

Austin and the EPA's PM_{2.5} NAAQS

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City of Austin Environmental Commission

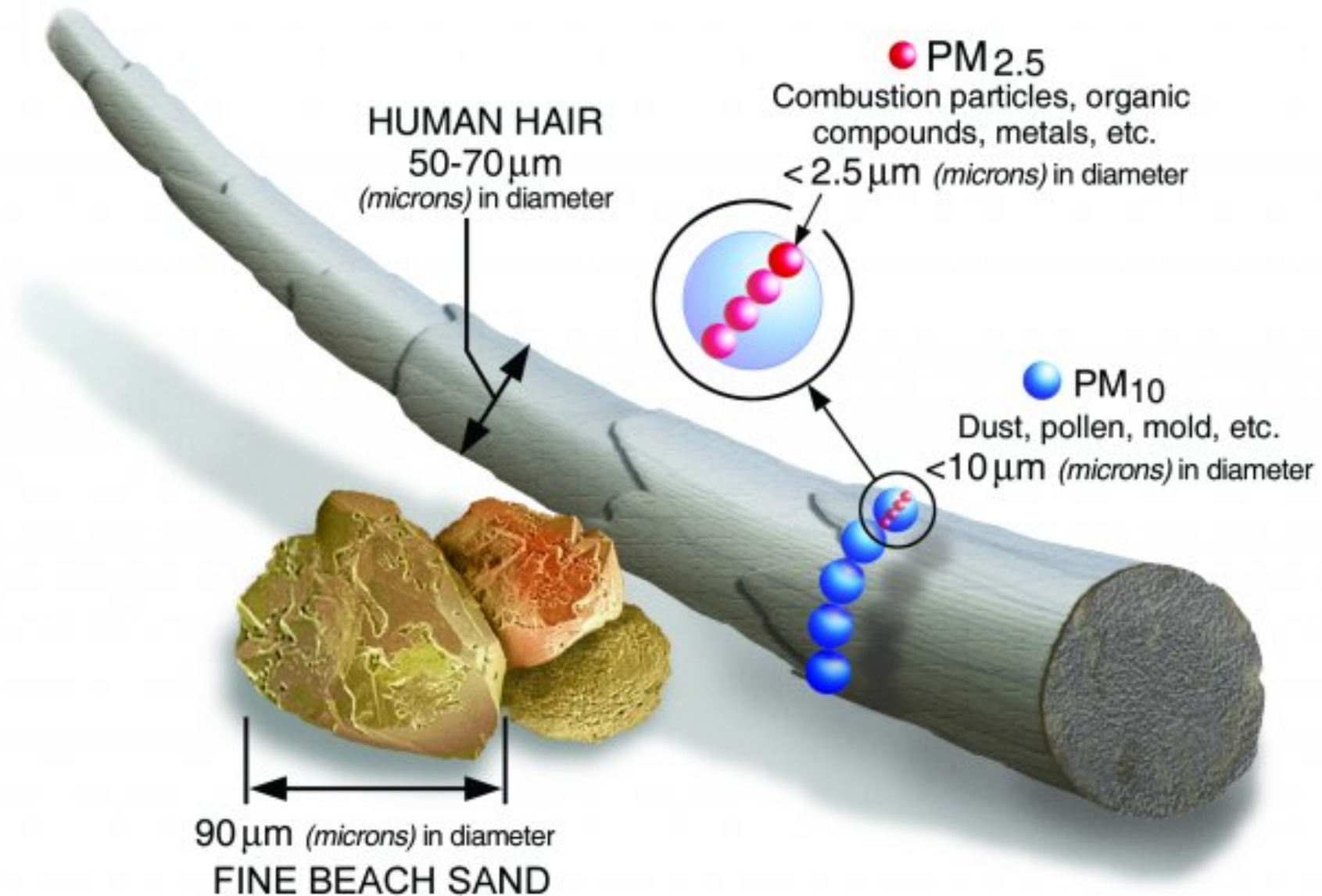
June 7, 2023

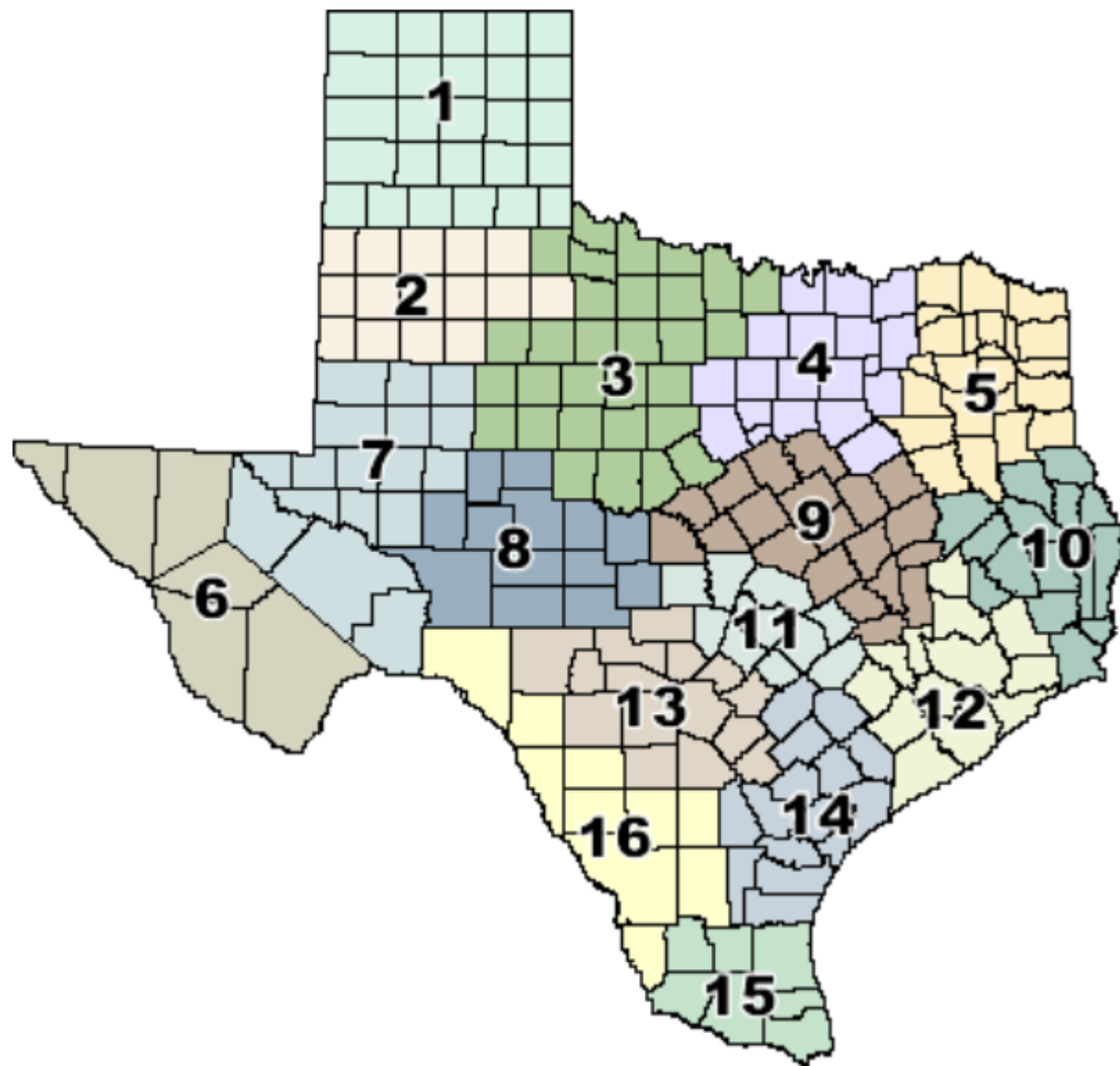
Background

- U.S. Environmental Protection Agency (EPA) regulates America's environmental quality based on authorization from the Congress & President.
- One tool for judging and regulating air quality are the National Ambient Air Quality Standards (NAAQS), which are applied to:
 - Ozone
 - Nitrogen dioxide
 - Sulfur dioxide
 - Carbon monoxide
 - Lead
 - Particulate matter

Particulate Matter 101

- Particulate Matter (PM)
 - Total suspended particles (TSP) includes all airborne particles and the Lead NAAQS is regulated by measuring TSP and isolating the Lead component.
 - PM10 is particulate matter less than 10 microns in diameter and is inhalable. Sources include dust, mold, pollen.
 - PM2.5 is particulate matter less than 2.5 microns in diameter and penetrates into the lung. Sources include smoke, sulfate, fine crustal material, vehicle exhaust.
 - PM can be measured on a filter after air has passed through it for 24 hours. This is the Federal Reference Method. Sample analyzed later in a lab. Samples generally taken every 6th day.
 - PM can also be measured by measuring the energy absorbed from beta particles (electrons) as they pass through particulate matter (PM) collected on a filter media. This produces continuous hourly data.





- TCEQ had 16 Regions
- Air Quality is judged based on MSA/CMSAs
- For Austin, our MSA is Travis, Hays, Williamson, Burnet, and Caldwell Counties

EPA PM NAAQS

Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 $\mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
		secondary	1 year	15.0 $\mu\text{g}/\text{m}^3$	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 $\mu\text{g}/\text{m}^3$	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 $\mu\text{g}/\text{m}^3$	Not to be exceeded more than once per year on average over 3 years

Air monitoring station (CAMS 1068)



Current PM_{2.5} status in Texas

- Downloaded raw data & data summaries.
- Crunched the data.
- NAAQS determination generally required three year of complete data.
- Excluded stations with less than complete data.
- Results follow....

Station	98th P-tile mean	3yr mean
9525 1/2 Clinton Dr, Houston, Harris County, HGB Area	23.7	10.3
20420 Park Road, Corpus Christi, Kleberg County, Corpus Christi Area	30.7	10.3
1262 1/2 Mae Drive, Houston, Harris County, HGB Area	23.0	10.2
4510 1/2 Aldine Mail Rd, Houston, Harris County, HGB Area	23.7	10.2
7210 1/2 Bayway Drive, Baytown, Harris County, HGB Area	22.0	10.1
Mines Road 11601 Fm 1472, Laredo, Webb County, Laredo Area	27.3	10.1
2700 New Boston Rd, Texarkana, Bowie County, Texarkana Area	23.0	10.0
8912 N Ih 35 Svrd Sb, Austin, Travis County, Austin Area	22.0	9.3
2600b Webberville Rd, Austin, Travis County, Austin Area	22.0	9.2
800 S San Marcial Street, El Paso, El Paso County, El Paso Area	21.7	9.2
3317 Ross Ave, Fort Worth, Tarrant County, DFW Area	23.3	9.1
344 Porter Drive, Brownsville, Cameron County, BH Area	28.7	9.1
4514 1/2 Durant St, Deer Park, Harris County, HGB Area	24.7	9.0
600 1/2 Congress St, Fort Worth, Tarrant County, DFW Area	24.3	8.9
1198 California Parkway North, Fort Worth, Tarrant County, DFW Area	23.3	8.8
3810 Huisache Street, Corpus Christi, Nueces County, CC Area	24.0	8.6
6655 Bluebird Lane, San Antonio, Bexar County, San Antonio Area	22.3	8.5
9904 Ih 35 N, San Antonio, Bexar County, San Antonio Area	20.7	8.5
2200 Jefferson Drive, Port Arthur, Jefferson County, BPA Area	20.3	8.2
Intersection Of Tx Hwys 62 And 12, West Orange, Orange County, BPA Area	19.3	8.2
265 Foster Maldonado, Eagle Pass, Maverick County, Eagle Pass Area	22.7	7.9
9511 Avenue V 1/2, Galveston, Galveston County, HGB Area	22.7	7.9
Denton Airport South, Denton, Denton County, DFW Area	20.0	7.5
8406 Georgia Avenue, Temple, Bell County, KT Area	21.0	7.4
2700 Disney, Odessa, Ector County, Odessa Area	19.3	7.4
14620 Laguna Rd, San Antonio, Bexar County, San Antonio Area	21.7	7.1
6500 Amarillo Blvd West, Amarillo, Potter County, Amarillo Area	15.3	6.0
3901 East 12th Street, Lubbock, Lubbock County, Lubbock Area	18.7	5.7

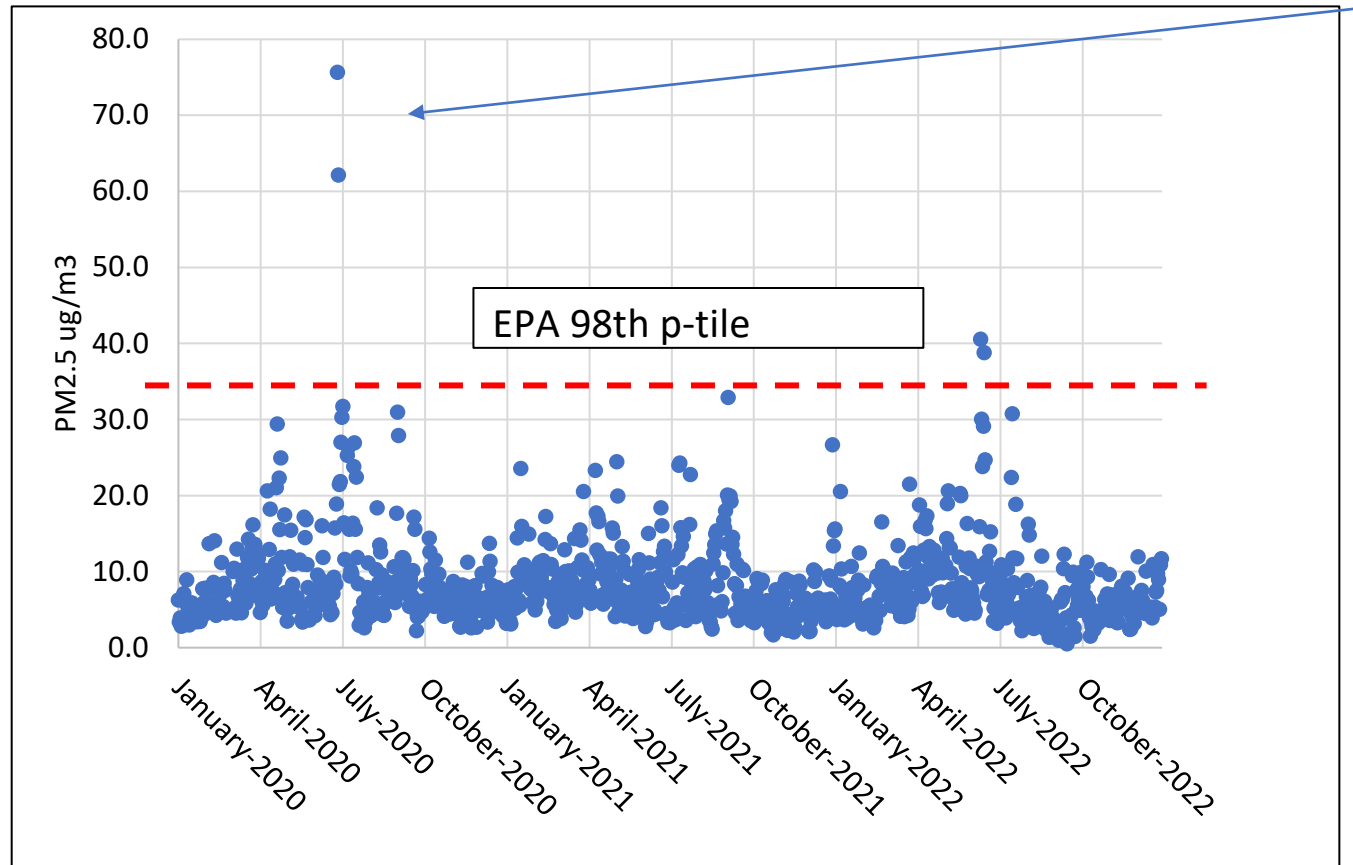
EPA Proposal to Strengthen PM_{2.5} NAAQS

- Earlier this year, EPA announced its proposed decision to revise the primary (health-based) annual PM_{2.5} standard from its current level of 12.0 µg/m³ to within the range of 9.0 to 10.0 µg/m³.
- See: <https://www.epa.gov/pm-pollution/national-ambient-air-quality-standards-naaqs-pm>

Federal law (CAA sec 179B) allows removal of some data from NAAQS calculations

- An air agency has the authority under section 179B to develop and submit to EPA a demonstration that its SIP would be adequate to ... maintain the NAAQS ..., but for emissions emanating from outside the U.S. (https://www.epa.gov/sites/default/files/2020-12/documents/final_caa_179b_guidance_december_2020_with_disc_laimer_ogc.pdf)
- In Many cases, smoke from agricultural fires in Central America and Southern Mexico and airborne dust from North African deserts impact the Texas coast and inland areas.

Application of CAA 179B



- **June 26 & 27, 2020 TCEQ Forecast:** Heavy amounts of African dust will arrive along the coast & begin moving inland over the course of the day ... daily PM2.5 AQI is forecast to reach the middle to upper end of the "Unhealthy for Sensitive Groups" range in parts of the Brownsville-McAllen area; the lower to middle end of the "Unhealthy for Sensitive Groups" range in parts of the Beaumont-Port Arthur, Corpus Christi, Houston, Laredo, & Victoria areas.

June 26-27, 2020 African Dust Case in Austin

Click on the Plot Data button once the tabular report has been generated to open a separate window containing data plots.

Select a date: June ▾ 26 ▾ 2020 ▾ **Time Format:** 24 Hour ▾ **Select a Parameter:** PM-2.5 (Local Conditions) in micrograms per cubic meter (local conditions) ▾

☒ Highlight validated data (Validated data has been manually reviewed by a data validator)

Select a Region: Region 11 -- Austin ▾ [Generate Report](#) [Plot Data](#)

PM-2.5 (Local Conditions) Hourly Averages for Friday, June 26, 2020. measured in micrograms per cubic meter (local conditions)																											
Region	CAMS	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	CAMS	POC
Austin - all times are in CST																											
	171	8.0	8.0	7.0	5.0	5.0	6.0	3.0	12.0	29.0	27.0	44.0	44.0	30.0	45.0	74.0	80.0	70.0	61.0	24.0	20.0	26.0	39.0	35.0	36.0	171	3 R MDL
	1068	6.0	8.0	8.0	9.0	16.0	9.0	6.0	13.0	32.0	23.0	52.0	46.0	26.0	36.0	61.0	81.0	76.0	66.0	28.0	23.0	42.0	32.0	33.0	36.0	1068	2 R MDL
	x.xx	Indicates the data has been validated.																									

Select a date: June ▾ 27 ▾ 2020 ▾ **Time Format:** 24 Hour ▾ **Select a Parameter:** PM-2.5 (Local Conditions) in micrograms per cubic meter (local conditions) ▾

☒ Highlight validated data (Validated data has been manually reviewed by a data validator)

Select a Region: Region 11 -- Austin ▾ [Generate Report](#) [Plot Data](#)

PM-2.5 (Local Conditions) Hourly Averages for Saturday, June 27, 2020. measured in micrograms per cubic meter (local conditions)																											
Region	CAMS	0000	0100	0200	0300	0400	0500	0600	0700	0800	0900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	CAMS	POC
Austin - all times are in CST																											
	171	42.0	50.0	51.0	59.0	59.0	57.0	57.0	61.0	73.0	84.0	91.0	82.0	84.0	92.0	87.0	80.0	41.0	61.0	54.0	46.0	39.0	35.0	33.0	31.0	171	3 R MDL
	1068	36.0	40.0	50.0	54.0	63.0	63.0	62.0	65.0	72.0	85.0	96.0	82.0	75.0	93.0	87.0	81.0	35.0	61.0	57.0	43.0	41.0	37.0	31.0	32.0	1068	2 R MDL
	x.xx	Indicates the data has been validated.																									

TCEQ will likely adjust the annual means to remove African dust cases and other “outside the US” origin PM_{2.5}

- Have not looked at the effect of removing “out of US” days on the annual means.
 - Happy to answer questions...
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- The End