SETRPC
SOUTH EAST TEXAS REGIONAL PLANNING COMMISSION

South East Texas Regional Planning Commission
Air Quality Advisory Committee

Location: MCM Elegante
2355 IH-10 Beaumont, TX (Fountain View Room)

Date: Thursday, September 22, 2022

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 2022 Ozone Season
  - -Regional Air Monitoring and Emergency Events
  - -Particulate Matter ($PM_{2.5}$)
  - -Sulfur Dioxide NAAQS compliance for Jefferson/Orange Counties
  - -Air Toxics/Benzene measurement trends

III. **Report on 2022 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**

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TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Beaumont/Port Arthur

AIR QUALITY MONITORING DATA

SETRPC and TCEQ Monitoring Networks

Status and Trends

September 22, 2022

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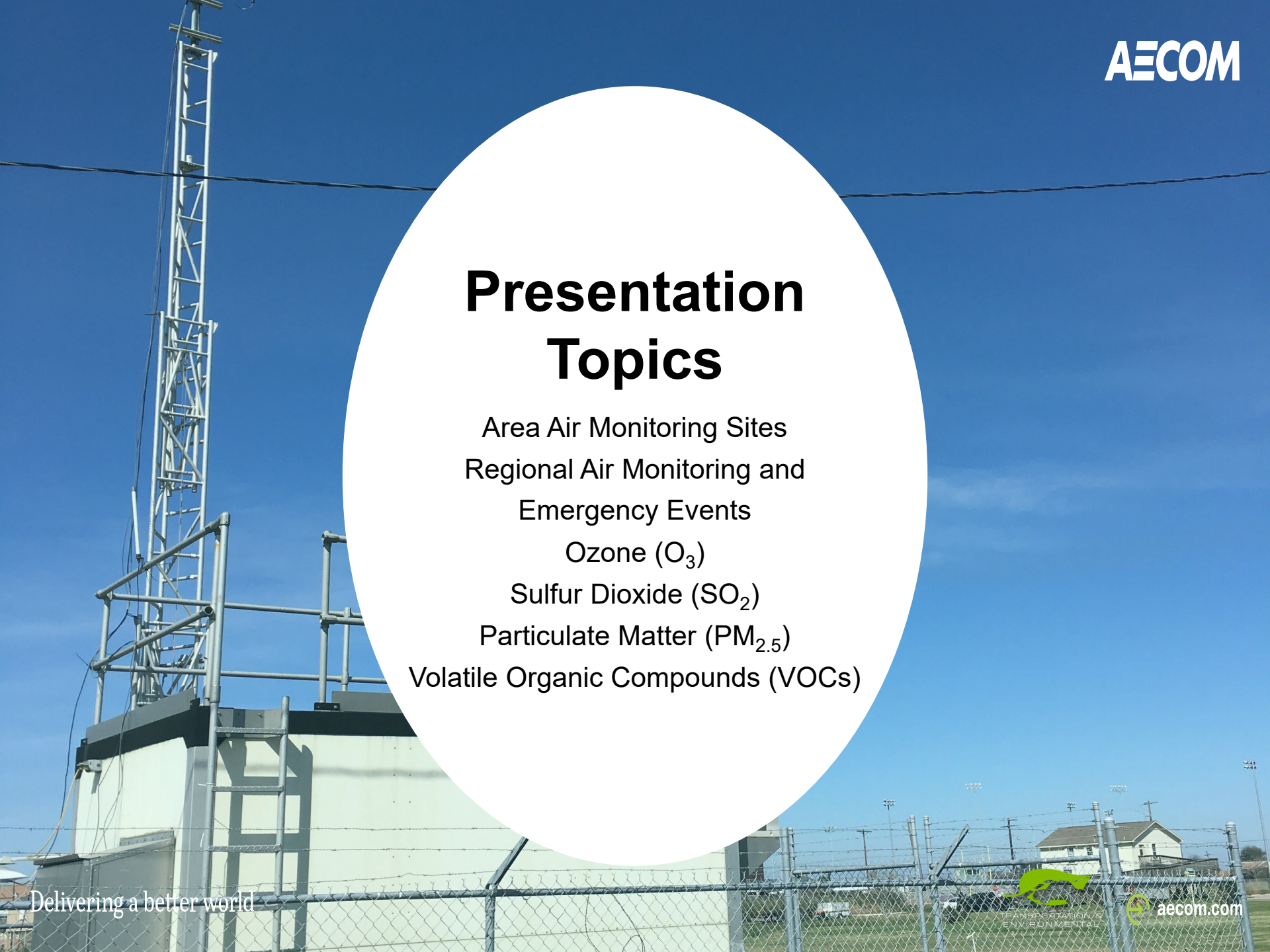


Presentation Topics

Area Air Monitoring Sites

Regional Air Monitoring and Emergency Events

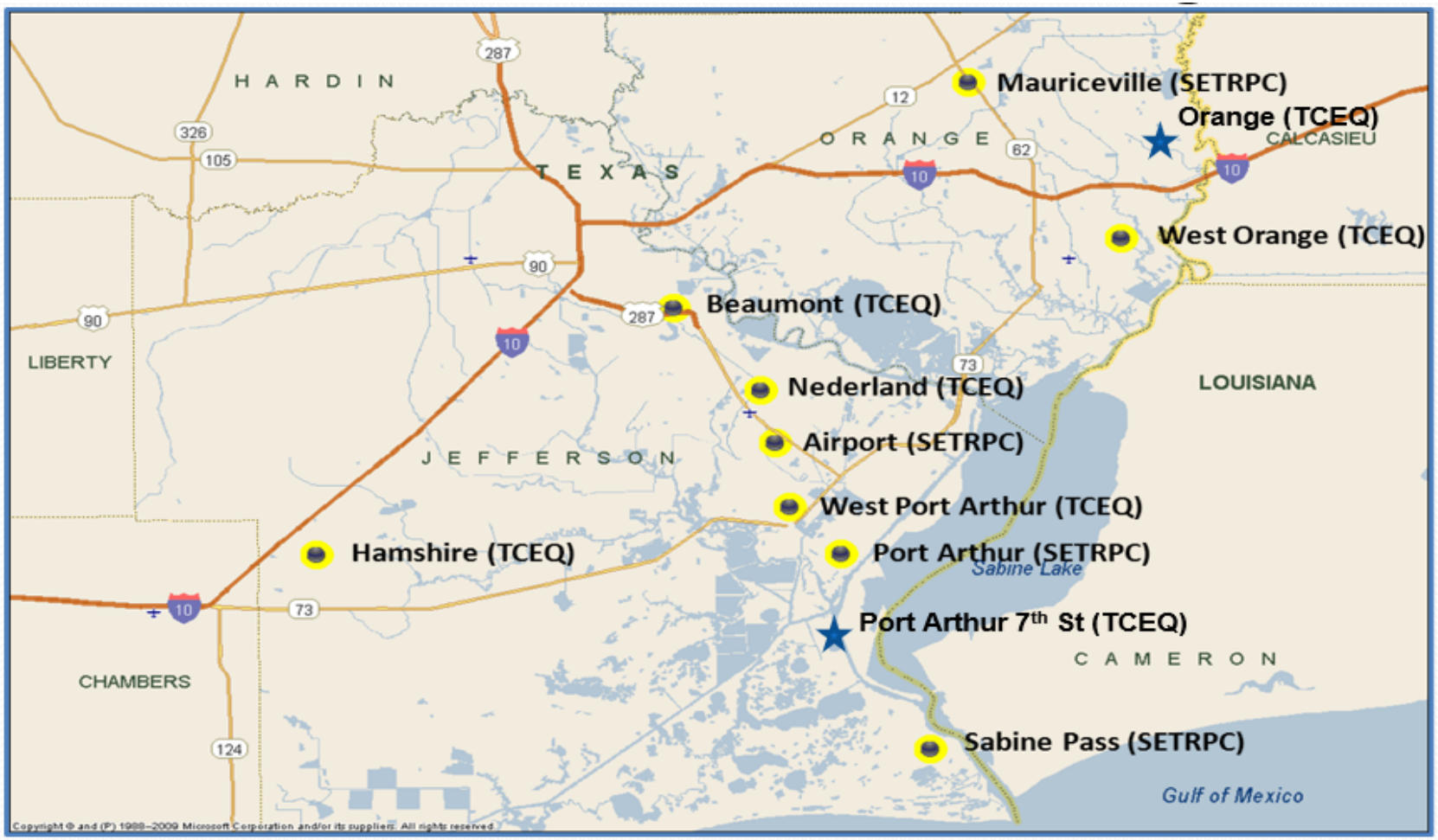
Ozone (O_3)

Sulfur Dioxide (SO_2)

Particulate Matter ($PM_{2.5}$)

Volatile Organic Compounds (VOCs)

Southeast Texas Area Air Monitoring Sites



★ New TCEQ SO_2 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.

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Regional Air Monitoring and Emergency Events

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Roles and Responsibilities

Whenever a crisis occurs at an industrial facility in the Beaumont/ Port Arthur area (BPA), the need to obtain good information regarding air and water quality impacts quickly is vital to the response effort. In these situations, information comes from several sources:

- First responders from public agencies work with facility staff/ incident commanders to assess immediate dangers and take action
- Environmental status information can come from monitors operated at the facility
- Coordination with TCEQ/EPA can result in those agencies sending staff to provide monitoring efforts
- Facilities often have contracts for emergency air/ water monitoring with consultants to supplement the governmental agency efforts
- Where do the SETRPC and TCEQ regional air monitoring networks fit in this response and how can they assist?

Regional Network Focus

The air monitoring networks operated by SETRPC and TCEQ in the BPA area are primarily designed to measure long term trends in air quality and provide data for determining and understanding regulatory compliance issues, but they can provide assistance during events:

- Depending on the location and nature of the event, a monitoring site could be well-positioned to measure the effects of a facility event
- The meteorological data available to the TCEQ/EPA is comprehensive and area wide so looking at wind patterns and running models is made easier
- Since the communities in this area are adjacent to each other, more area can be evaluated than what the emergency responders are focused on immediately adjacent to the facility
- In the period after the emergency ceases, a change in the routine air shed of the area can be evaluated for net impacts

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OZONE

Data Status and Trend Analysis

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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 NAAQS based on 2014-2016 data from all monitors

Nederland and Hamshire sites had the highest average 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)									2014-2016 Average (ppb)	2020-2022 YTD Average (ppb)
	2014	2015	2016	2017	2018	2019	2020	2021	2022 YTD		
SETRPC Airport	62	65	59	64	72	74	60	66	60	62	62
Nederland	67	74	63	65	67	63	57	64	60	68	60
SETRPC Sabine Pass	67	64	67	67	71	67	62	60	62	66	61
Hamshire	67	68	69	63	69	65	62	62	61	68	62
West Orange	63	62	58	61	73	64	62	61	59	61	61
Port Arthur West	63	75	64	64	70	66	57	65	57	67	60
Beaumont	65	69	60	67	68	65	59	65	59	65	61
SETRPC Mauriceville[1]	68	65	61	67	72	66	67	62	65	65	65
SETRPC Port Arthur[1]	56	70	59	67	71	68	63	63	64	62	63

1 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; 2022 to date data are favorable and remain well below the level of the standard

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SULFUR DIOXIDE

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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 SO_2 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

99th Percentile Values for 2017-2019:

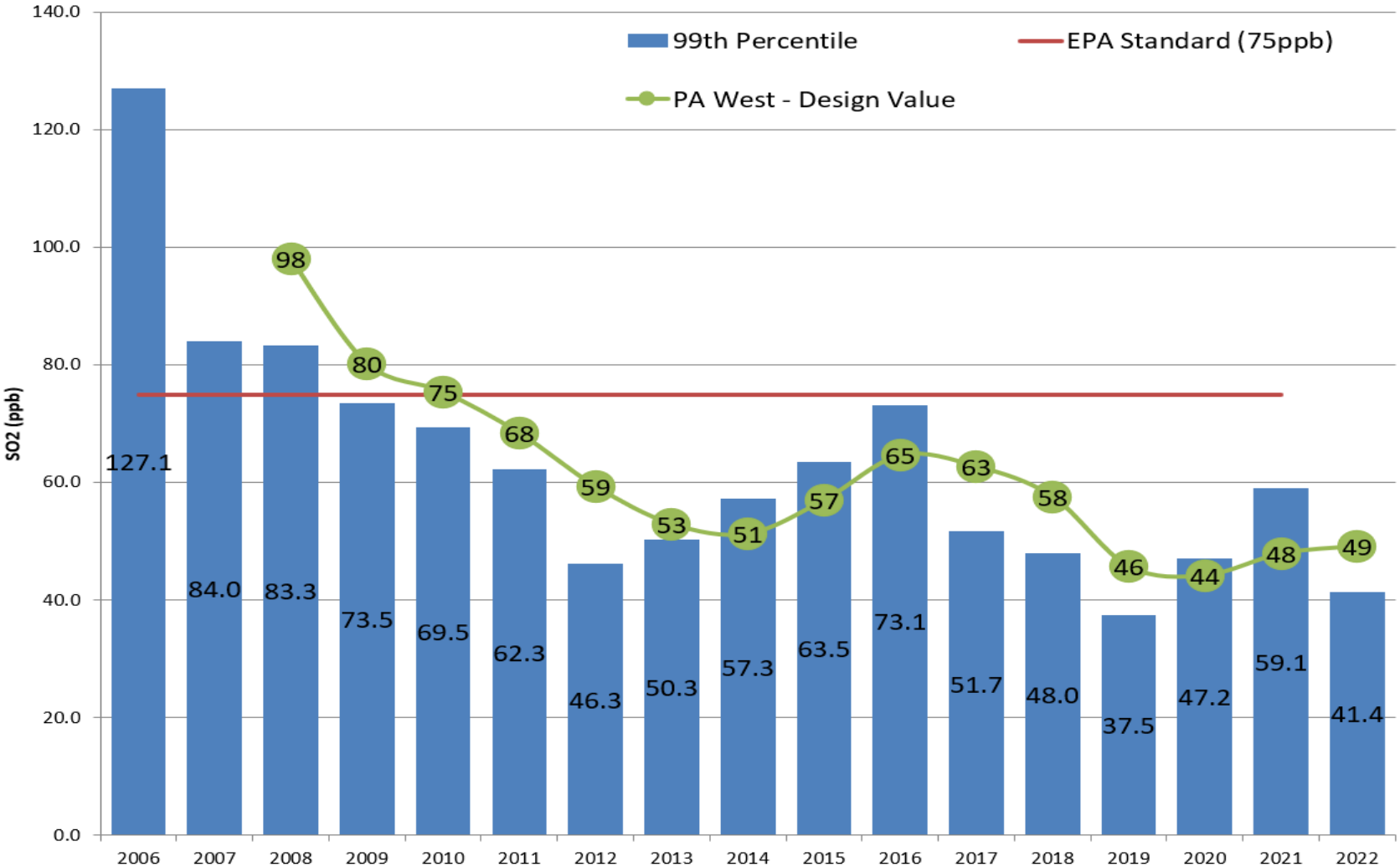
Jefferson County is 58 ppb

Orange County is 75 ppb

Both counties are in compliance with the Sulfur Dioxide NAAQS

Other TCEQ and SETRPC SO_2 monitoring sites are also present in Jefferson County, and the Port Arthur West CAMS site has shown the most frequent elevated values so far in 2022 yet only one single data point has been reported above the 75 ppb level of the standard. CAMS 1083 remains the only SO_2 monitoring site in Orange County.

Recent SO_2 Trends in the Port Arthur Area (Highest Value for 2022 YTD is 79 ppb)



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PARTICULATE MATTER ($PM_{2.5}$)

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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 – PM_{10} 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 PM_{10} and $PM_{2.5}$ continuous data are posted to the TCEQ website, under the site name CAMS 628
- The $PM_{2.5}$ NAAQS is the annual 98th percentile of daily averages, averaged over 3 consecutive years, not to exceed 35 $\mu g/m^3$

$PM_{2.5}$ Data Trends at SETRPC Port Arthur

Annual 98th percentile values:

- For 2019, 20.1 μg/m^3
- For 2020, 22.0 μg/m^3
- For 2021, 20.1 μg/m^3

The 2019 through 2021 average is 20.7 μg/m^3; if an EPA NAAQS attainment designation period was in effect the area would meet the standard of 35 μg/m^3

For 2022 through 6/30, the value is approximately 27 μg/m^3

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VOLATILE ORGANIC COMPOUNDS (VOC)

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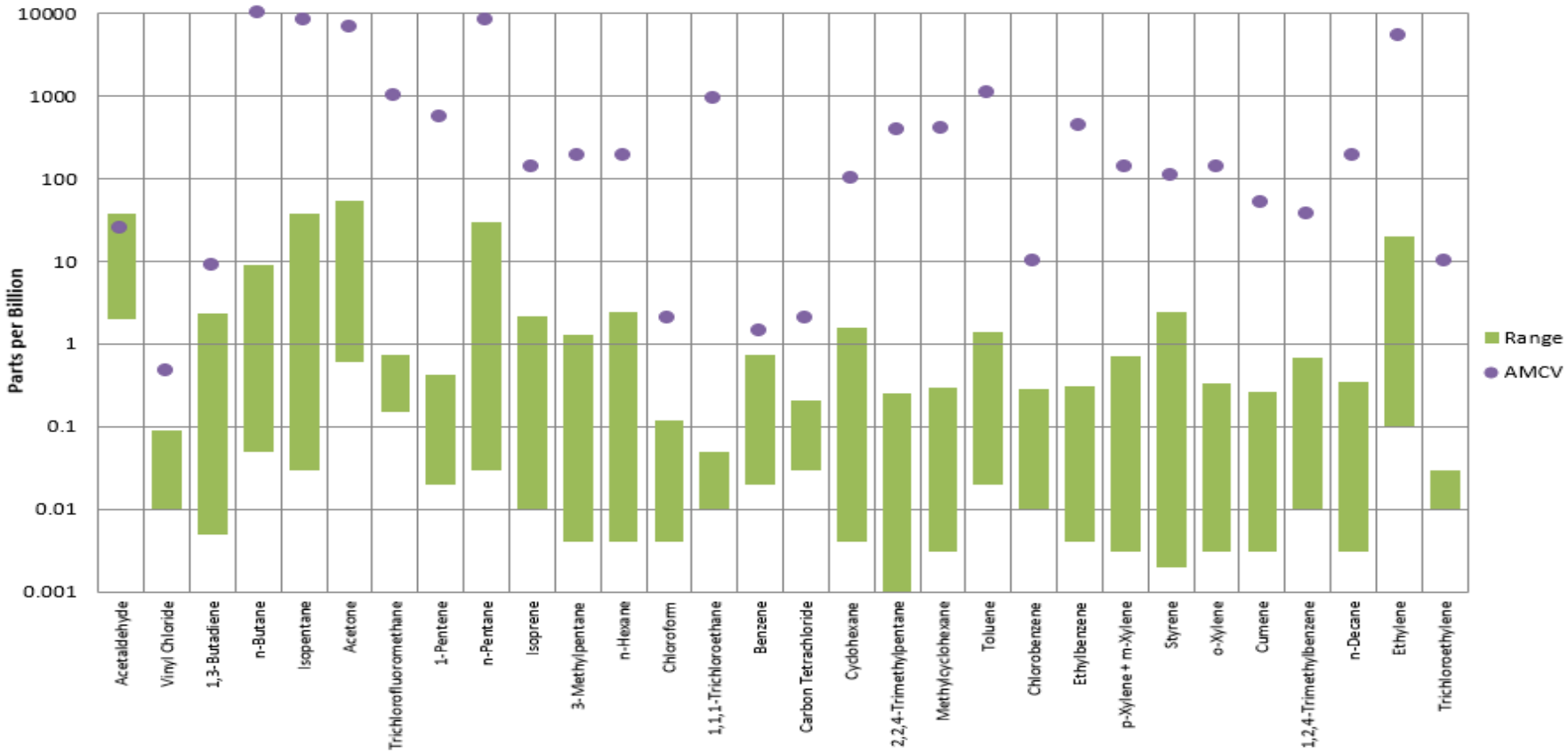
Summary of VOC Sampling at SETRPC Network

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 2022 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

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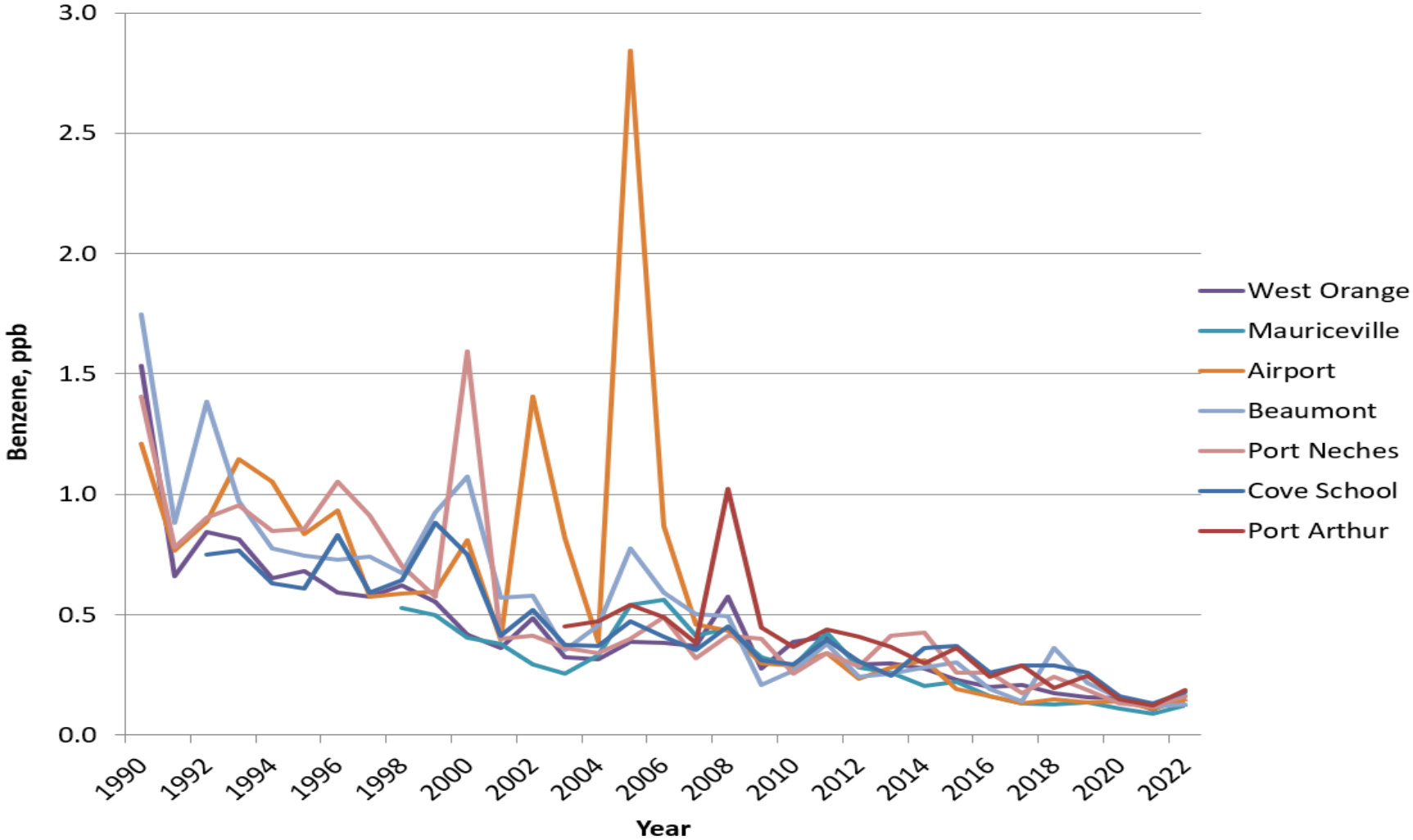
BPA Area Benzene Trends 1990 - 2022 (through June)



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Continuous Monitoring Comparison to TCEQ AMCV for Hourly Benzene, Styrene, and 1,3-Butadiene Levels at Port Arthur Jefferson M.S. Monitoring Site 2022 YTD

	Short-Term AMCV (ppb)	Max 1-Hour Value (ppb)	Long-Term AMCV (ppb)	2022 YTD Average (ppb)
Benzene	180	24.88	1.4	0.34
Styrene	5,200	25.02	110	0.01
1,3-Butadiene	1,700	2.58	9.1	0.05

Max 1-Hour Values:
Benzene 1/21/22 10:00; wind direction 8° (N), wind speed 5.2 mph
Styrene 1/21/22 10:00; wind direction 8° (N), wind speed 5.2 mph
1,3-Butadiene 4/28/22 12:00; wind direction 142° (SE), wind speed 8.7 mph

Questions/Comments

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2022 Ozone Action Day Program

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Ozone Action Day	Max 8-Hr
May 12	58
May 27	79
May 28	82
June 18	50
June 19	60
June 20	64
June 23	54
September 15	58

Ozone Exceedance But No Ozone Action Day	Max 8-Hr
May 26	72
September 14	79

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

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Beaumont/Port Arthur 2022 8-Hour Ozone 70 ppb Exceedances

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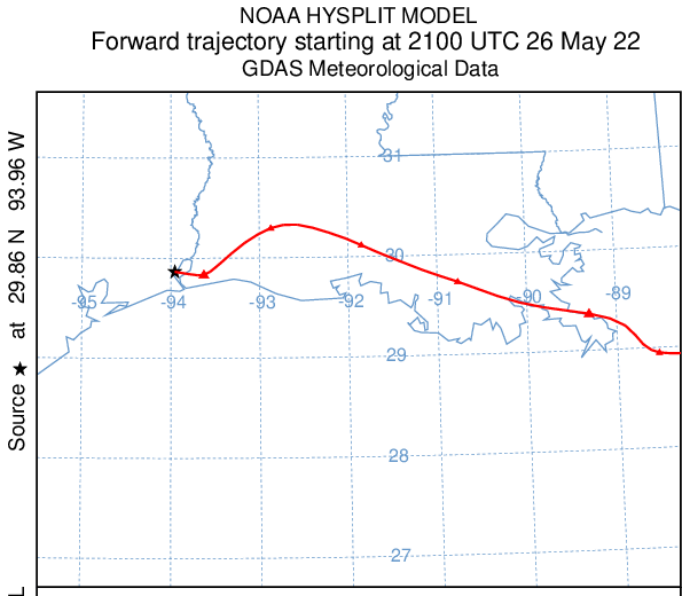
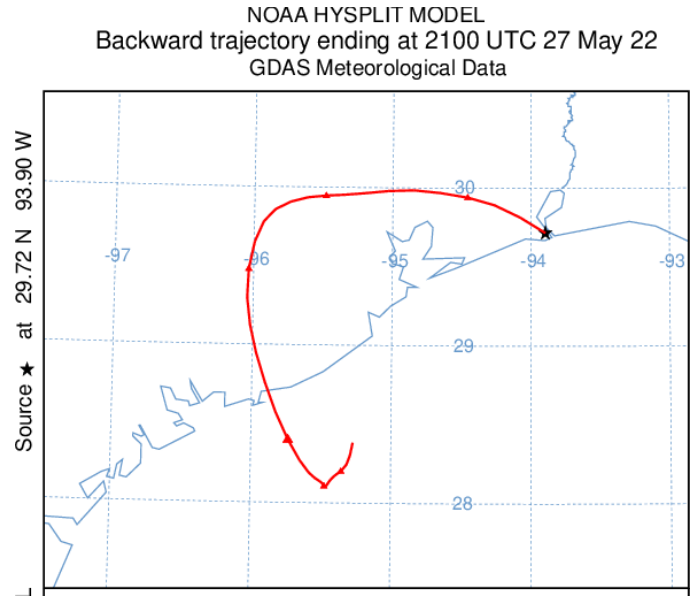
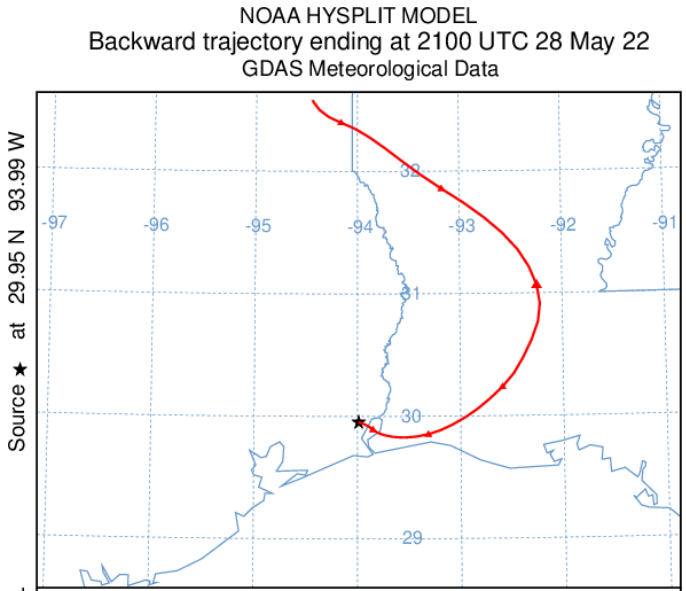
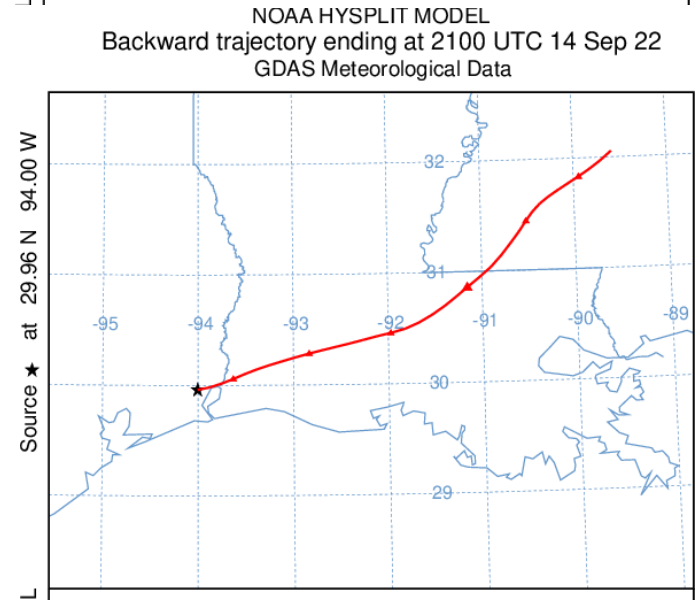
#	Ozone Action Day	Ozone Exceedance Day	Monitors and Max 8-Hr Values (ppb)
1	No	Thursday, May 26	Sabine Pass (72), Port Arthur$_S$ (72), Hamshire (71)
2	Yes	Friday, May 27	Sabine Pass (79)
3	Yes	Saturday, May 28	Mauriceville (82), Sabine Pass (78), Nederland (74), West Orange (73)
4	No	Wednesday, September 14	Nederland (79), Airport (71)

Beaumont/Port Arthur 2022 8-Hour 70 ppb Ozone Exceedances









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2022 Daily Maximum 8-Hour Ozone
Ozone Action Day Season

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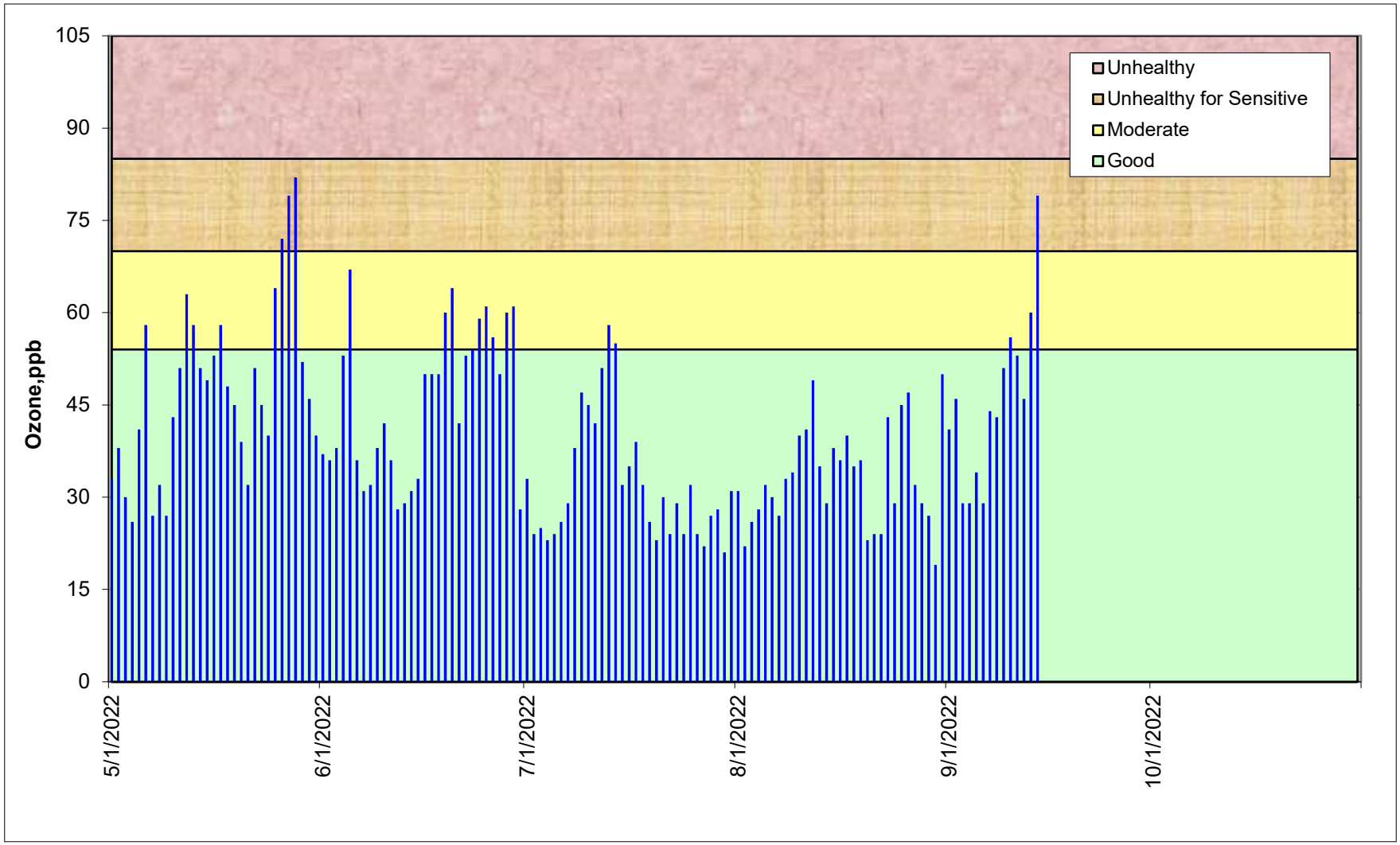

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Average 4th Highest 8-Hour Ozone Value (ppb)

(Attainment when all design values ≤ 70 ppb)

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Monitor	2020 *4th High*	18-20 ***Design Value***	2021 *4th High*	19-21 ***Design Value***	2022 *4th High*	*2022 trigger*	20-22 ***Design Value***
T-Beaumont	59	64	65	63	59	*89*	61
T-West Orange	62	66	61	62	59	*90*	60
T-Port Arthur	57	64	65	62	58	*91*	60
T-Hamshire	62	65	62	63	61	*89*	61
S-Sabine Pass	62	66	60	63	62	*91*	61
S-Airport	60	68	66	66	60	*87*	62
S-Mauriceville	67	67	62	64	65	*84*	64
S-Port Arthur	63	67	63	64	64	*87*	63
T-Nederland	57	62	64	61	63	*92*	61

NAAQS: 70 ppb

As of 9/14/22

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South East Texas Regional Planning Commission Environmental (SETRPC) Initiatives

Among the factors that contribute to the successful growth of a community, quality of life is certainly of major importance. Quality of life takes on a variety of forms, including desirable and affordable housing, effective educational systems, fulfilling employment, and a robust social and civic activity atmosphere. Other aspects of quality of life contribute as well, like the availability of easy to navigate transportation systems, a variety of retail and commercial offerings, and recreational venues.

All of these quality of life issues is potentially impacted by the environment in which they reside. The effects of environmental issues are far-reaching within a community and need ongoing attention for the successful growth of a community. In addition to the concerns for health and safety of work environments, there are significant concerns for air and water quality within a community that is seeking to grow and provide its citizens with a sustainable quality of life.

A significant environmental concern for the Beaumont/Port Arthur/ Orange area (BPAO) is the overall air quality, given the presence of major industrial facilities in the area, along with the increasing population and automobile traffic. Industrial and vehicular activity contribute pollutants and combined with other natural sources, can degrade the quality of the ambient air which consequently can lead to loss of enjoyment of outdoor activities, the potential for long-term health effects, and acute effects on the health of sensitive groups.

Air Monitoring Station - Port Arthur

Since the advent of the US Environmental Protection Agency -EPA "Clean Air Act of 1970", the Federal and State environmental agencies have identified and classified pollutants by their ability to affect the health and welfare of people. They have established standards to identify geographical areas where action needs to be taken to improve air quality. Given that these actions can be quite significant regarding the specific issues of concern, more extensive pollution control measures may be required. Such measures can restrain traditional planning for economic activities and are ultimately perceived as roadblocks for community growth. This often leads to a challenge for community leaders to balance the quality of life issues with the commercial viability of an area, while maintaining the health, safety and welfare of the citizens.

Since 1990, the South East Texas Regional Planning Commission (SETRPC) has worked with Beaumont/ Port Arthur/Orange industrial and governmental organizations to directly measure and evaluate air quality in metropolitan areas. This has proven to be a vitally important scientifically based process for assessing the current status of air quality in our region. Further, the evaluation of air quality in our communities has led to positive resolution of issues of concern while providing a platform for long-term community planning.

While the primary responsibility for evaluating air quality standards compliance lies with the US EPA and the Texas Commission on Environmental Quality (TCEQ), these agencies welcome and rely on supplemental information gathering from organizations such as South East Texas Regional Planning Commission (SETRPC) to augment their efforts to protect the health and welfare of the people of the Beaumont/Port Arthur/ Orange area. The SETRPC air monitoring network is located in several communities in the area and the air quality data that are produced are shared with and posted on the TCEQ statewide air quality information website. The TCEQ staff regularly provide oversight and independent auditing of the air quality measurements provided by the SETRPC's contractor-AECOM which has resulted in an extensive amount of air quality data that have served and continues to serve the interests of the local communities.

As of late 2020, the BPAO is in compliance with all national and state air quality standards. There are also no special study areas in effect, such as the TCEQ Air Pollutant Watch List program that identifies areas of concern that would require additional resources to evaluate for potential problems. Traditionally, this has not always been the case in BPAO, and the past use of government and SETRPC data were vital in resolving the concerns.

Air Monitoring Station - Port Arthur

While the track record has been successful and the current air quality situation is largely stable, the ongoing need for vigilance is a key component in enabling local communities to continue to grow and ensure that the environmental impact on quality of life remains within regulatory standards. SETRPC is committed to continuing to contribute vital information to the regulatory and industrial entities serving BPAO to enable sound planning and decision making for the benefit of all citizens of the Beaumont/ Port Arthur/Orange area communities.

For more information on the ways in which SETRPC supports environmental issues, please contact Bob Dickinson at bdickinson@setrpc.org.