Creative Implementation

- Iowa DNR -- *The current annual $PM_{2.5}$ NAAQS became effective for PSD applications on 5/6/2024. **The DNR will continue to implement the previous annual $PM_{2.5}$ NAAQS ($12 \mu\text{g}/\text{m}^3$) for non-PSD applications until our revised $PM_{2.5}$ Infrastructure SIP is submitted to EPA (early 2027).***
- **Minor Source NAAQS \neq PSD Source NAAQS**



Creative Implementation

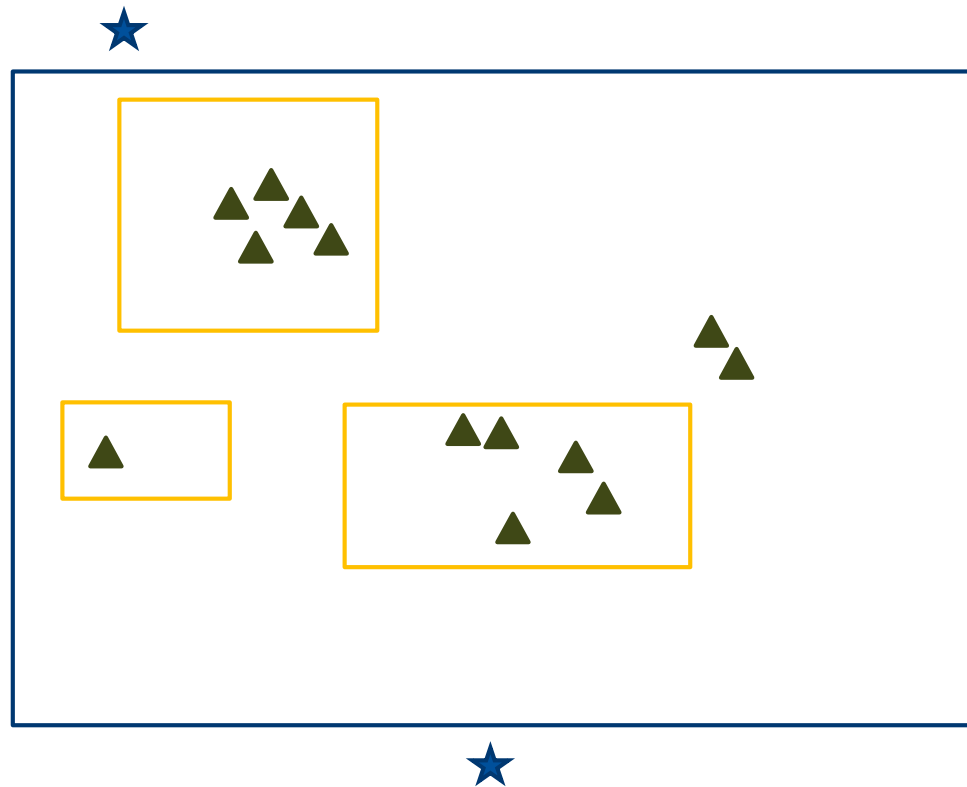
- Wisconsin DNR -- *For existing sources, minor new sources, and minor modifications of sources **dispersion modeling of $PM_{2.5}$ is not necessary to demonstrate whether the emissions from the source cause or exacerbate a violation of the air quality standard for $PM_{2.5}$ and will no longer be performed for this purpose.***
- ***No $PM_{2.5}$ minor modeling required!***





NAAQS Demonstration Alternative

- Agencies continuing to consider PM_{2.5} monitoring to support existing operations and new construction
- Example of monitoring success



Major Facility Example Using $PM_{2.5}$ Monitoring



-  Buildings
-  Ambient Boundary
-  Monitors
-  Stacks

3 years of sampling indicates average concentrations for both monitors between $3-4 \mu\text{g}/\text{m}^3$ after removal of fire events. Success!

Summary / thoughts

- Depending on the election results – PM_{2.5} annual NAAQS may stay at 9 µg/m³ OR move to 10 or 11 µg/m³
- Work to avoid nonattainment designations
- Prepare for future permitting issues by investigating current air quality around your facilities (e.g., modeling or monitoring)
- Other issues including community/non-regulatory monitoring and Environmental Justice may still advance



Questions?

Jeff Bennett
Barr Engineering
jbennett@barr.com
(573) 638-5033