



South East Texas Regional Planning Commission Air Quality Advisory Committee

Location: Holiday Inn & Suites

🏠 3950 IH-10 South Beaumont, TX (El Paso Room)

📅 **Date:** Wednesday, May 31, 2023

🕒 **Time:** 11:30 a.m.

AGENDA

- I. **Welcome and Introduction**
- II. **Update on Current Air Quality Issues in South East Texas**
 - *James Clarke, AECOM – Austin, TX*
 - Ozone measurement trends related to the NAAQS and plans for the 2023 Ozone Season
 - Particulate matter (PM _{2.5}) update on proposed NAAQS revision and potential impacts on BPA
 - Sulfur Dioxide NAAQS compliance for Jefferson/Orange Counties
 - Air Toxics/Benzene measurement trends
 - New regulations for chemical industries under hazardous organic NESHAP (HON) rules and air quality monitoring
- III. **Report on 2023 to date SETRPC Ozone Action Day Program**
 - *Bob Dickinson, SETRPC – Beaumont, TX*
- IV. **Other Business**
- V. **Questions and Answers**
- VI. **Set Next Meeting Date**
- VII. **Adjournment**



Beaumont/Port Arthur AIR QUALITY MONITORING DATA

SETRPC and TCEQ Monitoring
Networks

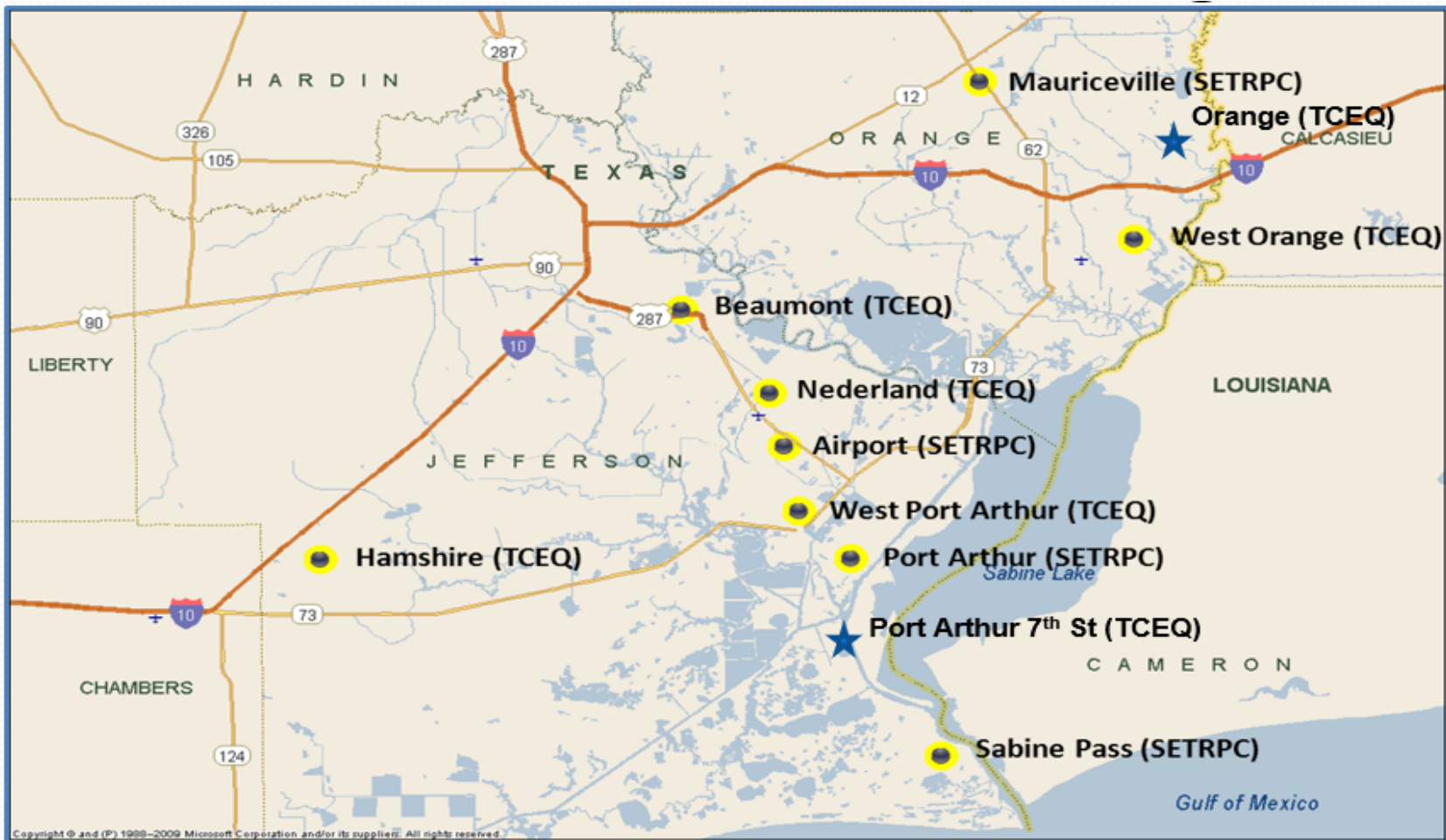
Status and Trends

May 31, 2023

Presentation Topics

- Area Air Monitoring Sites
- NAAQS Definitions
- Ozone (O₃)
- Sulfur Dioxide (SO₂)
- Particulate Matter (PM_{2.5}) and proposed NAAQS revision
- Volatile Organic Compounds (VOCs) and HON rule revision

Southeast Texas Area Air Monitoring Sites



★ New TCEQ SO₂ compliance sites for 2017 in Port Arthur (7th Street) and Orange (1st Street)

Other Sites not shown on map collect VOC samples (SETRPC Beaumont Courthouse, West Orange, Orange Cove School, Port Neches Fire Station; and four other TCEQ sites in the area). A continuous GC site is operated at Port Arthur Jefferson MS.

EPA NAAQS

The Clean Air Act, which was last amended in 1990, requires EPA to set National Ambient Air Quality Standards (40 CFR part 50) for six principal pollutants ("criteria" air pollutants) which can be harmful to public health and the environment. The Clean Air Act identifies two types of national ambient air quality 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.

Of the six criteria pollutants subject to the NAAQS, five are measured routinely in the BPA area (lead is the exception). Three are of the highest priority concern, based on historical data and regulatory monitoring focus. These include ozone, sulfur dioxide, and particle pollution. We will review these three for current and recent historical data trends.

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OZONE

Data Status and Trend Analysis

ASSESSING THE 2015 OZONE STANDARD: Area Designations for EPA NAAQS in Beaumont/Port Arthur (BPA)

Official compliance designations were based on comparisons with 2014-2016 monitored ozone design values

- A design value is calculated for each monitoring site and compliance for the entire area is determined by the design value at the area's highest site
- BPA has nine ozone monitors, but EPA/TCEQ considers only seven of them "regulatory monitors" for determining if the standard is being met (Mauriceville and Port Arthur are designated as "non-regulatory" although they are operated to the same quality standards)

BPA is in compliance with the ozone Primary and Secondary NAAQS of 0.070 ppm (70 ppb) based on 2014-2016 data from all monitors.

Nederland and Hamshire TCEQ sites had the highest design values for 2014-2016: 68 ppb.

The expectation of BPA continuing to meet the standard in future compliance periods is reasonable based on the values we have seen since 2016.

BPA Compliance with the 2015 Ozone NAAQS and Continuing Trends

Monitoring Site	4th Highest Daily Max 8-Hour Average (ppb)							Design Value 2014-2016 Average (ppb)	2021-2023 YTD Average (ppb)
	2017	2018	2019	2020	2021	2022	2023 YTD		
SETRPC Airport	64	72	74	60	66	65	59	62	63
Nederland	65	67	63	57	64	65	60	68	63
SETRPC Sabine Pass	67	71	67	62	60	62	60	66	61
Hamshire	63	69	65	62	62	62	58	68	61
West Orange	61	73	64	62	61	62	60	61	61
Port Arthur West	64	70	66	57	65	60	57	67	61
Beaumont	67	68	65	59	65	61	60	65	62
SETRPC Mauriceville*	67	72	66	67	62	67	61	65	63
SETRPC Port Arthur*	67	71	68	63	63	64	63	62	63

* This monitoring site information is not included in NAAQS designation determination

The 2015 NAAQS was met because the 4th highest daily maximum 8-hour ozone average, averaged over 3 consecutive years (i.e., the design value for 2014-2016), did not exceed 70 ppb

2020 showed an almost universal decrease in values; 2023 to date data are favorable and remain well below the level of the standard

SULFUR DIOXIDE

Data Status and Trend Analysis

NAAQS compliance determination 2017-2019 for Sulfur Dioxide

Site designation CAMS 1071, located west of 7th Street and Texaco Island Road in Port Arthur, Jefferson County; and site designation CAMS 1083, located at 2239 1st Street in City of Orange, Orange County.

Established in late 2016 to determine NAAQS compliance; TCEQ used 2017-2019 data to demonstrate attainment status of 2010 SO₂ NAAQS (99th Percentile of 1-hour daily maximums, averaged over 3 years, ≤ 75 ppb). The 99th Percentile is usually equivalent to the 4th highest value for an annual monitoring data set.

Average 99th Percentile values (aka Design Value) for 2017-2019:

Jefferson County is 58 ppb (CAMS 1071)

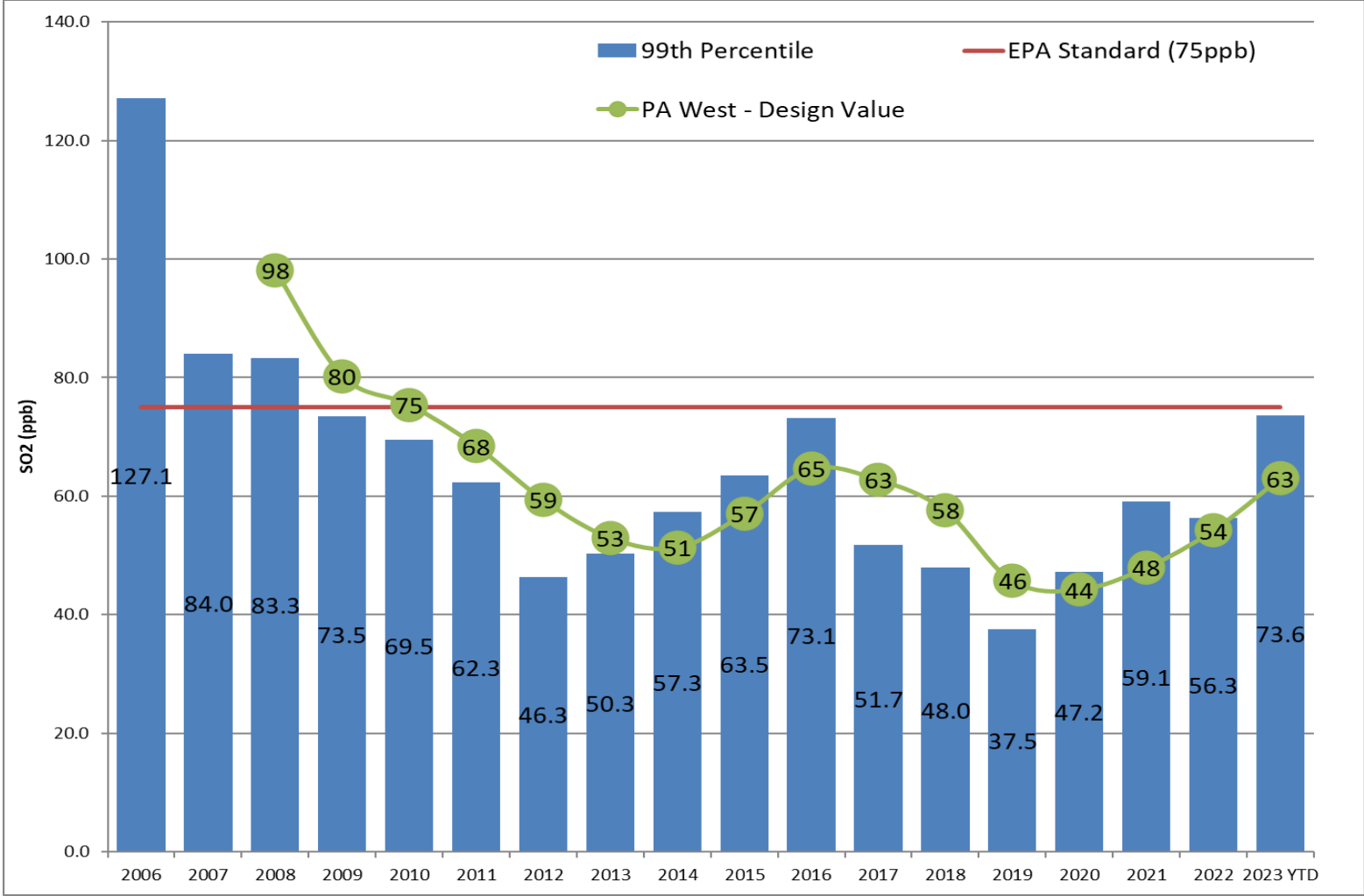
Orange County is 75 ppb (CAMS 1083)

Both counties are in compliance with the Sulfur Dioxide Primary NAAQS but the recent trend in Jefferson County has been an increase in the 99th Percentile values.

Other TCEQ and SETRPC SO₂ monitoring sites are also present in Jefferson County, and the Port Arthur West TCEQ site has shown the most frequent elevated values so far in 2023 and the current 98th Percentile value is 73.6 ppb.

CAMS 1083 remains the only SO₂ monitoring site in Orange County; the 98th Percentile value for 2023 so far is 79.8 ppb.

Recent SO₂ Trends in the Port Arthur Area (98th Percentile Value for 2023 YTD* is 73.6 ppb)



* January 1 – May 25, 2023

PARTICULATE MATTER (PM_{2.5})

Data Status and Trend Analysis
Proposed Revision to PM NAAQS

Particulate Matter Monitoring at SETRPC Port Arthur Site

Particulate Matter (PM) is comprised of dusts, mists, aerosols, etc. that are suspended and moved in the air. The smaller the diameter of the PM, the larger the potential for causing health effects. 2.5 microns = 0.0000984252 inches.

- SETRPC Port Arthur monitoring site takes continuous readings of PM and reports hourly average values
- Two measurements are taken – PM₁₀ and PM_{2.5} and each has a NAAQS
- PM_{2.5} (particles <2.5 microns in diameter) has the greater potential for health effects so its NAAQS is a lower value
- The most prevalent sources of PM_{2.5} are the byproducts of combustion, i.e. the burning of fuels (wood/plants, petroleum products)
- The PM₁₀ and PM_{2.5} continuous data are posted to the TCEQ website, under the site name CAMS 628
- The PM_{2.5} NAAQS is expressed for two data averaging periods, annual and 24-hour. Each period has its own Primary and Secondary standard.

PM_{2.5} Data at SETRPC Port Arthur – Annual Averaging

SETRPC Port Arthur Site PM_{2.5} data, expressed as annual mean values, averaged over three years:

- For 2020, 9.0 µg/m³
- For 2021, 10.3 µg/m³
- For 2022, 9.5 µg/m³

The 2020 through 2022 composite average is 9.6 µg/m³; if an EPA NAAQS attainment designation period was in effect the area would meet the current Primary standard of 12.0 µg/m³ (the Secondary standard of 15.0 µg/m³ would also be met)

For 2023 through 4/30, the mean value is 8.8 µg/m³

PM_{2.5} Data at SETRPC Port Arthur – 24-Hour Averaging

SETRPC Port Arthur Site PM_{2.5} data, expressed as annual 98th percentile values of 24-hour averages, averaged over three years:

- For 2020, 21.8 µg/m³
- For 2021, 20.9 µg/m³
- For 2022, 23.2 µg/m³

The 2020 through 2022 average is 22.0 µg/m³; if an EPA NAAQS attainment designation period was in effect the area would meet the Primary and Secondary standard of 35 µg/m³

For 2023 through 4/30, the 98th Percentile value is approximately 18.3 µg/m³

Proposed Revision of PM_{2.5} NAAQS

On January 6, 2023, the U.S. Environmental Protection Agency (EPA) announced a proposal to strengthen the National Ambient Air Quality Standards (NAAQS) for fine particle pollution (PM_{2.5}) by revising the level of the Primary (health-based) annual PM_{2.5} standard from 12 micrograms per cubic meter (µg/m³) to within the range of 9.0 to 10.0 µg/m³. EPA proposed to retain the primary (health based) and secondary (welfare based) 24-hour PM_{2.5} standard, with its level of 35 µg/m³.

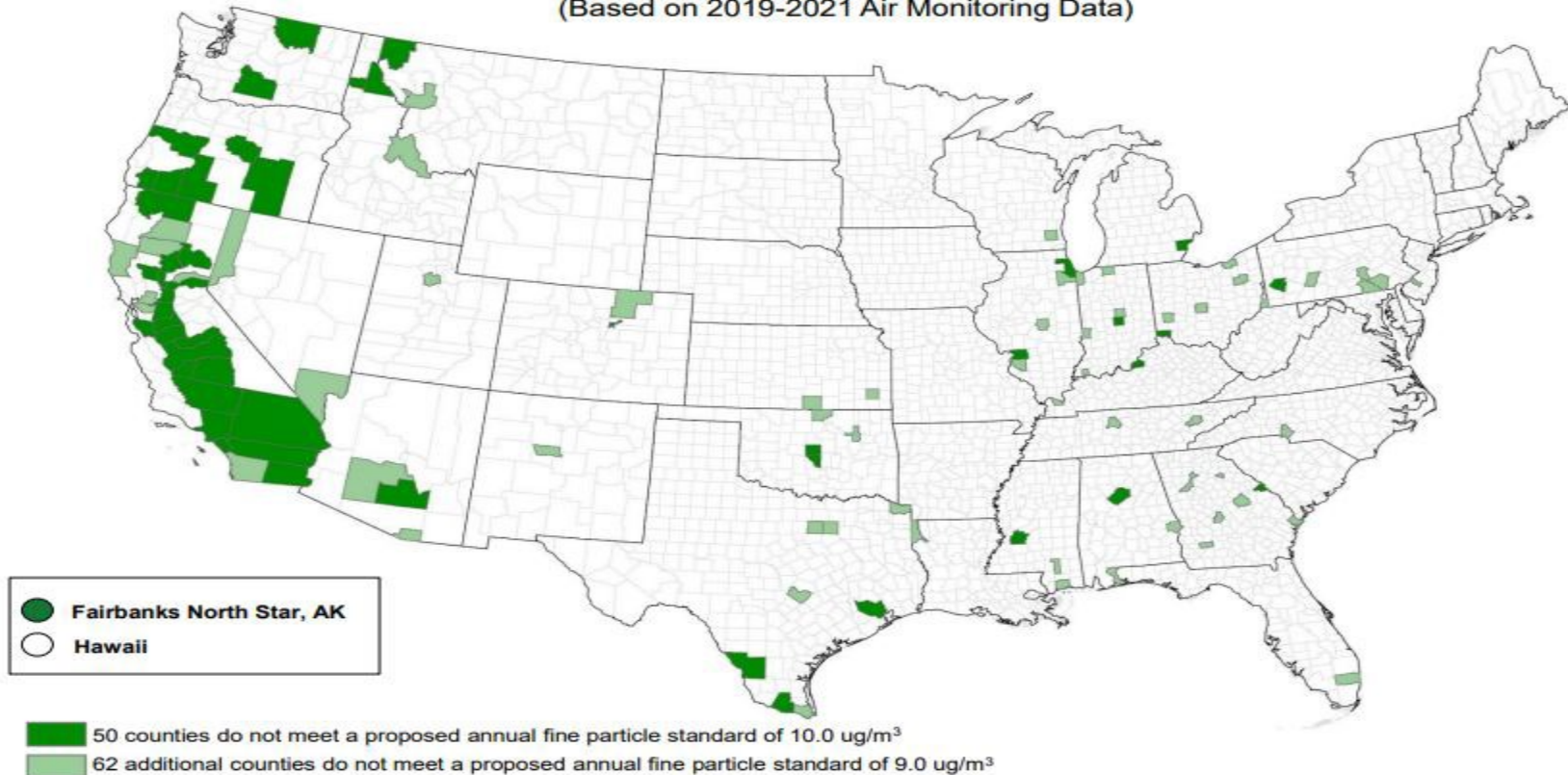
EPA has currently listed the 2019-21 design value for Jefferson County at 8.3 µg/m³ and the design value for Orange County at 8.2 µg/m³ based on TCEQ regulatory monitoring data (Hamshire, Port Arthur Jefferson MS, Mauriceville). The data from the SETRPC Port Arthur site, which trends higher, is shared with the TCEQ but is not used for compliance purposes.

The BPA area will be closer to the new level so the amount of increase of this pollutant under the standard will be more limited. New provisions for compliance monitoring include the placement of monitoring sites in areas impacted by environmental justice issues. The impact nationwide is potentially significant, especially in the West.

Map Showing Potential Impact of Revised PM_{2.5} NAAQS

Current Air Monitoring Data Show Some Counties Would Not Meet Proposed Primary Fine Particle Standards

(Based on 2019-2021 Air Monitoring Data)



Note: Map reflects monitored counties with complete monitoring data. See accompanying table for more detail. Future area designations (attainment/nonattainment) will not be based on these data, but likely on monitoring data collected between 2021 and 2024. Of the 112 counties with 2019-2021 design values above 9 ug/m³, 24 counties are totally or partially contained in nonattainment areas for the current PM_{2.5} standards.

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

VOLATILE ORGANIC COMPOUNDS (VOC)

Data Status and Trend Analysis
New HON Monitoring Rulemaking

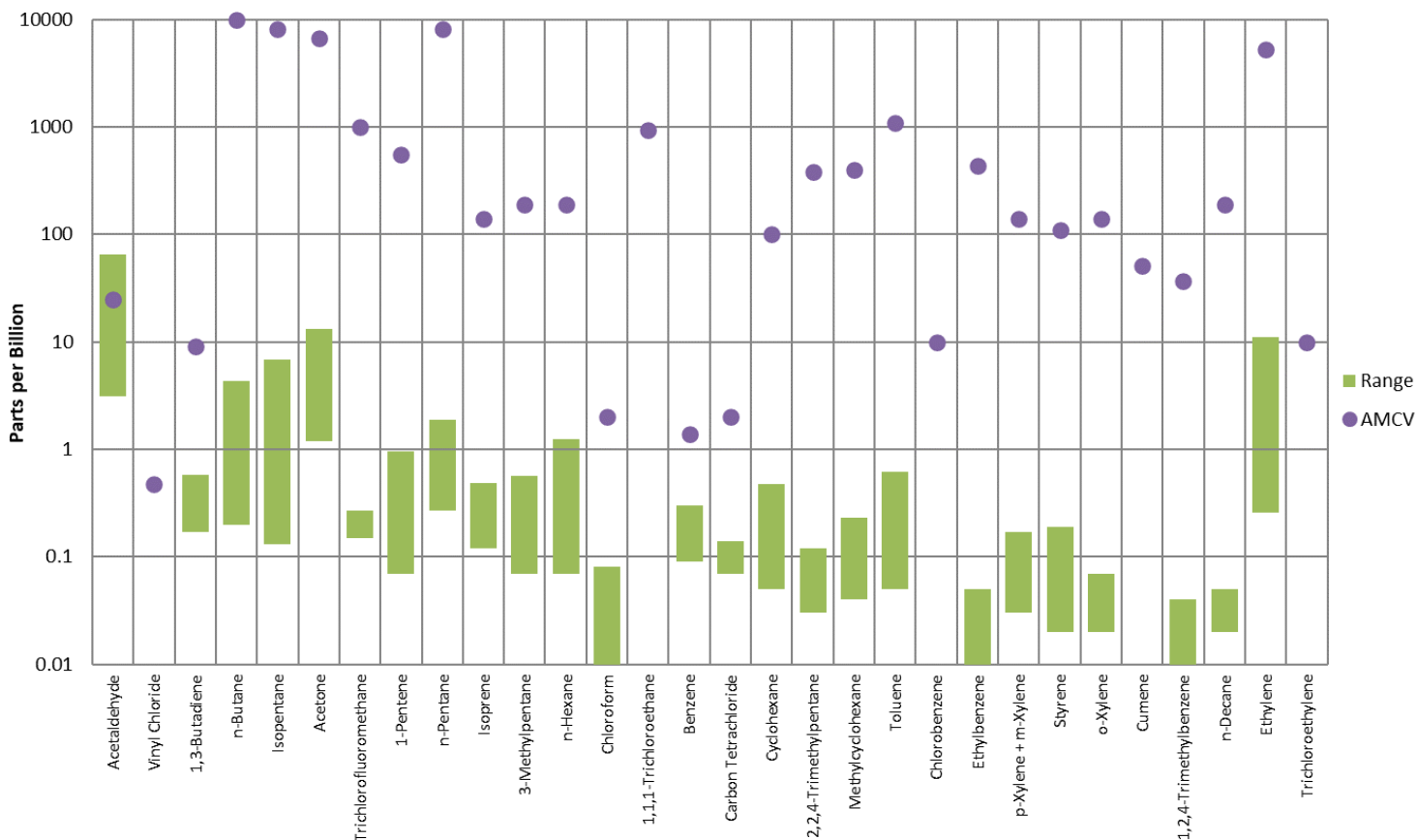
Summary of VOC Sampling at SETRPC Network

Stainless steel canister sampling at seven BPA sites

- Samples collected every 12th day (30 per year)
- 24-hour sampling periods
- Samples analyzed by GC/MS by accredited lab
- Analyzed for 53 chemicals or co-eluting pairs
 - Hazardous Air Pollutants (HAPs)
 - Ozone precursors
 - Other chemicals of interest (indicative of point, mobile, or area source emissions)
- Results are evaluated against Air Monitoring Comparison Values (AMCVs) by TCEQ; there are no NAAQS for VOC compounds



Range of Measurement Results for 2023 YTD and TCEQ Long-Term Air Monitoring Comparison Values (AMCVs)



Acetaldehyde is the only chemical compound found at average levels above one-tenth of the respective AMCV

Continuous Monitoring Comparison to TCEQ AMCV for Hourly Benzene, Styrene, and 1,3-Butadiene Levels at Port Arthur Jefferson M.S. Monitoring Site 2023 YTD

	Short-Term AMCV (ppb)	Max 1-Hour Value (ppb)	Long-Term AMCV (ppb)	2023 YTD Average (ppb)
Benzene	180	14.41	1.4	0.40
Styrene	5,200	0.74	110	0.08
1,3-Butadiene	1,700	29.45	9.1	0.20

Note: Data fully validated through 2/28/23; these values include data through 4/30/23 that are subject to change

Max 1-Hour Validated Values:

Benzene 1/14/23 4:00; wind direction 32° (NE), wind speed 3 mph

Styrene 1/4/23 7:00; wind direction 0° (N), wind speed >0.6 mph

1,3-Butadiene 1/23/23 5:00; wind direction 33° (NE), wind speed 7.5 mph

Proposed Revision of HON Rule

On April 6, 2023, the U.S. Environmental Protection Agency (EPA) announced a proposal to change the Hazardous Organic NESHAP (HON) rule by adding new standards to require the reduction of emissions of hazardous air pollutants (HAPs), which includes monitoring and reporting of six key organic chemicals:

ethylene oxide (EtO), chloroprene, benzene, 1,3-butadiene,
ethylene dichloride, and vinyl chloride

Approximately 200 facilities nationwide will be impacted by this new rulemaking, scheduled to be promulgated by March 29, 2024. Fence line monitoring and sampling will be required for facilities that use, produce, store, or emit any of these compounds. The proposed action levels for the air quality measurements are near or less than 1 ppb (similar to or less than current TCEQ AMCV levels for some of these compounds).

Although this regulation is facility specific, benzene, 1,3-butadiene, and vinyl chloride are sampled in the SETRPC regional VOC canister sampling network and those current and historical data sets are available on the SETRPC network website.

Questions/Comments

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2023 Ozone Action Day Program

As of 5/25/23

Ozone Action Day	Max 8-Hr
May 3	66
May 18	60
May 19	71
May 23	75

Ozone Exceedance But No Ozone Action Day	Max 8-Hr
May 1	77
May 22	74

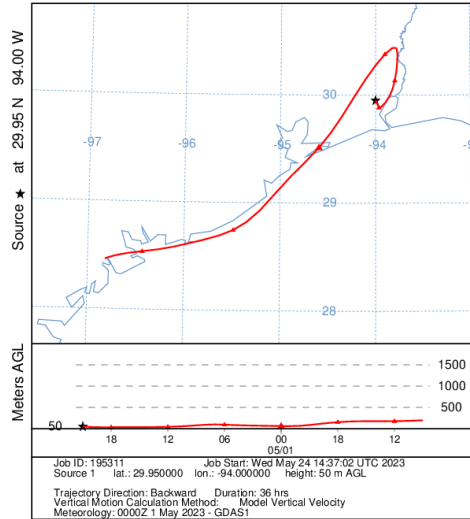
Ozone Exceedance Before/After Ozone Action Day Season	Max 8-Hr

Beaumont/Port Arthur 2023 8-Hour Ozone 70 ppb Exceedances

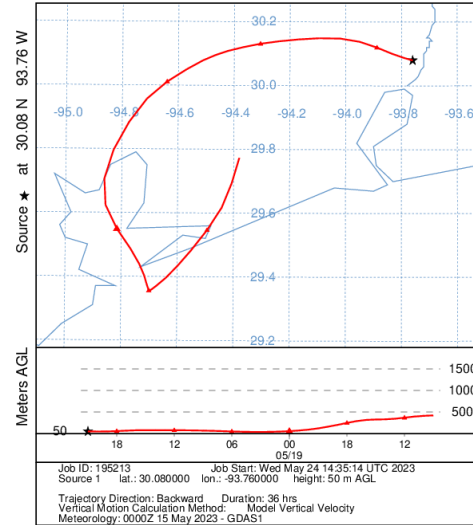
#	Ozone Action Day	Ozone Exceedance Day	Monitors and Max 8-Hr Values (ppb)
1	No	Monday, May 1	Nederland (77), Airport (72)
2	Yes	Friday, May 19	West Orange (71)
3	No	Monday, May 22	Sabine Pass (74)
4	Yes	Tuesday, May 23	Sabine Pass (75)

Beaumont/Port Arthur 2023 8-Hour 70 ppb Ozone Exceedances

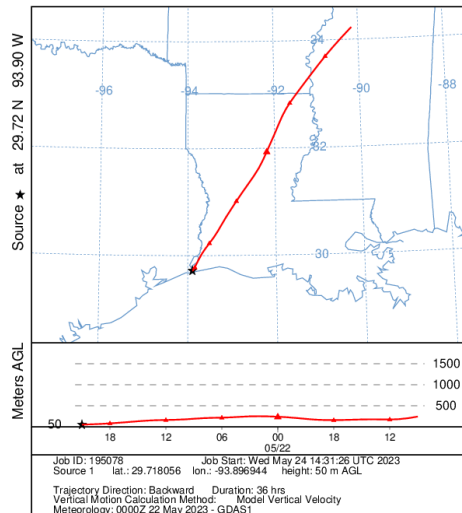
NOAA HYSPLIT MODEL
Backward trajectory ending at 2100 UTC 01 May 23
GDAS Meteorological Data



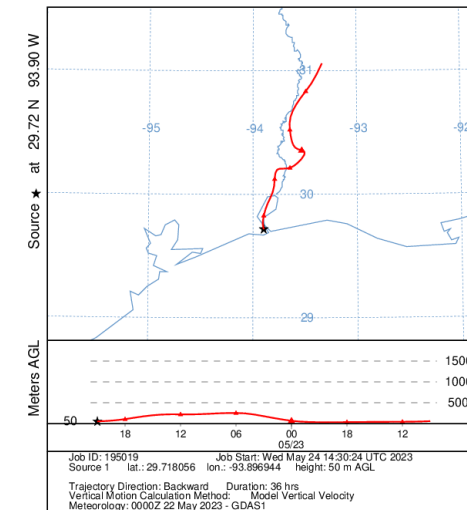
NOAA HYSPLIT MODEL
Backward trajectory ending at 2100 UTC 19 May 23
GDAS Meteorological Data



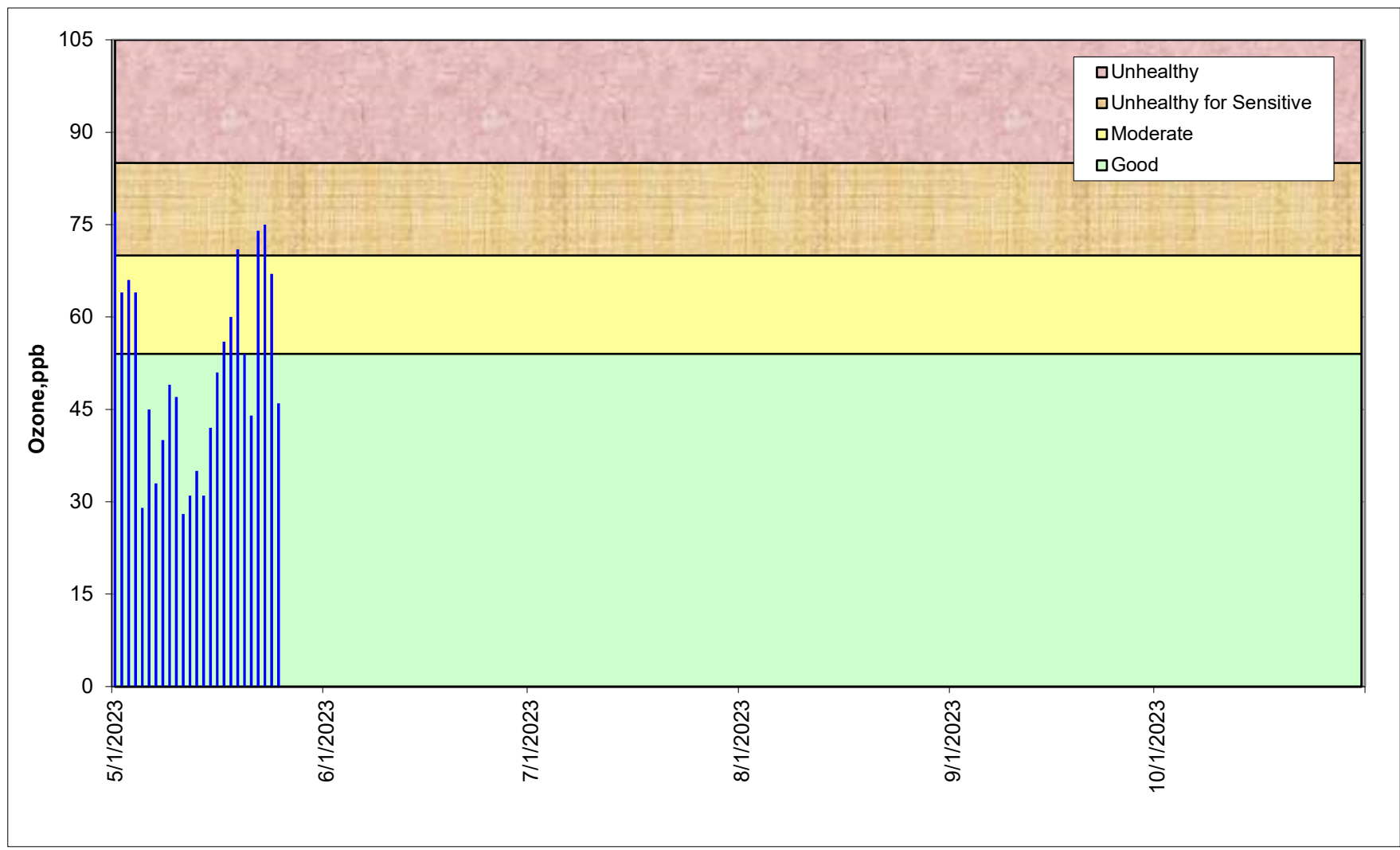
NOAA HYSPLIT MODEL
Backward trajectory ending at 2100 UTC 22 May 23
GDAS Meteorological Data



NOAA HYSPLIT MODEL
Backward trajectory ending at 2100 UTC 23 May 23
GDAS Meteorological Data



2023 Daily Maximum 8-Hour Ozone Ozone Action Day Season



Average 4th Highest 8-Hour Ozone Value (ppb)

(Attainment when all design values \leq 70 ppb)



Monitor	2021 4 th High	19-21 Design Value	2022 4 th High	20-22 Design Value	2023 4 th High	2023 trigger	21-23 Design Value
T-Beaumont	65	63	61	61	60	87	62
T-West Orange	61	62	62	61	60	90	61
T-Port Arthur	65	62	60	60	57	88	60
T-Hamshire	62	63	62	62	59	89	61
S-Sabine Pass	60	63	62	61	62	91	61
S-Airport	66	66	65	63	59	82	63
S-Mauriceville	62	64	67	65	61	84	63
S-Port Arthur	63	64	64	63	63	86	63
T-Nederland	64	61	65	62	60	84	63

NAAQS: 70 ppb

As of 5/25/23

