
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

Air & Waste Management Association

2024 Central Texas Chapter Officers

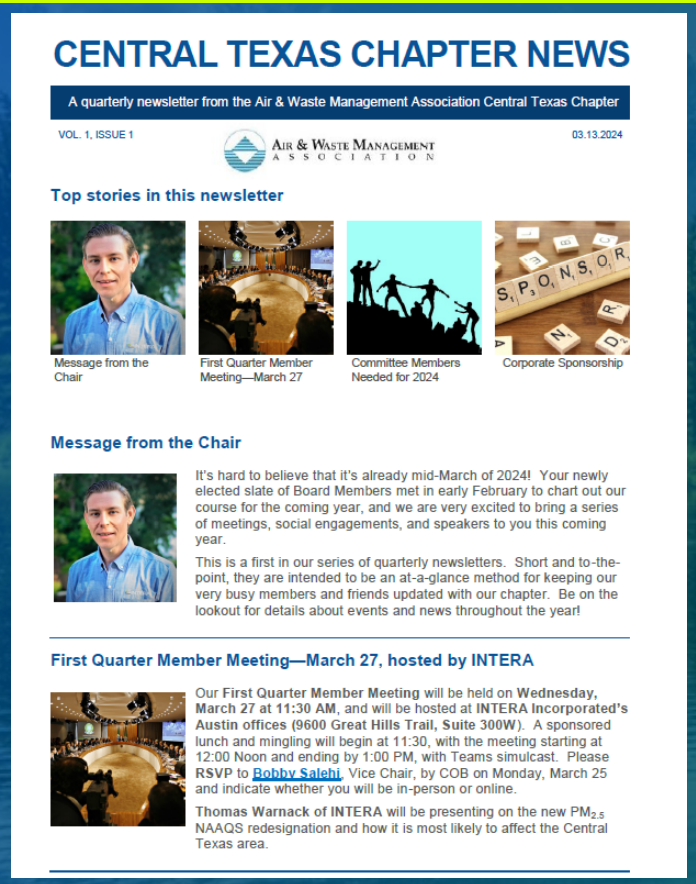
Joe Pere
Chair

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

Air & Waste Management Association

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

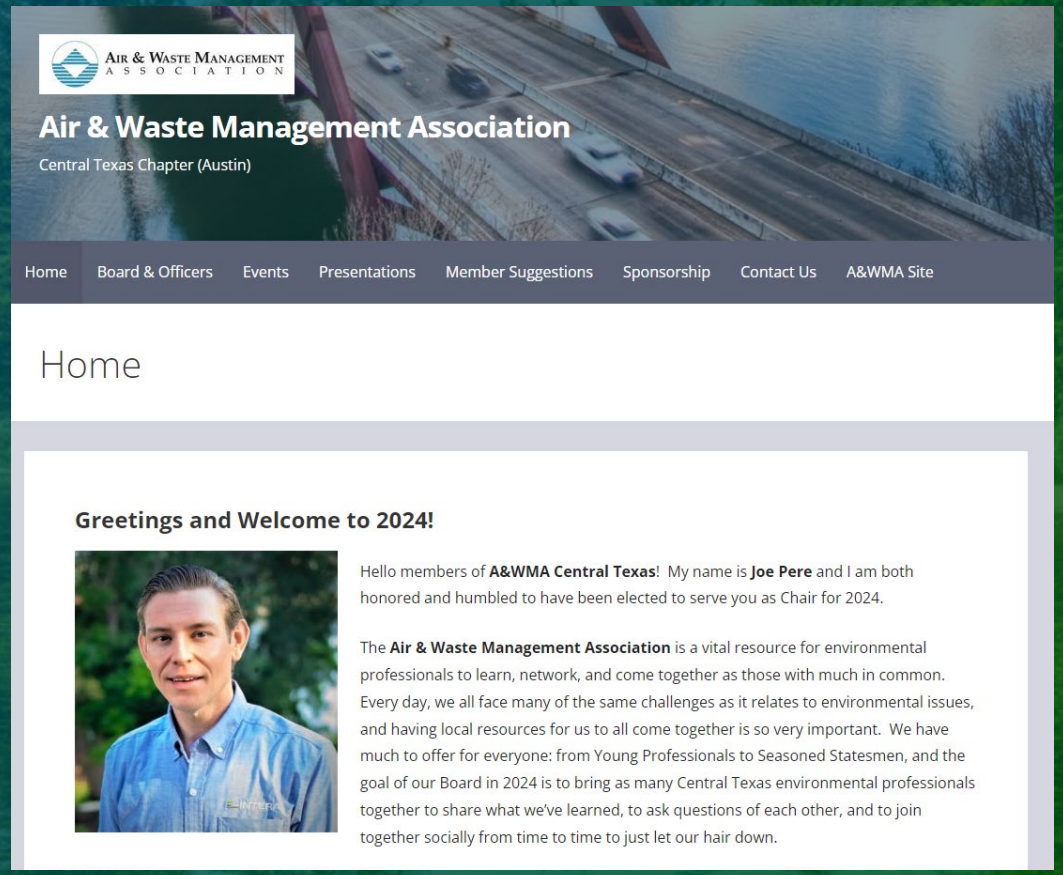
It's hard to believe that it's already mid-March of 2024! Your newly elected slate of Board Members met in early February to chart out our course for the coming year, and we are very excited to bring a series of meetings, social engagements, and speakers to you this coming year.

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 Bobby 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

2024 Revised Annual $PM_{2.5}$ NAAQS Standard

Presented to

Air & Waste Management Association

March 27, 2024

INTERA

Presentation Contents

1. PM_{10} and $PM_{2.5}$ Basics
2. NAAQS Background
3. The Updated Standard
4. Central Texas Impacts
5. Conclusions

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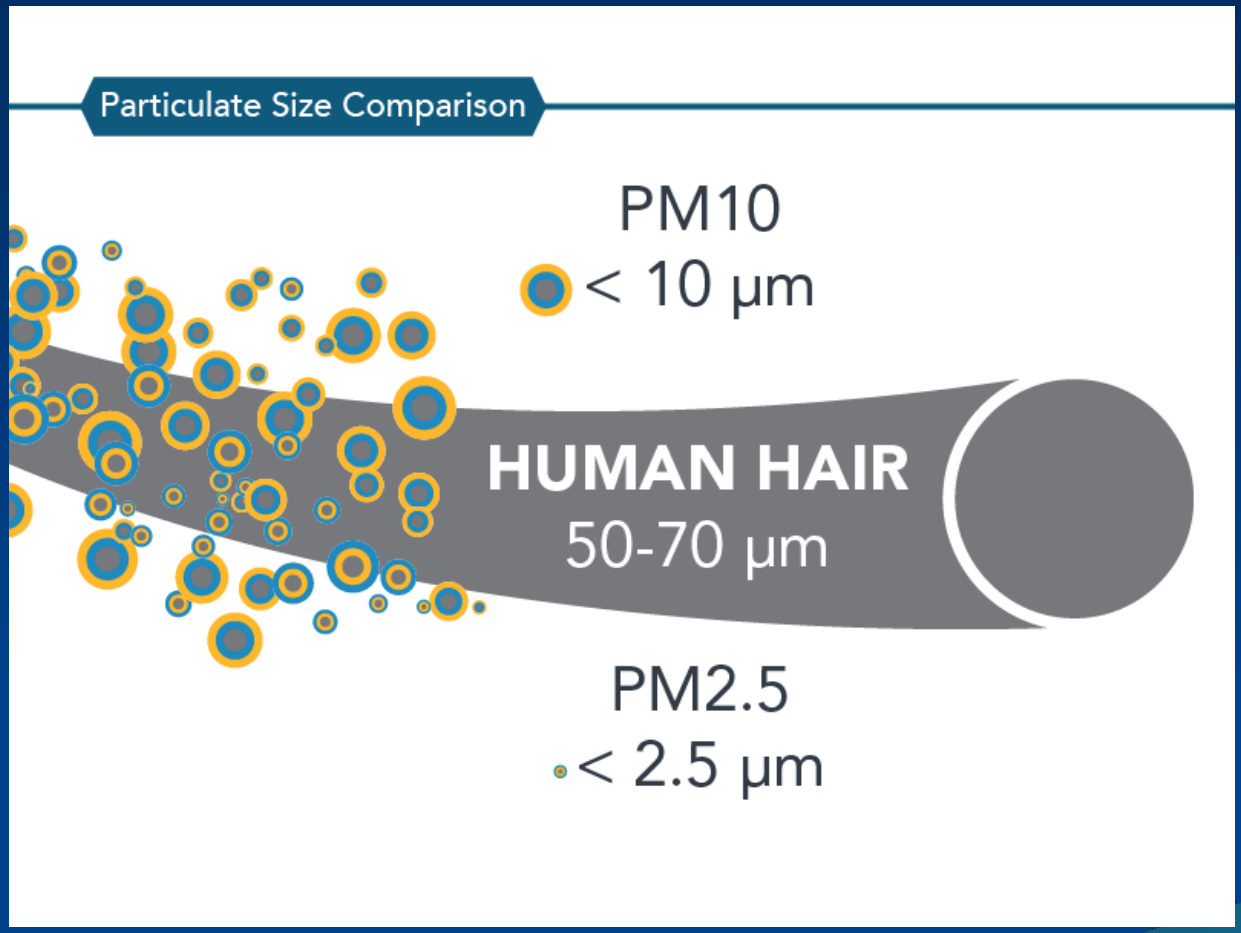
PM_{10} and $PM_{2.5}$



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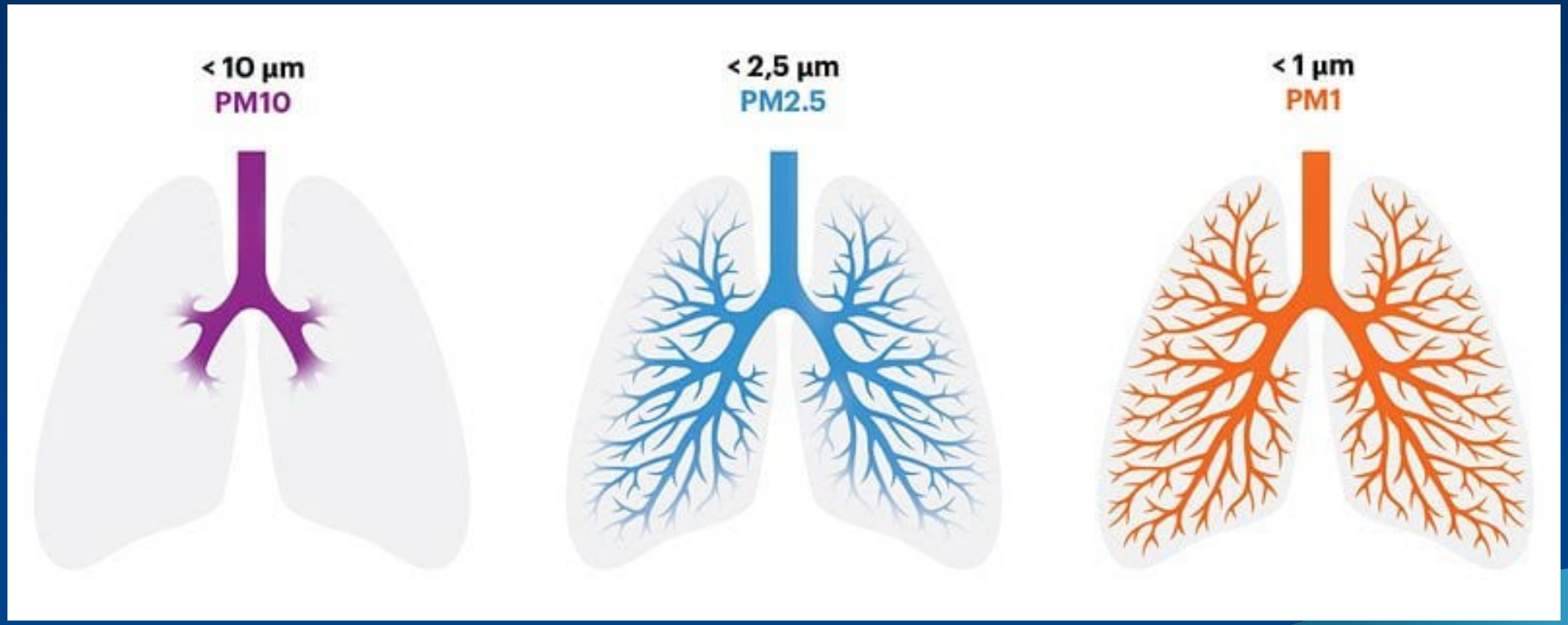
Entry Mechanism



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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 (NO_2)		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 (O_3)		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 (SO_2)		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

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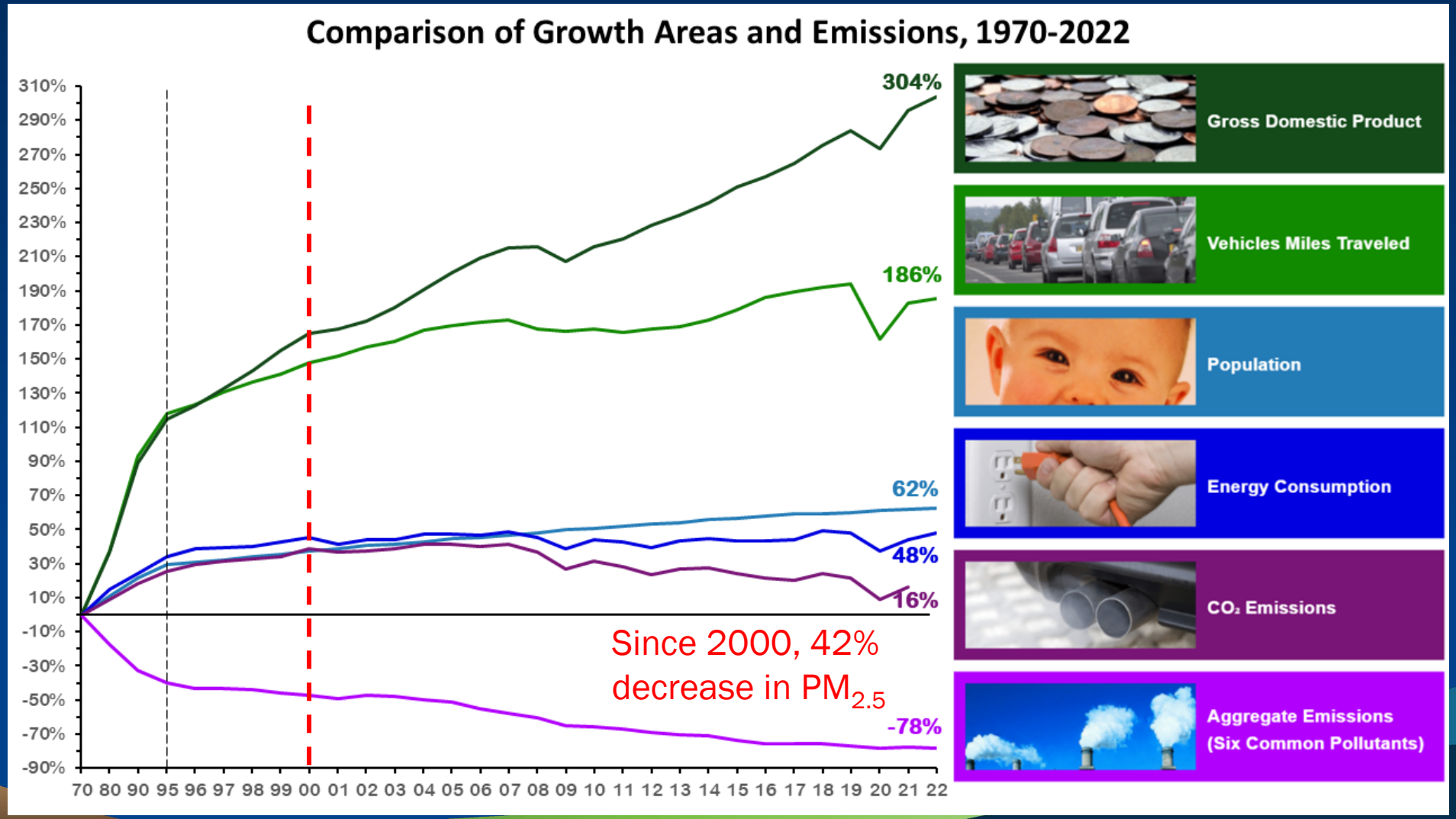
Why Establish NAAQS?



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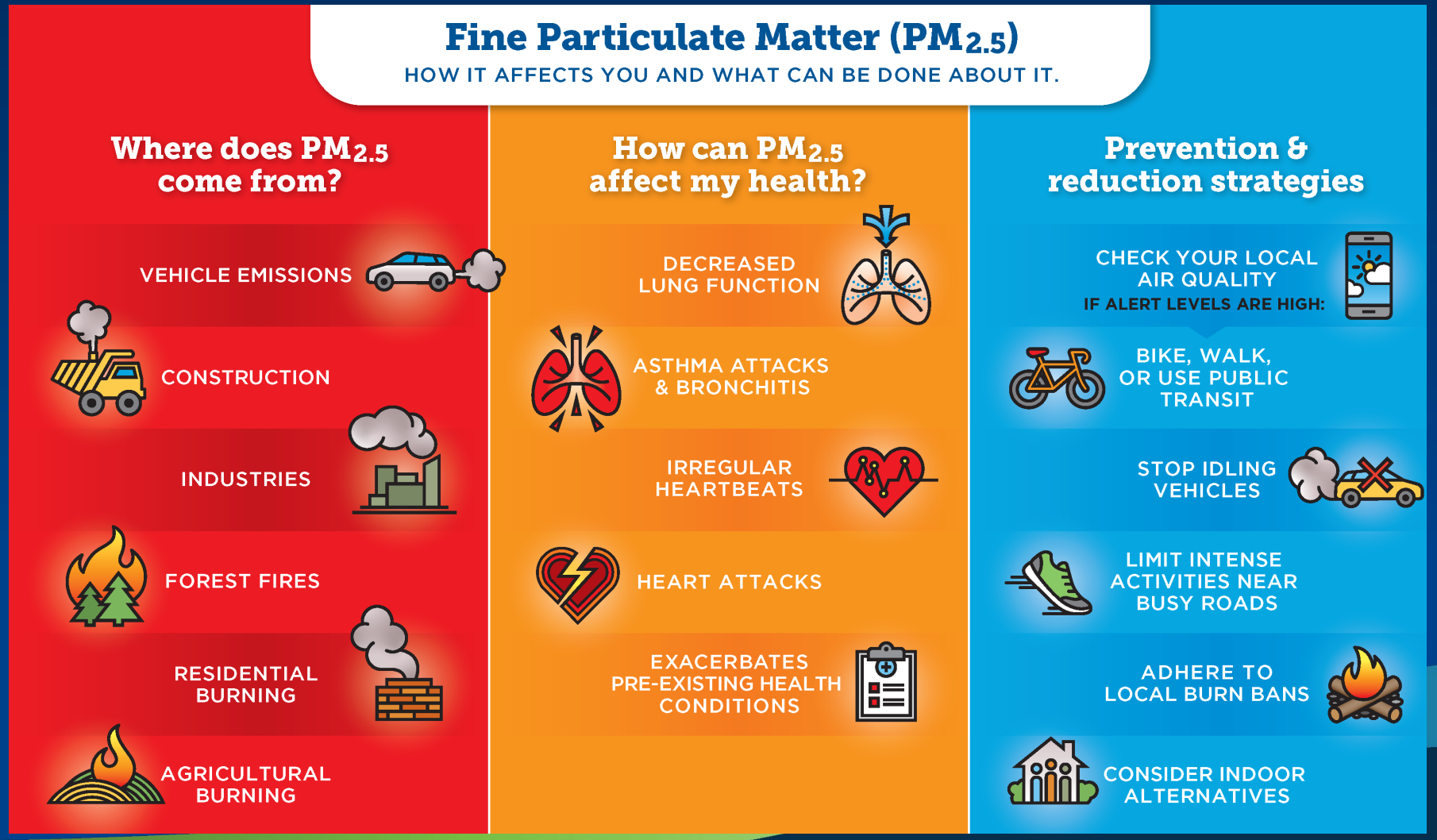
PM2.5 Sources and Health Impact Findings



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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

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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/m³	Annual arithmetic mean, averaged over 3 years	Retained	**Revise level to 9.0 µg/m³**
		Secondary	15.0 µg/m³		Retained	**Retain**
	24-hour	Primary and Secondary	35 µg/m³	98th percentile, averaged over 3 years	Retained	**Retain**
PM_{10}	24-hour	Primary and Secondary	150 µg/m³	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 PM_{10}), 1997 (set $PM_{2.5}$), 2006 (revised $PM_{2.5}$, PM_{10})

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AQI Updates

Final Revision to AQI for $PM_{2.5}$

AQI Value	Current [µg/m^3]	Revisions [µg/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.

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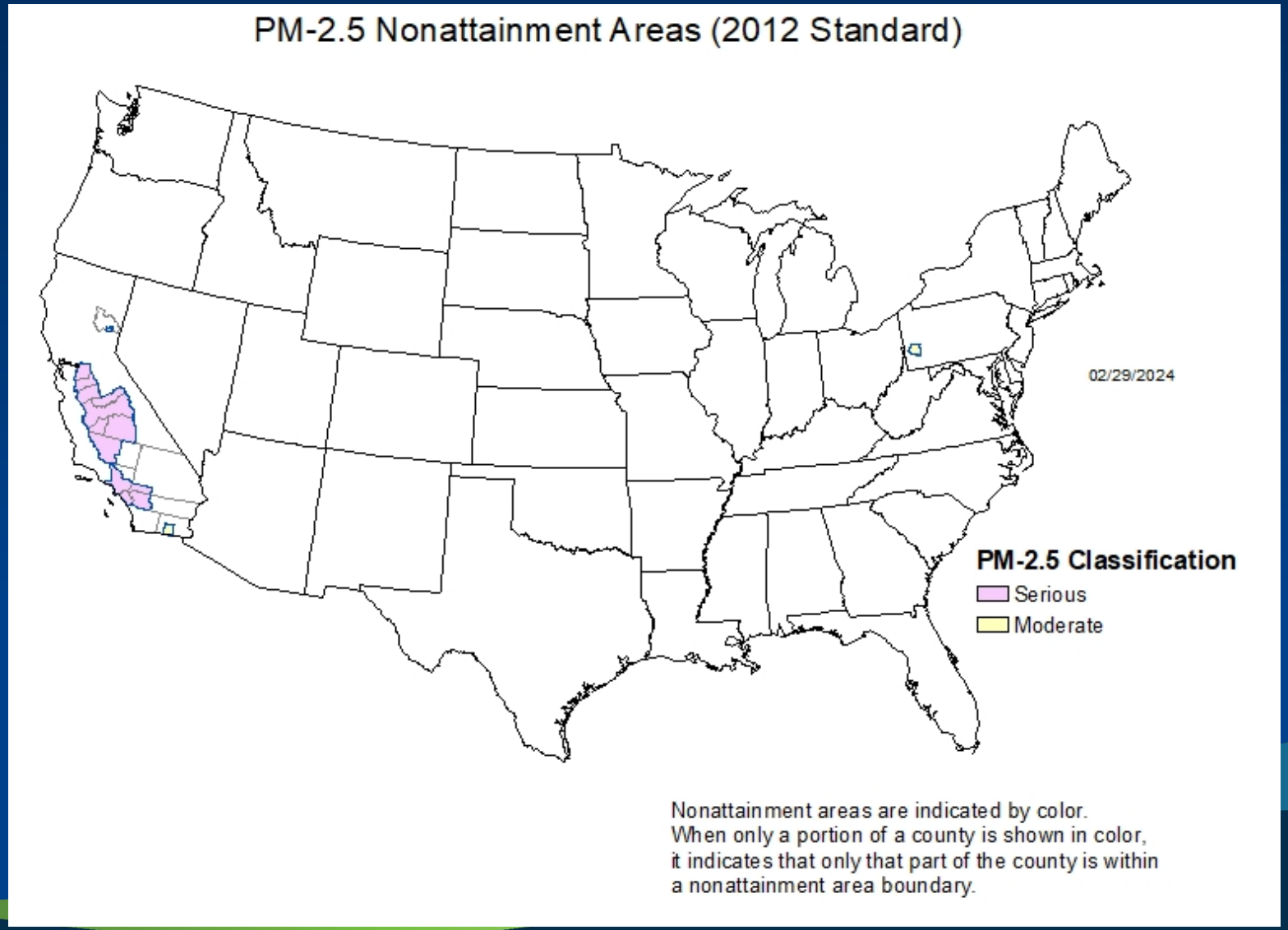
2012 $PM_{2.5}$ Annual NAAQS Standard (12 µg/m^3)



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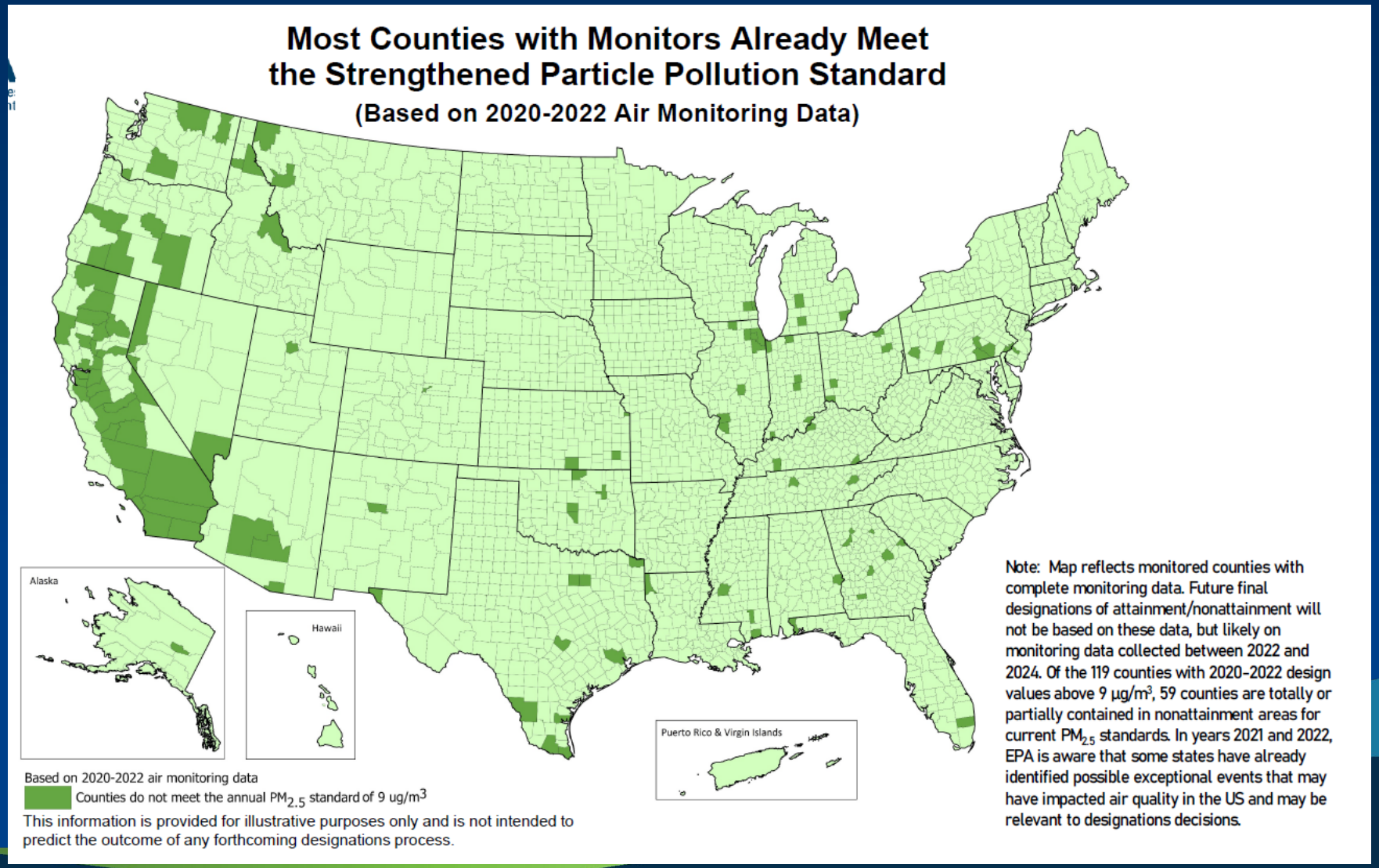
2024 $PM_{2.5}$ Annual NAAQS Standard (9 µg/m³)



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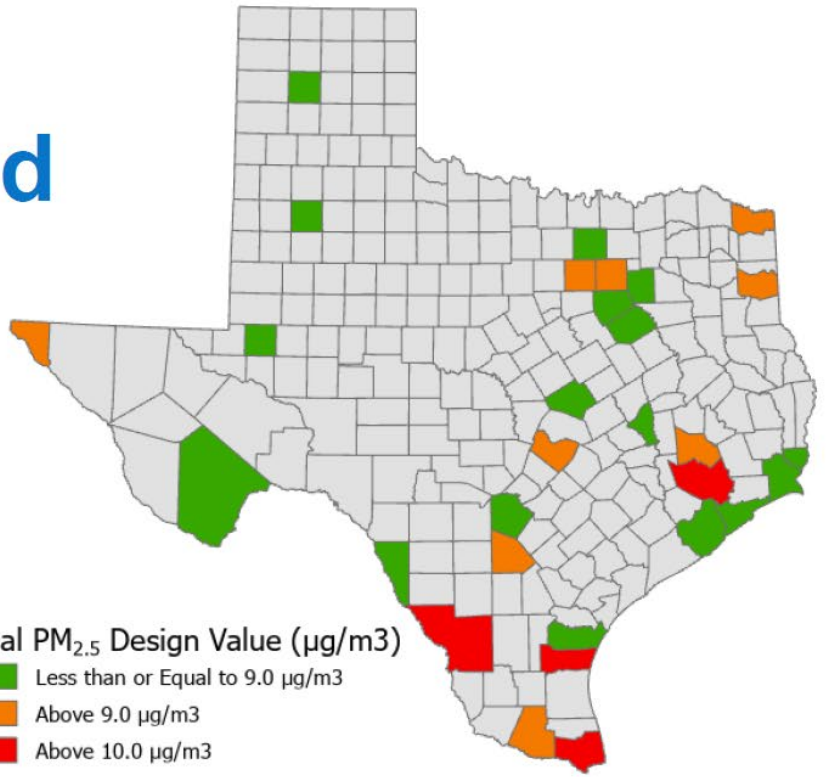
Texas Map

Potentially Affected Counties Map



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

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How is the Design Value Calculated for an Area?

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

	2021 (ug/m^3)	2022 (ug/m^3)	2023 (ug/m^3)
Quarter 1	11.12	10.3	8.95
Quarter 2	15.6	11.13	12.61
Quarter 3	9.46	10.51	12.4
Quarter 4	10.1	8.45	5.82
Annual Average:	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 µg/m^3

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Potential Timeline

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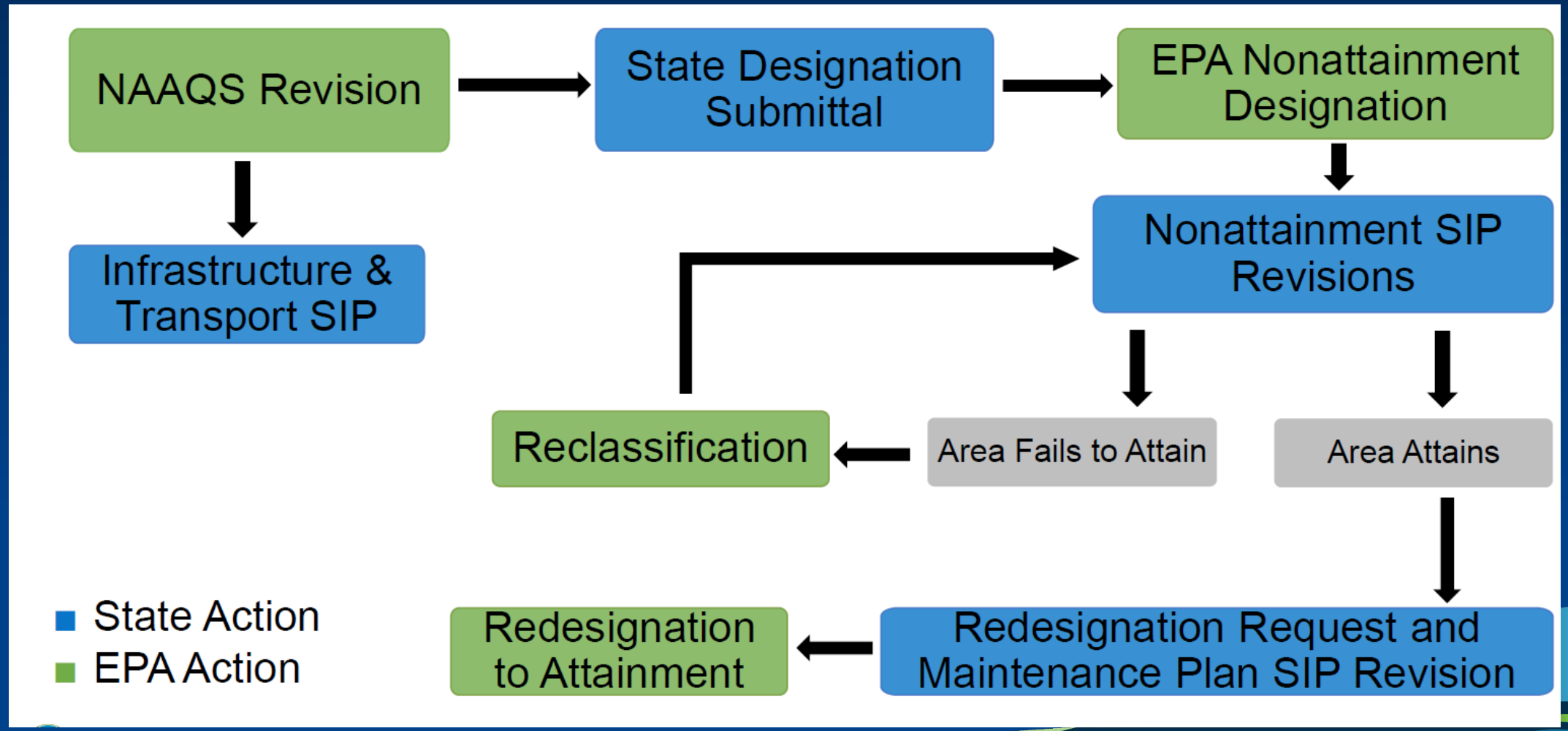
Next Steps for State/Federal Implementation



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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

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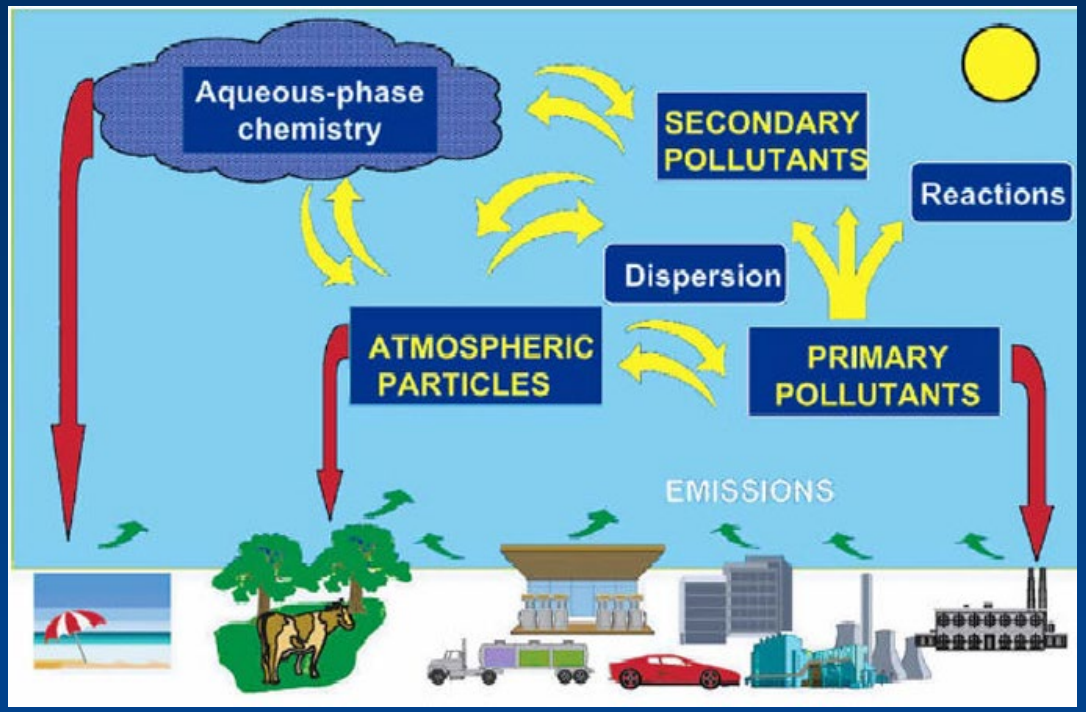
$PM_{2.5}$ Precursors

- NO_X and SO_2 are considered precursors to $PM_{2.5}$
- VOCs and NH_3 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



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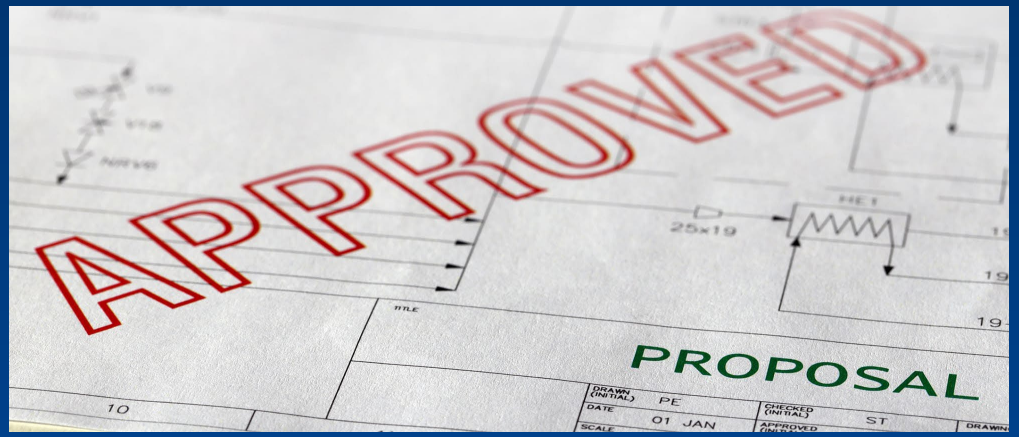
Permitting Implications - PSD

- PSD Sources
  - BACT
  - Consider 9 µg/m^3 $PM_{2.5}$ when modeling impacts against NAAQS (effective May 2024)
  - Background concentrations
  - Keep in mind $PM_{2.5}$ precursors (NO_X, SO_2, VOC, NH_3)



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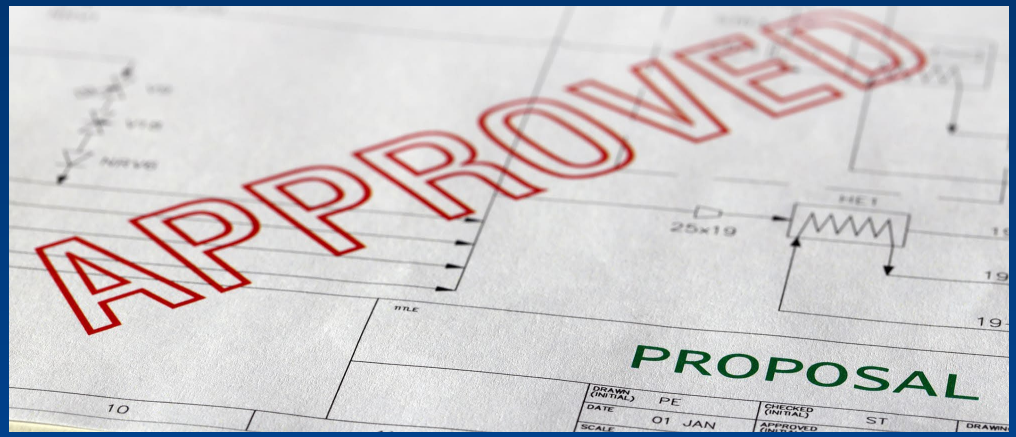
Permitting Implications - NNSR

- 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



[1]2019-2020 TCEQ Biennial Report Appendix B, PSD/NNSR permits

[ ] designates 2-year phase in period

Red denotes state requirement to assign SER

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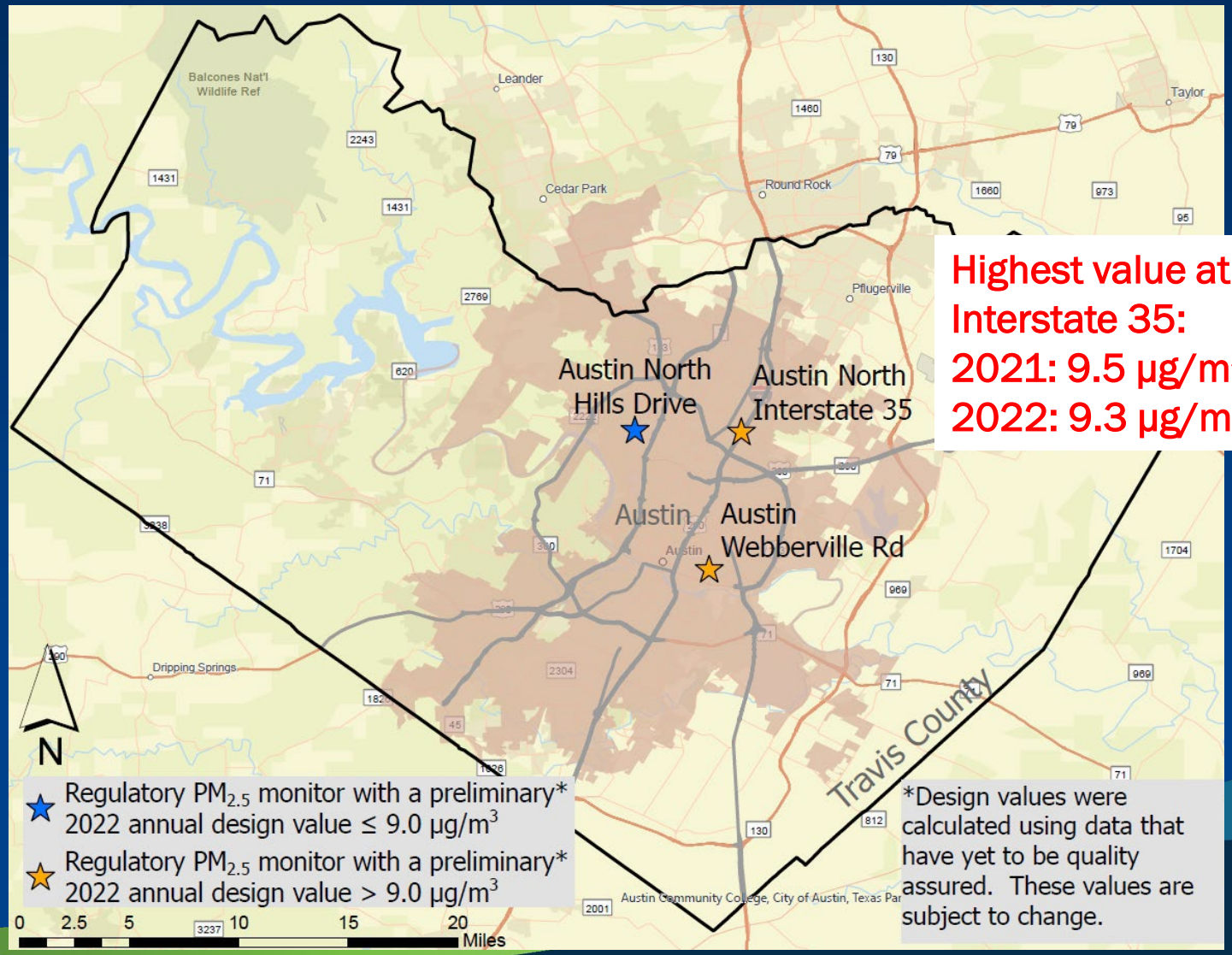
Travis County Monitors



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

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Travis County (Operating Year 2022)

Industry Sector	NO_X (tpy)	$PM_{2.5}$ (tpy)	SO_2 (tpy)	VOC (tpy)
Electric Services	512	40.5	4.81	37.7
Lime	459	13.7	1.40	5.22
Semiconductors and Related Devices	133	8.30	1.34	154
Refuse Systems	78.9	40.0	111	99.0
Petroleum Bulk Stations & Terminals	0.286	0	0	44.6
Totals:	1,183	102.5	118	342

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TCEQ MERP Secondary $PM_{2.5}$ Formation

$$Annual\ PM_{2.5}\ SIL: \left[\frac{Modeled\ Value}{SIL} + \frac{NO_X\ Emissions}{NO_X\ MERP} + \frac{SO_2\ Emissions}{SO_2\ MERP}\right] * 100 < 100\%$$

$$Annual\ PM_{2.5}\ SIL: Modeled\ Value < SIL * [1 - \frac{NO_X\ Emissions}{NO_X\ MERP} + \frac{SO_2\ Emissions}{SO_2\ MERP}]$$

$$Annual\ PM_{2.5}\ SIL: Modeled\ Value < 0.2\ \frac{\mu g}{m^3} * [1 - \frac{1{,}183\ tpy\ NO_X}{2{,}649\ tpy\ NO_X} + \frac{118\ tpy\ SO_2}{10{,}397\ tpy\ SO_2}]$$

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

NO_X and SO_2 annual emissions in Travis County may contribute ~45% of the SIL in Travis County

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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

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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

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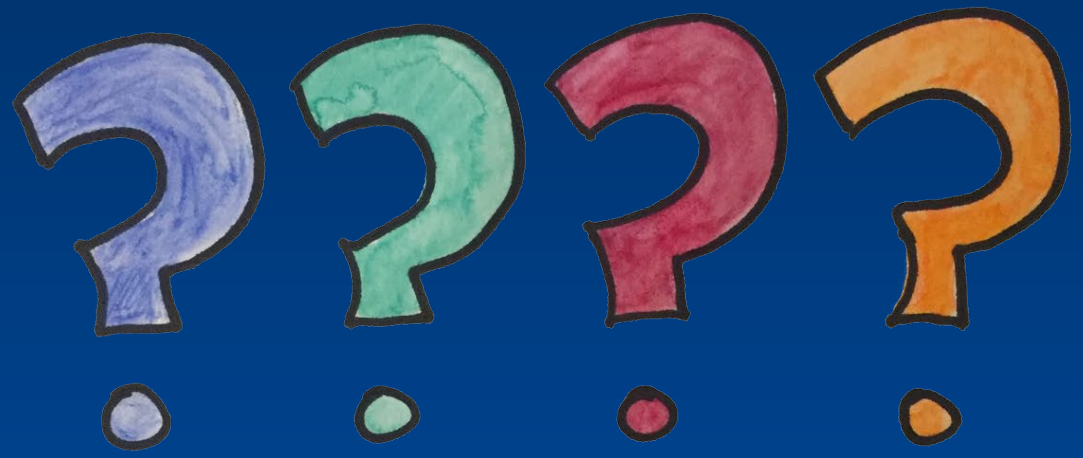
Considerations

- 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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