



AIR & WASTE MANAGEMENT
ASSOCIATION

Air & Waste Management Association, Central Texas Chapter

First Quarterly Meeting

March 27, 2024

Today's Agenda

- Welcome and Introductions – Joe Pere
- Message from the Chair – Joe Pere
- Treasurer's Report – Natasha Martin
- Membership Report – Bobby Salehi
- Committee Chair/Membership Needs – Bobby Salehi
- Secretary's Report – Douglas Wolf
- Presentation – PM2.5 NAAQS – Thomas Warnack, Air Quality Engineer, INTERA Incorporated
- Question & Answer Session
- Adjournment



2024 Central Texas Chapter Officers



Joe Pere
Chair



Bobby Salehi
Vice Chair



Natasha Martin
Treasurer



Douglas Wolf
Secretary



Quarterly Newsletter & Website

CENTRAL TEXAS CHAPTER NEWS

A quarterly newsletter from the Air & Waste Management Association Central Texas Chapter

VOL. 1, ISSUE 1



03.13.2024

Top stories in this newsletter



Message from the Chair



First Quarter Member Meeting—March 27



Committee Members Needed for 2024



Corporate Sponsorship

Message from the Chair



It's hard to believe that it's already mid-March of 2024! Your newly elected slate of Board Members met in early February to chart out our course for the coming year, and we are very excited to bring a series of meetings, social engagements, and speakers to you this coming year.

This is a first in our series of quarterly newsletters. Short and to-the-point, they are intended to be an at-a-glance method for keeping our very busy members and friends updated with our chapter. Be on the lookout for details about events and news throughout the year!

First Quarter Member Meeting—March 27, hosted by INTERA



Our First Quarter Member Meeting will be held on Wednesday, March 27 at 11:30 AM, and will be hosted at INTERA Incorporated's Austin offices (9600 Great Hills Trail, Suite 300W). A sponsored lunch and mingling will begin at 11:30, with the meeting starting at 12:00 Noon and ending by 1:00 PM, with Teams simulcast. Please RSVP to [Robby Salehi](#), Vice Chair, by COB on Monday, March 25 and indicate whether you will be in-person or online.

Thomas Warnack of INTERA will be presenting on the new PM_{2.5} NAAQS redesignation and how it is most likely to affect the Central Texas area.



Air & Waste Management Association

Central Texas Chapter (Austin)

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Home

Greetings and Welcome to 2024!



Hello members of **A&WMA Central Texas**! My name is **Joe Pere** and I am both honored and humbled to have been elected to serve you as Chair for 2024.

The **Air & Waste Management Association** is a vital resource for environmental professionals to learn, network, and come together as those with much in common. Every day, we all face many of the same challenges as it relates to environmental issues, and having local resources for us to all come together is so very important. We have much to offer for everyone: from Young Professionals to Seasoned Statesmen, and the goal of our Board in 2024 is to bring as many Central Texas environmental professionals together to share what we've learned, to ask questions of each other, and to join together socially from time to time to just let our hair down.





2024 Revised Annual PM_{2.5} NAAQS Standard

Presented to

Air & Waste Management
Association

March 27, 2024



Presentation Contents

1 PM₁₀ and PM_{2.5} Basics

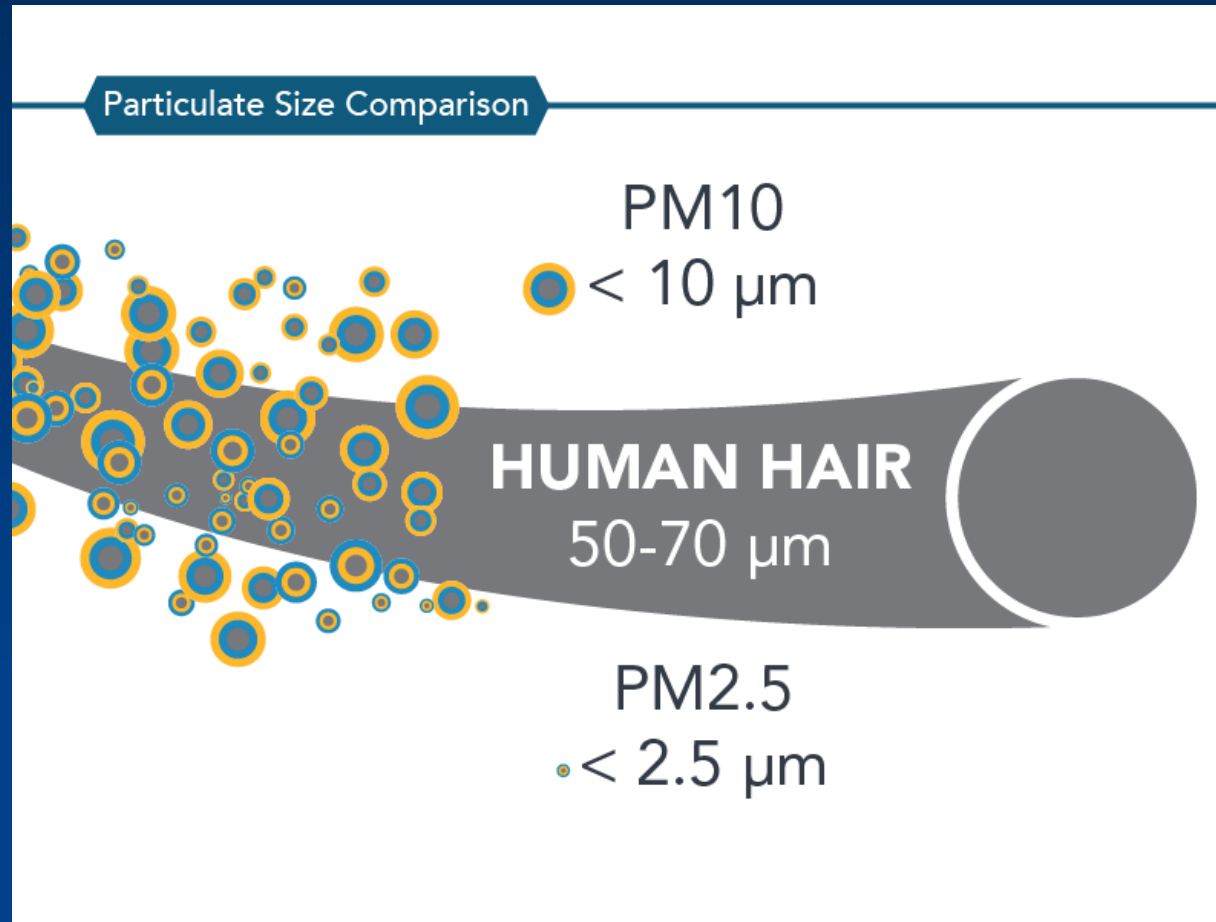
2 NAAQS Background

3 The Updated Standard

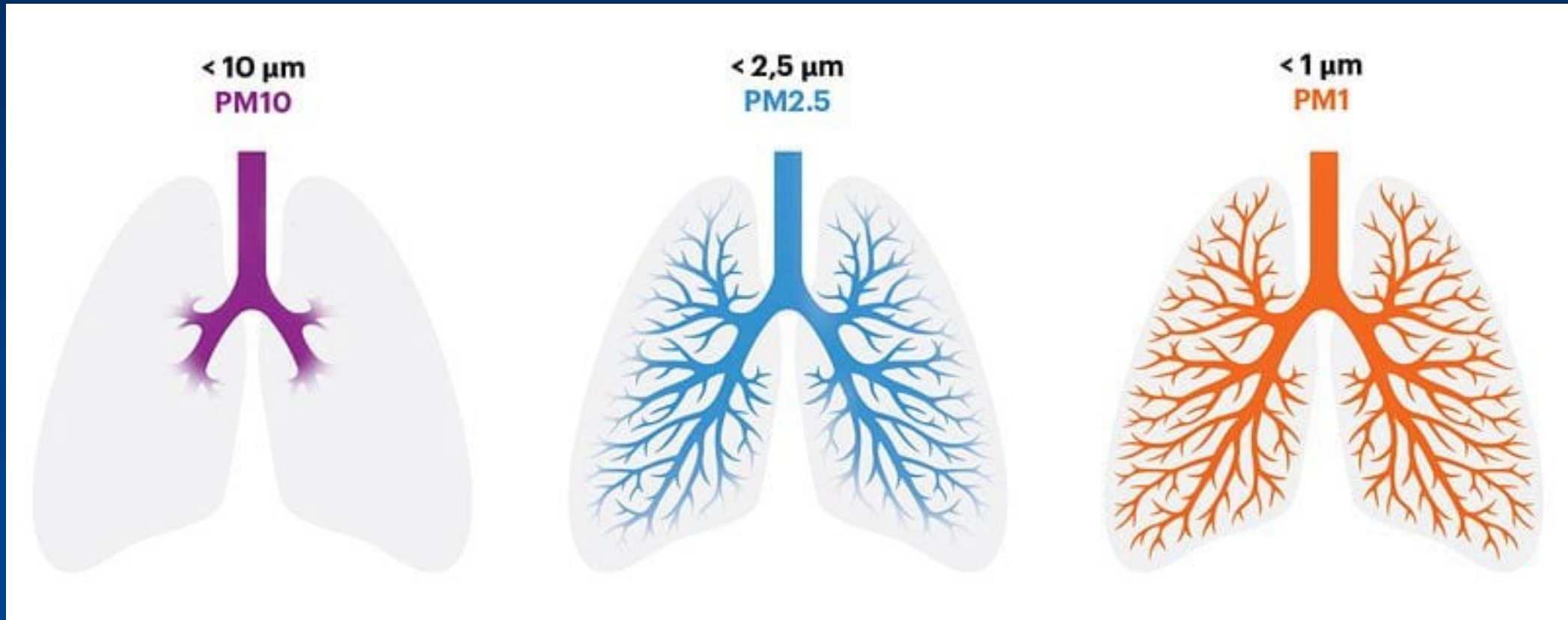
4 Central Texas Impacts

5 Conclusions

PM₁₀ and PM_{2.5}



Entry Mechanism



NAAQS Standards

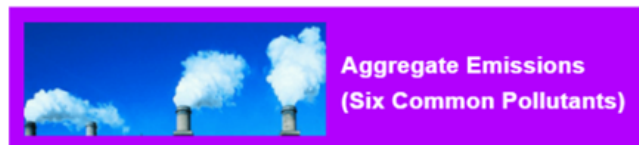
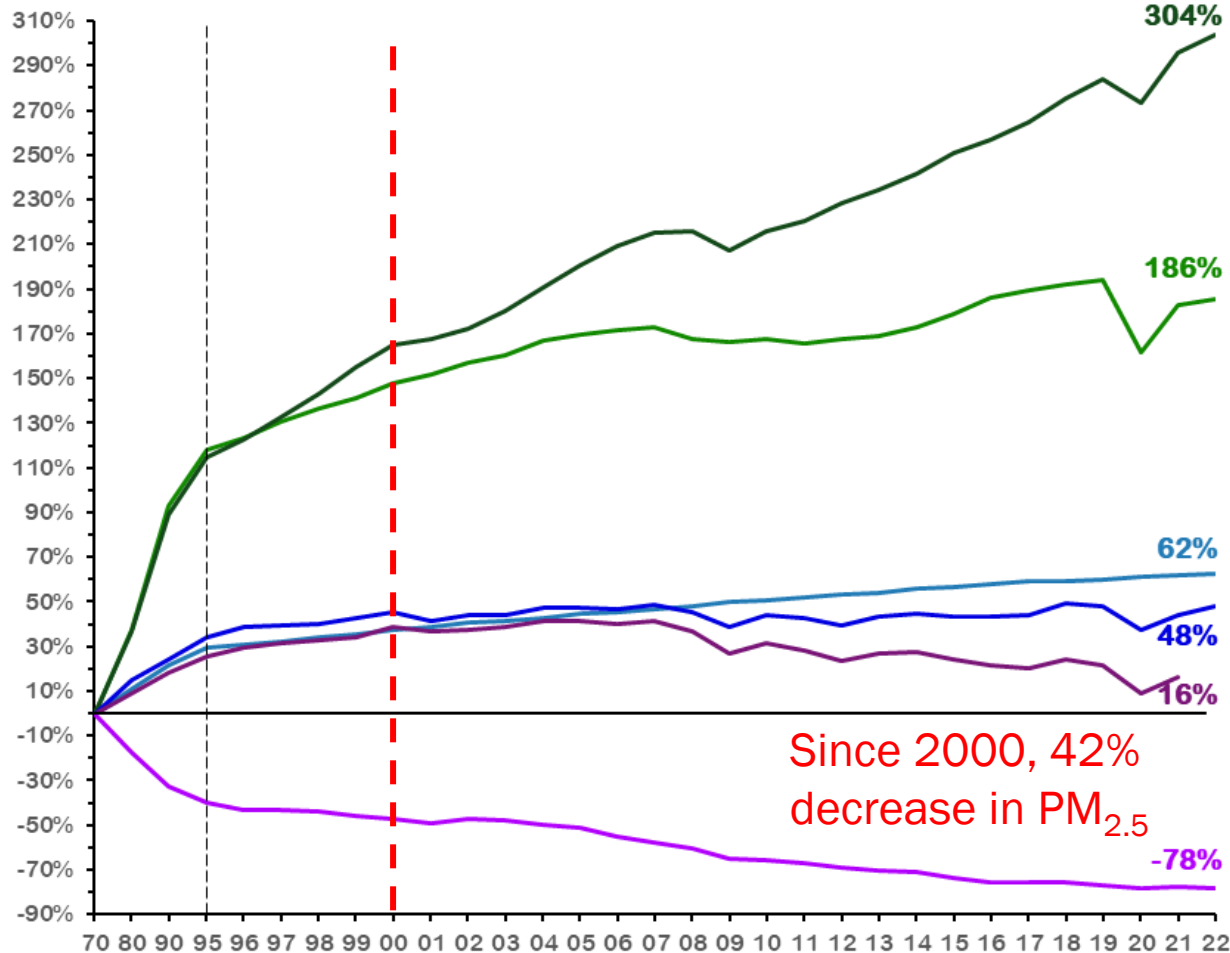
- **Primary Standards** – Provide public health protection, including protecting the health of “sensitive” populations such as asthmatics, children, and the elderly
- **Secondary Standards** – Provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings

Pollutant	Primary/Secondary	Averaging Time	Level	Form	
Carbon Monoxide (CO)	primary	8 hours	9 ppm	Not to be exceeded more than once per year	
		1 hour	35 ppm		
Lead (Pb)	primary and secondary	Rolling 3 month average	0.15 µg/m ³	Not to be exceeded	
Nitrogen Dioxide (NO₂)	primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	primary and secondary	1 year	53 ppb	Annual Mean	
Ozone (O₃)	primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO₂)	primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	

Source: EPA.gov

Why Establish NAAQS?







Comparison of Growth Areas and Emissions, 1970-2022








PM2.5 Sources and Health Impact Findings

Fine Particulate Matter (PM_{2.5})
HOW IT AFFECTS YOU AND WHAT CAN BE DONE ABOUT IT.







Where does PM_{2.5} come from?

- VEHICLE EMISSIONS 
- CONSTRUCTION 
- INDUSTRIES 
- FOREST FIRES 
- RESIDENTIAL BURNING 
- AGRICULTURAL BURNING 

How can PM_{2.5} affect my health?

- DECREASED LUNG FUNCTION 
- ASTHMA ATTACKS & BRONCHITIS 
- IRREGULAR HEARTBEATS 
- HEART ATTACKS 
- EXACERBATES PRE-EXISTING HEALTH CONDITIONS 

Prevention & reduction strategies

- CHECK YOUR LOCAL AIR QUALITY IF ALERT LEVELS ARE HIGH: 
- BIKE, WALK, OR USE PUBLIC TRANSIT 
- STOP IDLING VEHICLES 
- LIMIT INTENSE ACTIVITIES NEAR BUSY ROADS 
- ADHERE TO LOCAL BURN BANS 
- CONSIDER INDOOR ALTERNATIVES 

Predicted Benefits (through 2032)

- \$46 billion saved
- 4,500 less deaths
- 2,000 less emergency room visits
- 5,700 less onset asthma cases
- 800,000 less asthma symptom cases
- 290,000 less lost workdays
- 1,000 less Alzheimer's / Parkinson's cases
- 300 less stroke / lung cancer incidences
- 38,000 less hay fever symptoms



NAAQS Updates

Standards – Last Revised in the 2012 Review*					Decisions in 2020 Review	2024 Final Decision
Indicator	Averaging Time	Primary/ Secondary	Level	Form		
PM _{2.5}	Annual	Primary	12.0 µg/m ³	Annual arithmetic mean, averaged over 3 years	Retained	Revise level to 9.0 µg/m ³
		Secondary	15.0 µg/m ³		Retained	Retain
	24-hour	Primary and Secondary	35 µg/m ³	98th percentile, averaged over 3 years	Retained	Retain
PM ₁₀	24-hour	Primary and Secondary	150 µg/m ³	Not to be exceeded more than once per year on average over a 3-year period	Retained	Retain

* Prior to 2012, PM NAAQS were reviewed and revised several times – established in 1971 (total suspended particulate – TSP) and revised in 1987 (set PM₁₀), 1997 (set PM_{2.5}), 2006 (revised PM_{2.5}, PM₁₀)

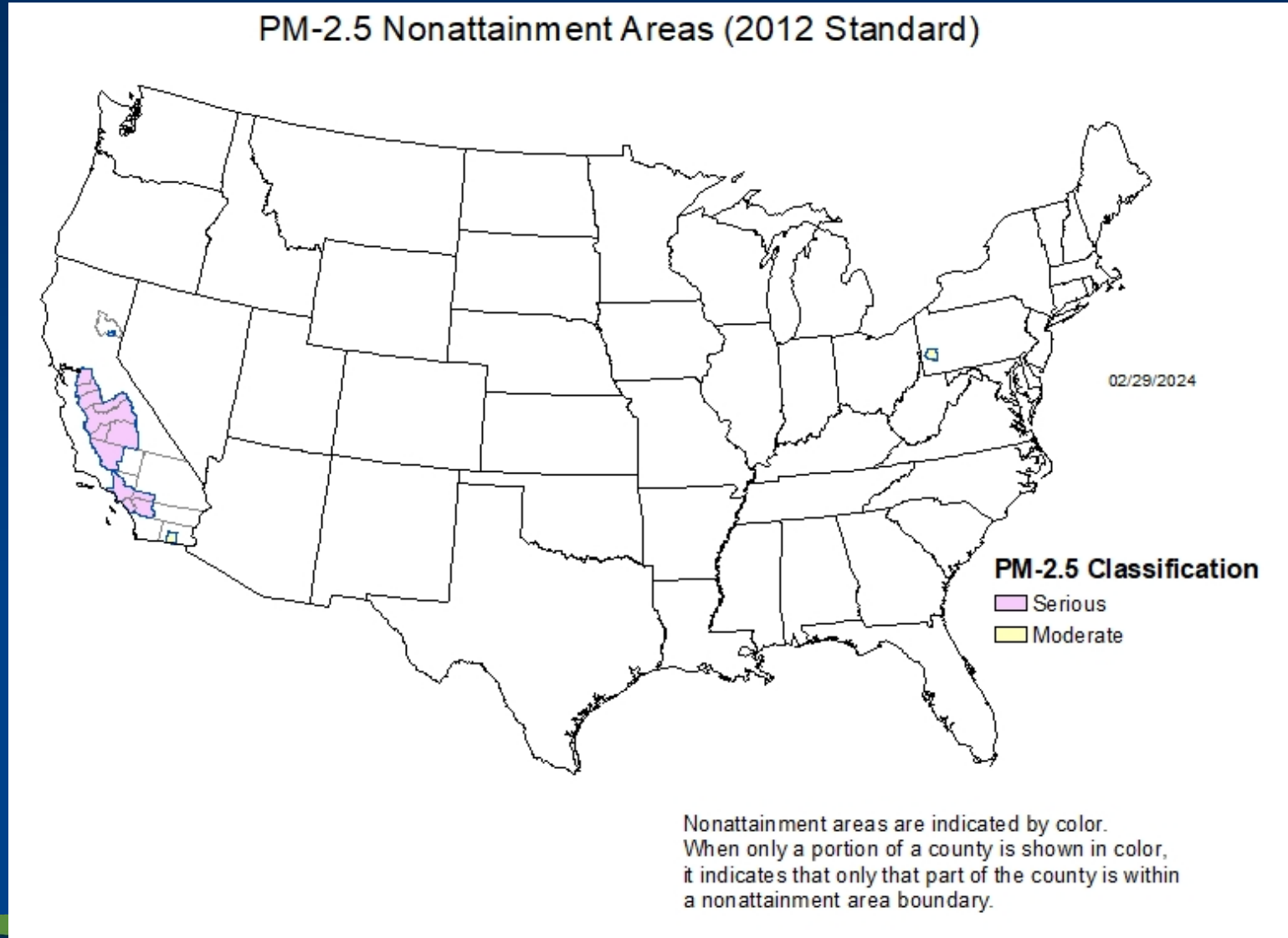
AQI Updates

Final Revision to AQI for PM_{2.5}

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

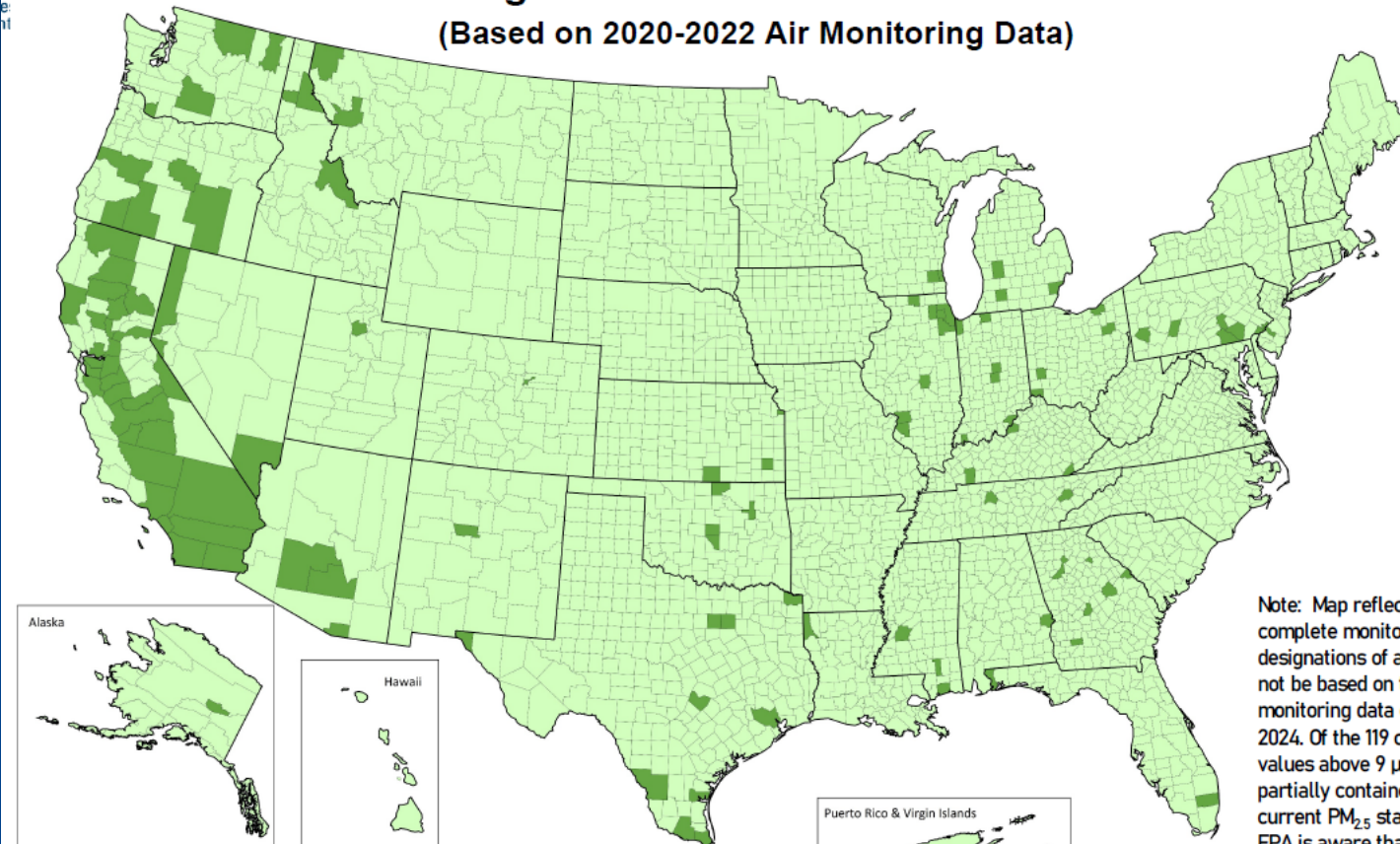
*The 500 breakpoint is used in conjunction with the 300 breakpoint to calculate AQI values within the hazardous category. The approach does not use the 500 breakpoint to determine other breakpoints values.

2012 PM_{2.5} Annual NAAQS Standard (12 µg/m³)




2024 PM_{2.5} Annual NAAQS Standard (9 µg/m³)

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

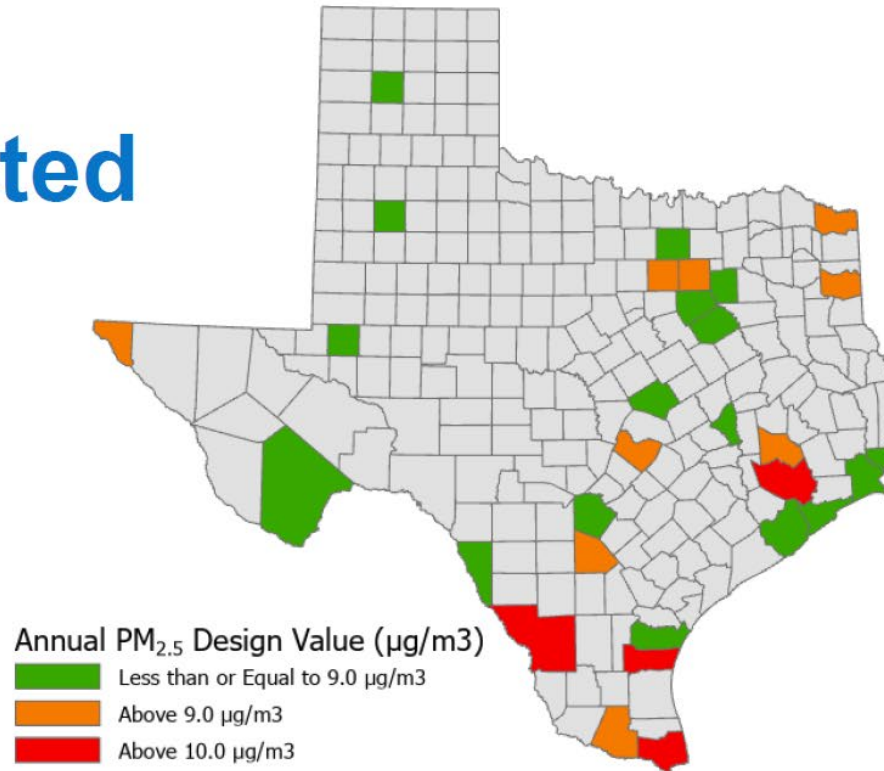
 Counties do not meet the annual PM_{2.5} standard of 9 µg/m³

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 µg/m³, 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.

Texas Map

Potentially Affected Counties Map



Data as of 01/13/2023 and subject to change.

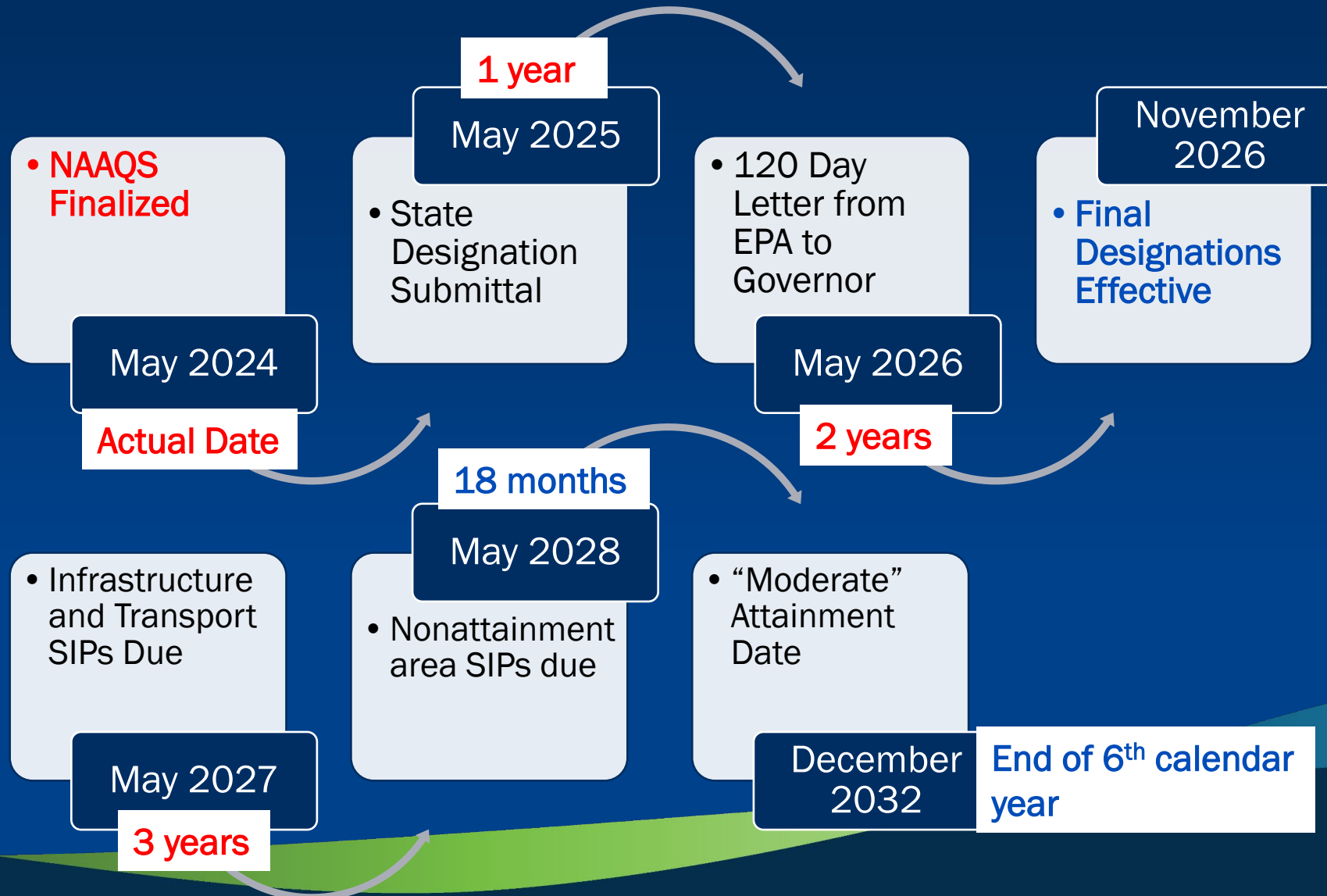
How is the Design Value Calculated for an Area?

Average of Daily (24-hr) Values over the Quarter

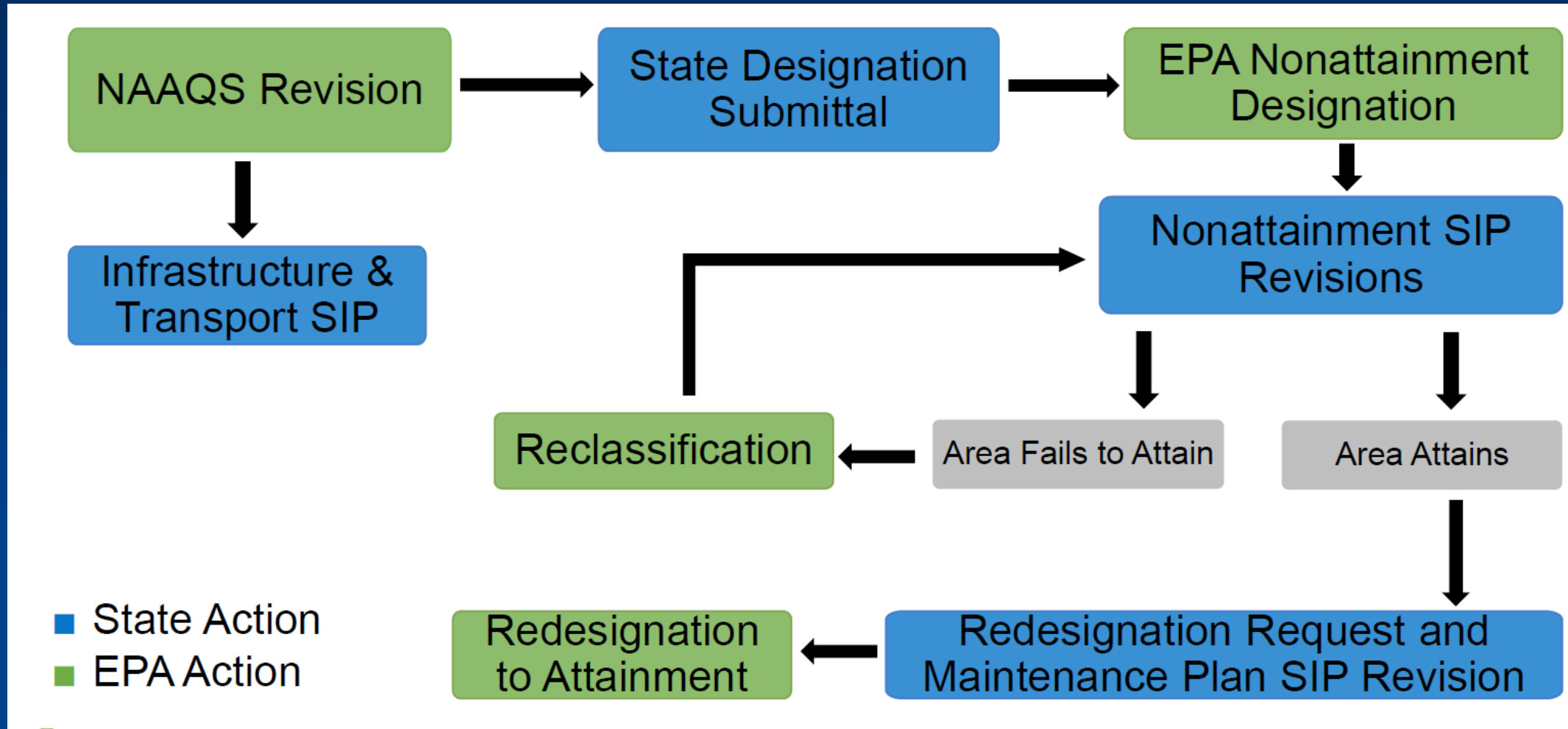
	2021 ($\mu\text{g}/\text{m}^3$)	2022 ($\mu\text{g}/\text{m}^3$)	2023 ($\mu\text{g}/\text{m}^3$)
<i>Quarter 1</i>	11.12	10.3	8.95
<i>Quarter 2</i>	15.6	11.13	12.61
<i>Quarter 3</i>	9.46	10.51	12.4
<i>Quarter 4</i>	10.1	8.45	5.82
<i>Annual Average:</i>	11.57	10.0975	9.945

For this theoretical, the 2023 design value would be the average of the three annual averages, or $10.4 \mu\text{g}/\text{m}^3$

Potential Timeline



Next Steps for State/Federal Implementation



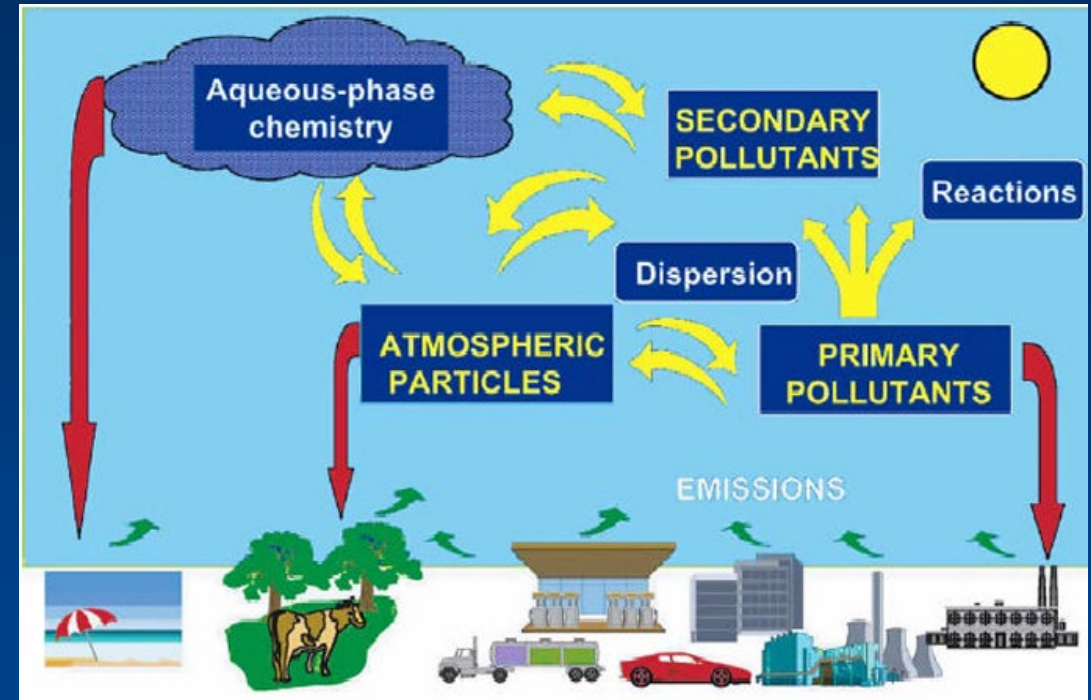
Nonattainment SIP Requirements

- Conduct an Emissions Inventory
- Demonstration of Attainment
 - Reasonably Available Control Technology (RACT)
 - Must implement RACT measures within 4 years
 - Reasonable measures to be deployed if attainment not possible
- Reasonable Further Progress and Milestones
- Contingency Measures
- Transportation & General Conformity



PM_{2.5} Precursors

- NO_x and SO₂ are considered precursors to PM_{2.5}
- VOCs and NH₃ are regulated as a precursor 24 months after nonattainment designations (phase-in approach)
- States have ability to provide demonstration showing that precursors do not significantly contribute to PM_{2.5} formation on an area wide basis



Permitting Implications - PSD

- PSD Sources
 - BACT
 - Consider $9 \mu\text{g}/\text{m}^3$ $\text{PM}_{2.5}$ when modeling impacts against NAAQS (effective May 2024)
 - Background concentrations
 - Keep in mind $\text{PM}_{2.5}$ precursors (NO_x , SO_2 , VOC, NH_3)



Permitting Implications - NNSR

- NNSR Sources
 - Moderate Nonattainment Area Major threshold:
100 tpy $PM_{2.5}$ / SO_2 / NO_x / [VOC / NH_3]
 - Moderate or Serious Major Modification:
10 tpy $PM_{2.5}$ OR 40 tpy SO_2 / NO_x / [VOC (/ NH_3)]
 - Nonattainment time frames are longer (takes 404 days on average)¹
 - LAER
 - Mass Emission Cap and Trade (MCET) program

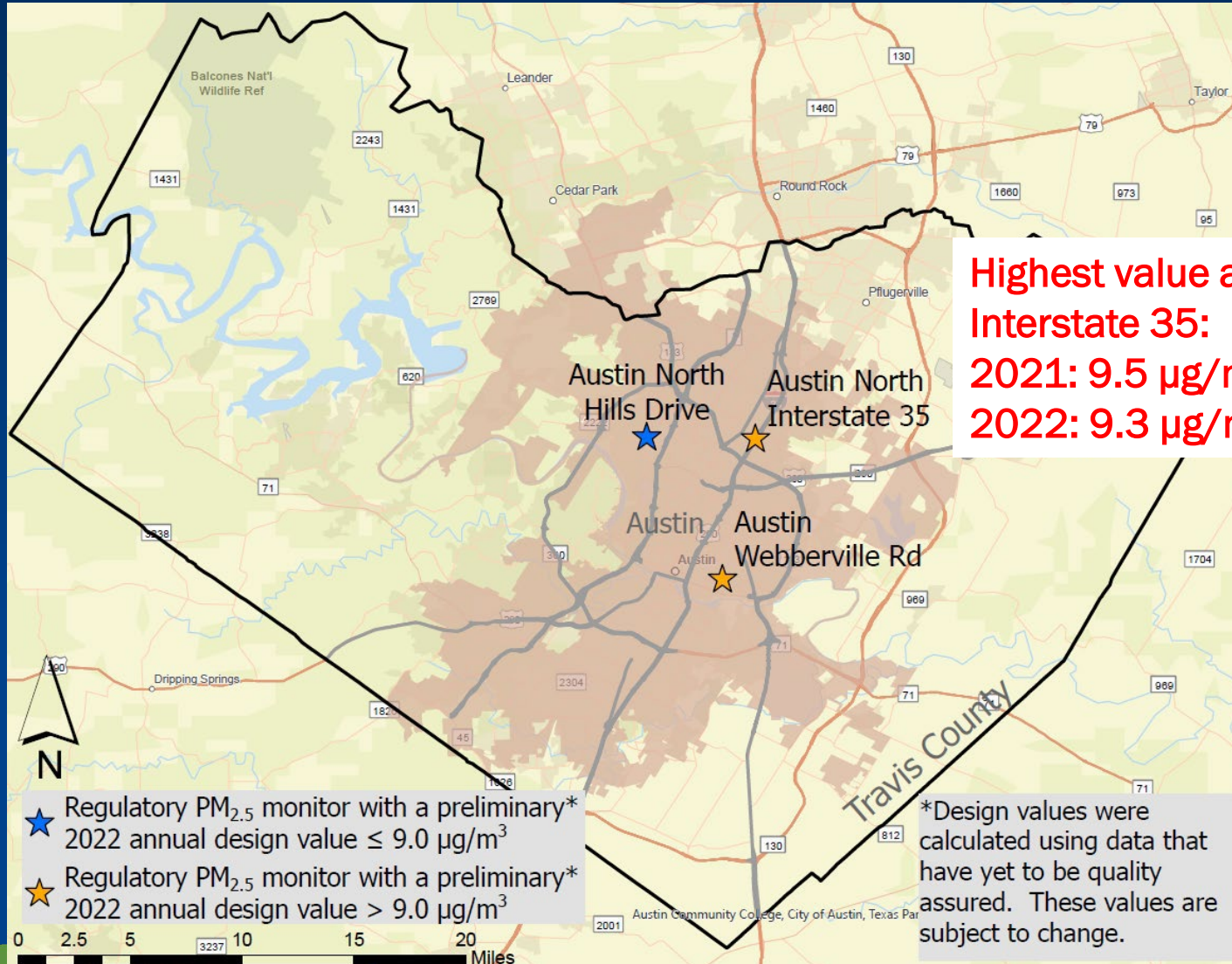
¹2019-2020 TCEQ Biennial Report Appendix B, PSD/NNSR permits

[] designates 2-year phase in period

Red denotes state requirement to assign SER



Travis County Monitors



Highest value at North Interstate 35:
2021: 9.5 µg/m³
2022: 9.3 µg/m³

★ Regulatory PM_{2.5} monitor with a preliminary* 2022 annual design value ≤ 9.0 µg/m³
★ Regulatory PM_{2.5} monitor with a preliminary* 2022 annual design value > 9.0 µg/m³

*Design values were calculated using data that have yet to be quality assured. These values are subject to change.

Travis County (Operating Year 2022)

Industry Sector	NO _x (tpy)	PM _{2.5} (tpy)	SO ₂ (tpy)	VOC (tpy)
<i>Electric Services</i>	512	40.5	4.81	37.7
<i>Lime</i>	459	13.7	1.40	5.22
<i>Semiconductors and Related Devices</i>	133	8.30	1.34	154
<i>Refuse Systems</i>	78.9	40.0	111	99.0
<i>Petroleum Bulk Stations & Terminals</i>	0.286	0	0	44.6
<i>Totals:</i>	1,183	102.5	118	342

TCEQ MERP Secondary PM_{2.5} Formation

$$\text{Annual PM}_{2.5} \text{ SIL: } \left[\frac{\text{Modeled Value}}{\text{SIL}} + \frac{\text{NO}_x \text{ Emissions}}{\text{NO}_x \text{ MERP}} + \frac{\text{SO}_2 \text{ Emissions}}{\text{SO}_2 \text{ MERP}} \right] * 100 < 100\%$$

$$\text{Annual PM}_{2.5} \text{ SIL: Modeled Value} < \text{SIL} * \left[1 - \frac{\text{NO}_x \text{ Emissions}}{\text{NO}_x \text{ MERP}} + \frac{\text{SO}_2 \text{ Emissions}}{\text{SO}_2 \text{ MERP}} \right]$$

$$\text{Annual PM}_{2.5} \text{ SIL: Modeled Value} < 0.2 \frac{\mu\text{g}}{\text{m}^3} * \left[1 - \frac{1,183 \text{ tpy NO}_x}{2,649 \text{ tpy NO}_x} + \frac{118 \text{ tpy SO}_2}{10,397 \text{ tpy SO}_2} \right]$$

$$\text{Annual PM}_{2.5} \text{ SIL: Modeled Value} < 0.108 \frac{\mu\text{g}}{\text{m}^3}$$

NO_x and SO₂ annual emissions in Travis County may contribute ~45% of the SIL in Travis County

LAER Determinations

Pollutant	Emissions Unit	Determination
PM	Simple Cycle Turbine	Good combustion practices; Limited to firing pipeline quality NG
NO _x	Boilers/turbines Regenerative Thermal Oxidizers (RTOs) Flares Heaters (natural gas and diesel), Generators	Good combustion practices, Minimize waste gas, Efficient burners / Ultra low-NO _x burners, SCR
VOCs	Automotive assembly Engines/Turbines/Boilers Process vents, Heat exchangers, Rail unloading, Equipment cleaning, Storage tanks Degassing	RTOs, Oxidation catalyst Baghouse Flare Natural gas use Vapor capture / LDAR Fixed roofs, Good combustion practices

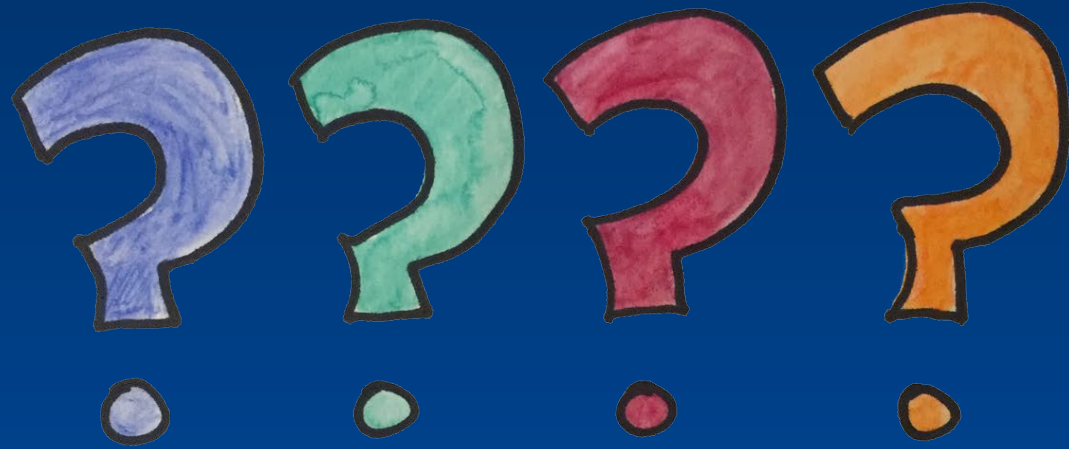
Key Takeaways

- Permits currently under review will need to revisit impacts analysis against the updated standard
- Non-attainment Area Emissions Inventories
- Modeling $PM_{2.5}$ and precursors and their impacts on new projects ($PM_{2.5}$, SO_2 , NO_x , VOC, NH_3)
- Major Sources in Moderate Nonattainment:
 - 100 tpy $PM_{2.5}/NO_x/SO_2/VOC/NH_3$
- Non-Attainment designations and SIP impacts for existing facilities
 - RACT/RACM determinations (case-by-case)
 - Emissions inventories

Considerations

- Assess current and upcoming projects
- Minimize PM_{2.5} emissions if modeling against the NAAQS becomes a challenge
- Explore alternative modeling options
- Consider site-specific ambient PM_{2.5} monitoring data collection
- Prepare for enhanced rulemaking and enforcement from EPA and local regulators

Questions?





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