



Public Information Meeting: Proposed Particulate Matter (PM) Standard Revision

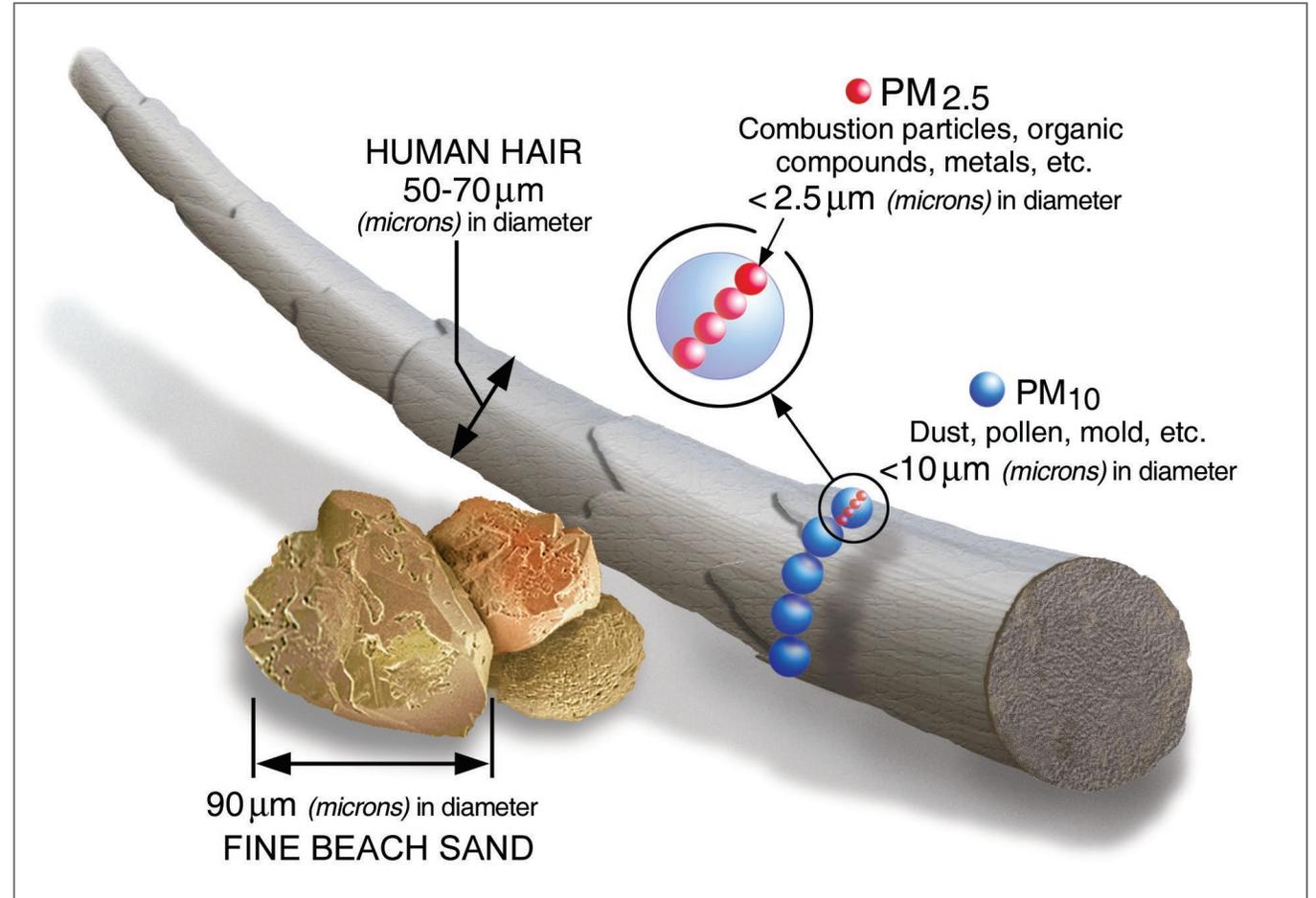
March 3, 2023 – Houston & Southeast Texas

Preview

- PM_{2.5} Defined
- Current and Proposed PM National Ambient Air Quality Standards (NAAQS)
- Potentially Affected Counties and Monitors
- NAAQS Compliance and PM_{2.5} Design Value Calculation
- Nonattainment Designation Process
- Permitting Impact

PM_{2.5} Defined

- PM_{2.5} – particles with diameters generally 2.5 micrometers and smaller
 - Smoke
 - Saharan Dust
 - Unpaved Roads
 - Construction Sites
 - Smokestacks
 - Chemical Reactions



Current PM NAAQS

- 2012 PM_{2.5} NAAQS
 - Primary Annual Standard: 12.0 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)
 - Secondary Annual Standard: 15.0 $\mu\text{g}/\text{m}^3$
 - Primary and Secondary 24-Hour Standard: 35 $\mu\text{g}/\text{m}^3$
- 2012 PM₁₀ NAAQS
 - Primary and Secondary Standard: 150 $\mu\text{g}/\text{m}^3$

Proposed PM NAAQS Revision

- On January 27, 2023, the EPA published a proposal to revise the annual PM_{2.5} NAAQS.
 - Would lower the primary annual standard to between 9 and 10 µg/m³.
 - Would retain the 24-hour standard of 35 µg/m³.
- Potential impact of a lower standard:
 - 14 counties greater than 9 µg/m³.
 - Seven counties greater than 10 µg/m³.
- Public comment period closes on March 28, 2023.

NAAQS Compliance

- A design value is a statistic used to summarize air quality data for an area to determine compliance.
- Design values must be greater than the NAAQS for an area to exceed the standard.
- An area that monitors over the NAAQS is not automatically designated as nonattainment.
- The area must go through the EPA's designation process to determine regulatory compliance.

PM_{2.5} Annual Design Value Calculation

1. Monitor A has three years of complete data, find the mean of the 24-Hr samples per quarter:

	2019 (µg/m ³)	2020 (µg/m ³)	2021 (µg/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

2. Find the mean for each year:

$$\frac{8.95 + 12.61 + 12.4 + 5.82}{4} = 9.45 \mu\text{g}/\text{m}^3$$

	2011 (µg/m ³)	2012 (µg/m ³)	2013 (µg/m ³)
Annual Mean	11.57	10.0975	9.45

3. Find the 3 year average:

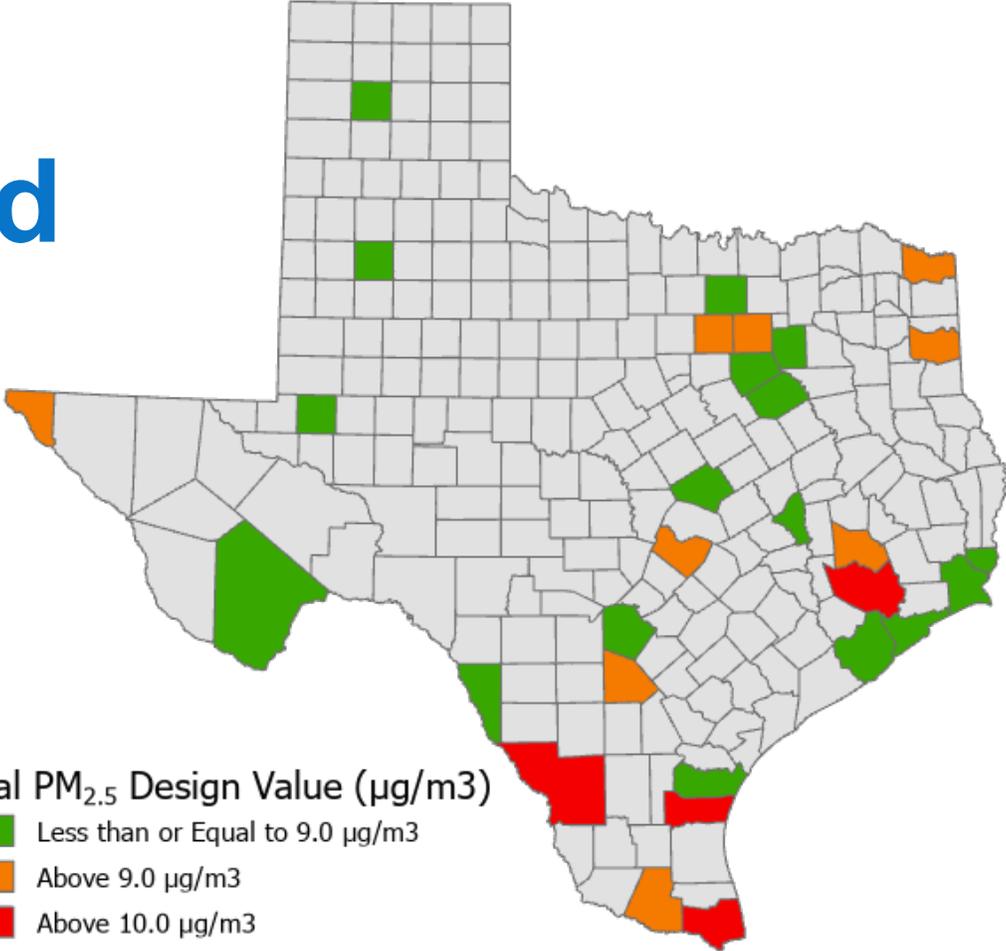
$$\frac{11.57 + 10.0975 + 9.45}{3} = 10.3725 \mu\text{g}/\text{m}^3$$

4. Round to 1 decimal place:

$$10.3725 \mu\text{g}/\text{m}^3 = 10.4 \mu\text{g}/\text{m}^3$$

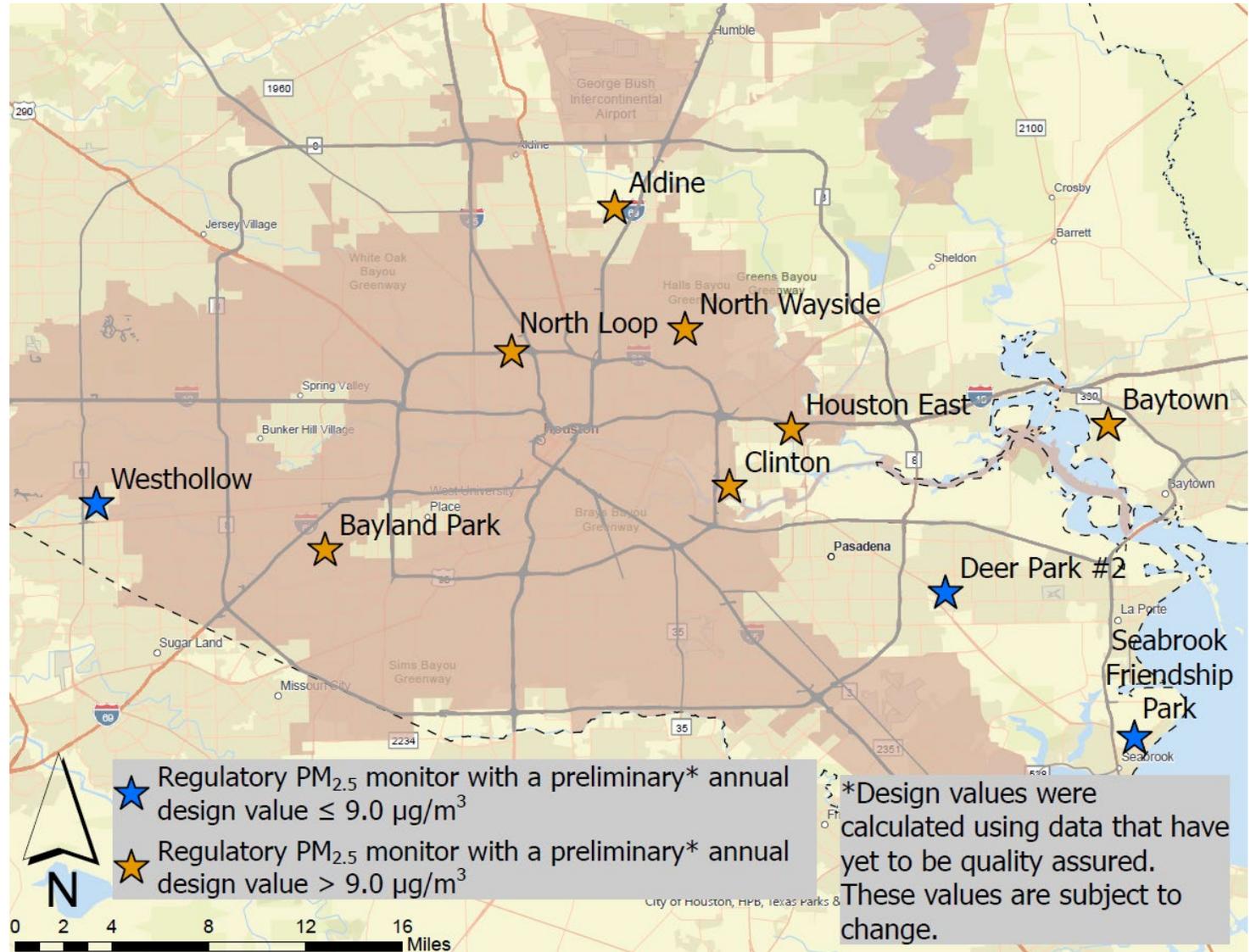
This is the hypothetical 2021 annual PM_{2.5} design value.

Potentially Affected Counties Map

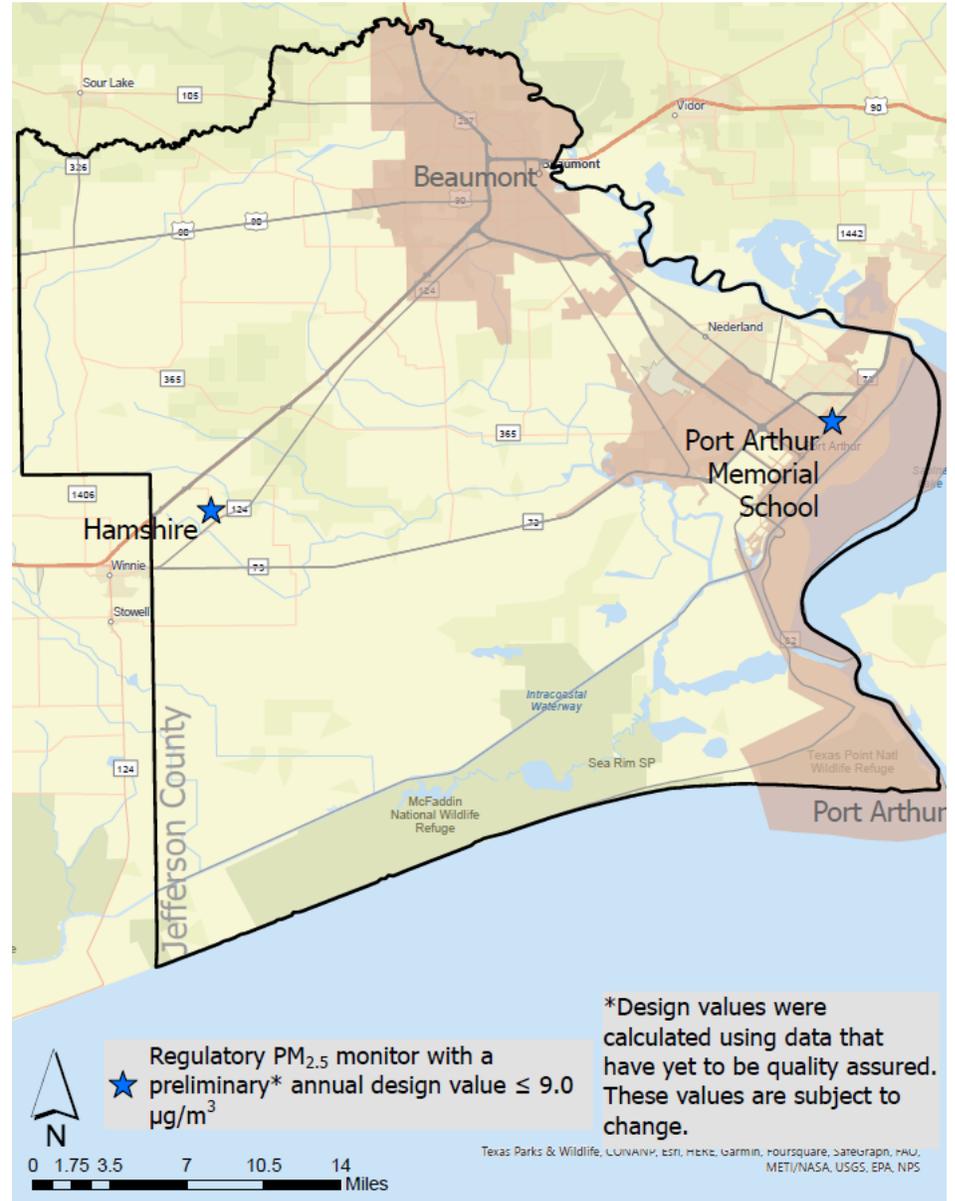


Data as of 01/13/2023 and subject to change.

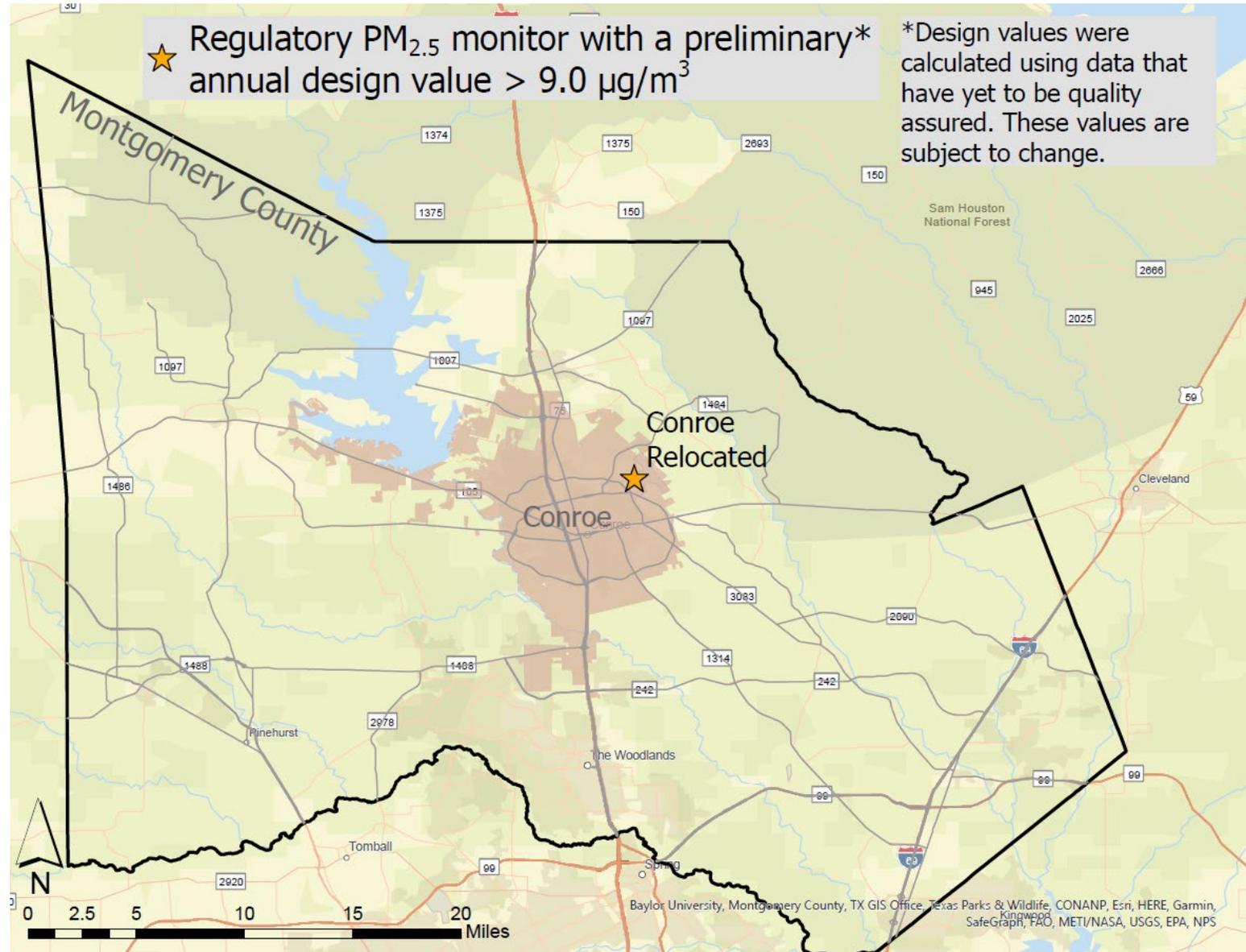
Harris County Monitors Map



Jefferson County Monitors Map



Montgomery County County Monitors Map



Southeast Texas Design Values

Counties with Preliminary 2022 PM_{2.5} Annual Design Values Exceeding 9.0 µg/m³

County	2021 AQS PM _{2.5} Design Value (µg/m ³)	Preliminary 2022 PM _{2.5} Design Value (µg/m ³)	Preliminary 2022 Design Value Setting Monitor Name	Regulatory Monitors with Preliminary 2022 PM _{2.5} Design Values > 9.0 µg/m ³	Regulatory PM _{2.5} Monitors in County
Harris	11.1	12.2	Houston North Wayside	7*	10
Jefferson	8.3	8.3	Port Arthur Memorial School	0	2
Montgomery	NA	9.8	Conroe Relocated	1	1

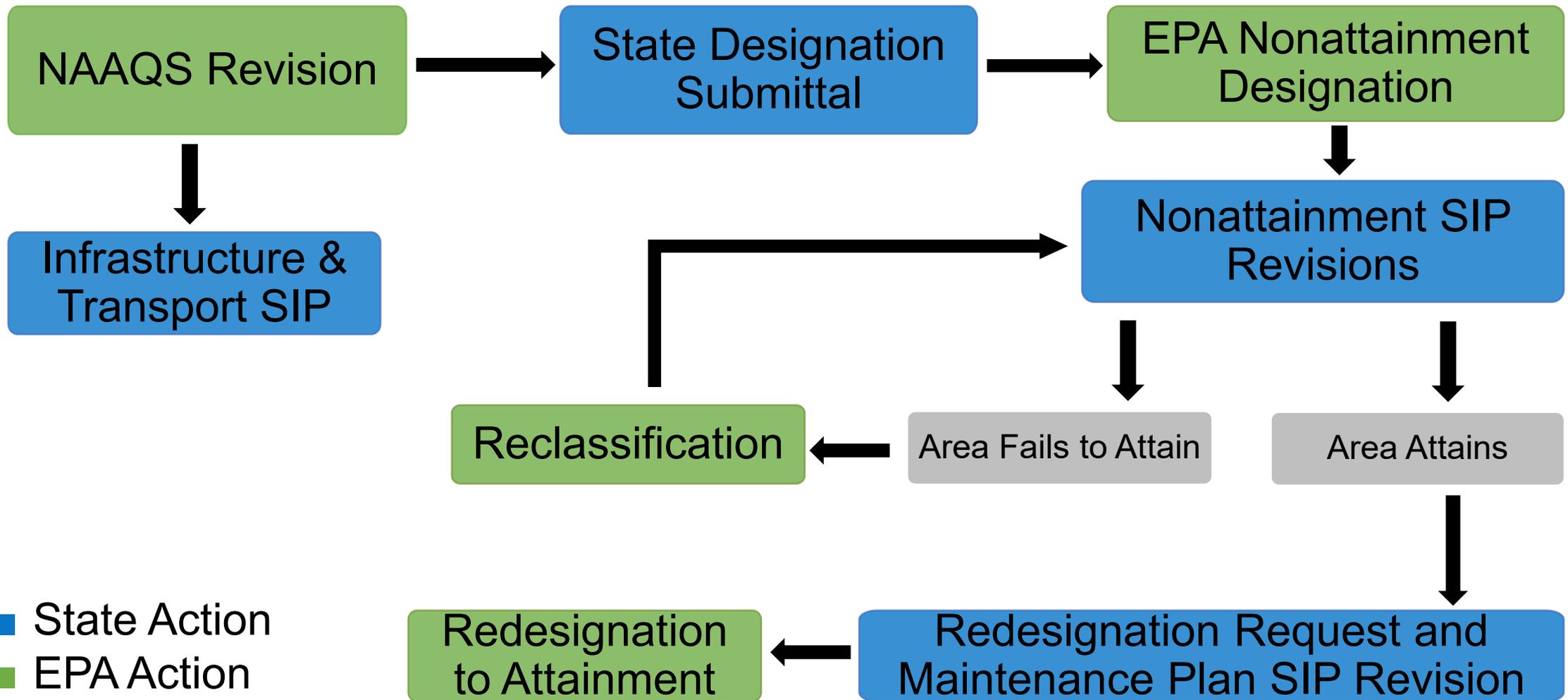
Notes:

Only monitors that have values in EPA's AQS spreadsheet for 2022 are included.

Data are preliminary, current as of 1/12/2023, and subject to change.

**In addition to Houston North Wayside, monitors in Harris County with preliminary data resulting in a 2022 PM_{2.5} annual design values that exceeded 9.0 µg/m³ included Houston North Loop, Clinton, Houston East, Houston Aldine, Baytown, and Houston Bayland Park.

Designation and SIP Revision Cycle



Potential PM_{2.5} NAAQS Implementation Timeline

Date	Event
December 2023	PM _{2.5} NAAQS revision finalized
December 2024	State designation submittal
August 2025	120-day Letter from EPA to Governor
Early 2026	Final designations effective
December 2026	Infrastructure and Transport SIPs due
July 2027	Nonattainment area SIPs due
December 2032	Attainment date

Nonattainment Area Requirements

- Moderate PM nonattainment area SIP requirements:
 - Nonattainment new source review permitting requirements; and
 - SIP revision due 18 months after initial designation.
- Reclassification to serious nonattainment if area fails to attain by the applicable moderate attainment date.
- EPA approval of redesignation request and maintenance plan SIP revision required to remove the nonattainment designation once area attains.

SIP Requirements for Nonattainment Areas

- Emissions Inventory
- Demonstration of Attainment
 - Reasonably Available Control Technology (RACT)
 - Reasonably Available Control Measures (RACM)
- Reasonable Further Progress
- Contingency Measures
- Transportation & General Conformity

Permitting Implications - Overview

- Two phases to be reviewed:
 - Pre-designation: Evaluate changes as PSD.
 - Post-designation: Evaluate changes as Nonattainment.
- PSD Changes:
 - Currently, PSD is looked at for Primary (direct) emissions of PM_{2.5}.
 - Secondary (precursor) emissions of PM_{2.5} will need to be considered to determine PSD applicability after adoption.

Permit Implications - Precursors

- Sulfur Dioxide (SO₂) and Nitrogen Oxides (NO_x) are regulated as precursors.
- Volatile Organic Compounds (VOC) and Ammonia (NH₃) are regulated as precursors to PM_{2.5} beginning 24 months from the date of nonattainment designation for PM_{2.5} (40 Code of Federal Regulations Part 51 Appendix S).
- TCEQ may provide demonstration that precursors do not significantly contribute to PM_{2.5} formation on an area wide basis.

Permit Implications - Nonattainment

- Nonattainment timeframes are longer.
- Nonattainment offsets - to be obtained/bought.
- Lowest Achievable Emission Rates (LAER) required.
 - Does not consider economic impacts.
 - The most stringent emission limitation.

Permit Implications - Requirements

- Applies to new major sources or modifications to existing major sources of PM_{2.5} and/or precursors on a pollutant basis.
- LAER and offset requirements apply to PM_{2.5} and each individual precursor for which nonattainment is triggered.
 - Offset 1:1 for primary PM_{2.5}.

Permit Implications - Thresholds

- Major Source
 - Moderate – 100 tpy PM_{2.5}, SO₂, NO_x, VOC, ammonia
 - Serious - 70 tpy PM_{2.5}, SO₂, NO_x, VOC, ammonia
- Major Modification
 - Moderate/Serious
 - 10 tpy PM_{2.5}
 - 40 tpy SO₂, NO_x, VOC
 - Designated in SIP for ammonia
- Initial classification will be moderate for all areas designated nonattainment.

Next Steps

- Comments on proposed NAAQS revision due March 28, 2023
 - Additional stakeholder outreach
 - State designation submittal
 - SIP planning for new nonattainment areas
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- To join the SIP/Air Quality update e-mail list go to:
www.tceq.texas.gov/airquality/sip/sipcontact.html

Contact Information

- Alison Stokes
 - alison.stokes@tceq.texas.gov
- August Kaiser
 - august.kaiser@tceq.texas.gov
- Timothy Janke
 - timothy.janke@tceq.texas.gov
- Richard Goertz
 - richard.goertz@tceq.texas.gov
- Dianne Anderson
 - dianne.anderson@tceq.texas.gov