South East Texas Regional Planning Commission (SETRPC)
Air Quality Advisory Committee
MCM Elegante Hotel, Fountainview Room
2355 IH-10 South, Beaumont, TX
Thursday, May 16, 2019
11:30 a.m.

AGENDA

1) Welcome and Introduction

2) Environmental Progress - An Industry Commitment
   - Eric Miller, Environmental Program Manager, TOTAL - Houston, TX

3) Overview of South East Texas Regional Planning Commission (SETRPC)
   Meteorological and Air Monitoring Network
   - James Clarke, AECOM - Austin, TX

4) Report on 2018 SETRPC Ozone Action Day Program
   - Bob Dickinson, SETRPC - Beaumont, TX

5) Other Business

6) Questions and Answers

7) Set Next Meeting Date

8) Adjournment
Environmental Report
Over 20 Years of Progress

Cleaner Air
For All of Us
An Industry Commitment

May 16, 2019
Environmental Report
Over 20 Years of Progress

Industry of Southeast Texas Continues Progress Improving Air Quality

Southeast Texas Emissions Reductions – 60%

May 16, 2019
Total Annual Emissions

Reduced 60% Since 1998

That's a reduction of 82K tons, especially significant considering 67% of ISET plants reported an average net increase of over 48% in production/output during this time period plus new production coming online.
Environmental Report
20 Years of Progress

NOx Emissions

76% REDUCTION

- Low NOx Burner Installation and Conversion
- Heater/Boiler Upgrades
- Selective Catalytic Reduction (SCR)
- Flare Gas Recovery Systems
- Replacement of Boilers with Efficient Cogeneration Units

May 16, 2019
Environmental Report
20 Years of Progress

VOC Emissions

60% REDUCTION

- Upgrade Valves to Reduce Process Leaks
- Piping Integrity Projects
- Flare Gas Recovery Projects
- VOC Reduction Projects
- More Aggressive Leak Detection and Repair Programs

May 16, 2019
Environmental Report
20 Years of Progress

SO$_2$ Emissions

50% REDUCTION

- Sulfur Recovery and Reduction Projects
- Compressor Upgrades
- Flare Gas Recovery Systems
- FCC Unit Controls
- Plant Reliability Improvements
- Replacement of Boilers with Efficient Cogeneration Units

May 16, 2019
Environmental Report
20 Years of Progress

SARA Air Emissions

56% REDUCTION

2012 & 2013 increase from 2011 may be due to reinstating of H$_2$S in 2012
Environmental Report
Over 20 Years of Progress

Reportable Emissions Events

76% REDUCTION

The number of emissions events have declined 76% despite new plant additions and existing facility expansions.
Environmental Report
Over 20 Years of Progress

Total Emissions from Emissions Events

95% REDUCTION

95% reduction in emissions from unplanned events.
AMBIENT AIR MONITORING
Shows Continuous improvement

- Attainment with all National Ambient Air Quality Standards (NAAQS)

- Air toxic levels are consistently below the TCEQ Health Effects Screening Levels

- No pollutants are on the TCEQ Air Pollutant Watch List.
AMBIENT AIR MONITORING

The Southeast Texas Regional Air Monitoring Network

- Partially Sponsored by Southeast Texas Industry through voluntary contributions to SETRPC
- Approximately matches the air monitoring assets allocated to the region by TCEQ
  - 4 Ozone monitors
  - 4 NOX monitors
  - 8 Air toxics monitors
- Data fed directly from monitoring stations to TCEQ website

Source: SETRPC

May 16, 2019
The Southeast Texas Regional Air Monitoring Network

4 SETRPC Ozone/NO\textsubscript{X} monitoring sites expand the coverage provided by TCEQ monitors and fills important gaps

(Since 1989)

Source: SETRPC
8 SETRPC air toxics sampling sites provide data to compare with TCEQ health effects screening levels and also measure some of the chemicals that react to form ozone.
AMBIENT AIR MONITORING
NOx Trends for SETRPC Monitoring Site

The SETRPC Port Arthur Site was installed in 2004.
AMBIENT AIR MONITORING
VOC Trend (Propylene)

80% AVERAGE REDUCTION IN MONITORED PROPYLENE LEVELS

Source: SETRPC
## AMBIENT AIR MONITORING

### Ozone Trend

**Monitored Ozone Levels**

<table>
<thead>
<tr>
<th>Year</th>
<th>Ozone Design Value (parts per billion)</th>
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<td>1992</td>
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<td>2017</td>
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<td>2018</td>
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</table>

**End of 3-Year Period**

- Met the 1997 EPA Standard
- Designated Attainment with the 2008 EPA Standard
- Met the 2015 EPA Standard

**38% REDUCTION IN THE MONITORED OZONE**

**May 16, 2019**

Source: SETRPC
96% REDUCTION IN EMISSIONS FROM UNPLANNED EVENTS
Dropped from 34 in 1998 to only 3% of authorized emission levels in 2007

AMBIENT AIR MONITORING
SO₂ Trend

Monitored SO₂ Levels

End of 3-Year Period

SO₂ Design Value (parts per billion)


Beaumont Downtown
Port Arthur

88% REDUCTION IN BEAUMONT AND 41% REDUCTION IN PORT ARTHUR SINCE 2008

Source: SETRPC
How was this achieved?

- **Air Emission Reduction Projects**
  - Industry Spent over $775 Million in the last 5 years
    - Flare Gas Recovery System Installation and Upgrades
    - Sulfur Recovery Plant Upgrades
    - Flare monitoring Upgrades
    - Flare SO2 Reduction Project
    - NOx Controls – Heater/Boiler Upgrades
    - Installations to reduce fugitive emissions
  - New projects being identified over next 5 years

- **Plant Reliability**
  - Upgrading of older facilities with new efficient technology
  - Robust Mechanical Integrity Programs
  - Trained and Committed People
Continuing Our Partnership

The partnership with all stakeholders continues to be vital to our Communities’ economic prosperity and quality of life

- Region meets 2015 ozone standard - 70 ppb; science based approach for NAAQS
- Continued support from TCEQ for efficient permitting process for new projects
- Support legislation to streamline the permitting process to lessen the time for approval
- Continued partnership with all of our stakeholders for future development of projects, future growth and quality of life in our area
<table>
<thead>
<tr>
<th>Participating Companies</th>
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<tr>
<td>1. Air Liquide</td>
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<td>2. Air Products</td>
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<td>3. Arkema Chemicals</td>
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<td>4. BASF BMT Agro</td>
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<td>5. BASF Total Petrochemicals LLC (BTP)</td>
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<td>6. Chemtrade Logistics</td>
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<td>9. Dow Beaumont Works</td>
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<td>10. DuPont – Sabine River Works</td>
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<td>11. Entergy</td>
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<td>12. ExxonMobil Chemical BMCP</td>
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<td>13. ExxonMobil Chemical BPEP</td>
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<td>14. ExxonMobil Refinery BMRF</td>
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<td>15. Firestone Polymers</td>
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<td>16. Flint Hills Resources</td>
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<td>17. Optimus steel</td>
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<td>18. Goodyear Tire &amp; Rubber</td>
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<td>19. Huntsman</td>
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<td>20. Arlanxeo</td>
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<tr>
<td>21. Lucite International</td>
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<td>22. Motiva Port Arthur Refinery</td>
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<td>23. OCI Beaumont</td>
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<td>25. Oxbow Calcining</td>
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<td>26. South Hampton Resources</td>
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<td>27. Sunoco</td>
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<td>28. TPC</td>
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<td>29. Total Petrochemicals &amp; Refining USA, Inc. – Port Arthur Refinery</td>
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<td>30. Total Petrochemicals - TCV Beaumont</td>
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<td>31. Veolia ES Technical Solutions</td>
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<td>32. Valero</td>
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</tbody>
</table>
Beaumont/Port Arthur MSA
AIR QUALITY MONITORING
DATA

STATUS and TRENDS

May 16, 2019
Presentation Topics

– Ozone \((O_3)\)

– Sulfur Dioxide \((SO_2)\)

– Volatile Organic Compounds (VOCs)
Southeast Texas Area Air Monitoring Sites

- Mauriceville (SETRPC)
- Orange (TCEQ)
- West Orange (TCEQ)
- Beaumont (TCEQ)
- Nederland (TCEQ)
- Airport (SETRPC)
- West Port Arthur (TCEQ)
- Port Arthur (SETRPC)
- Port Arthur 7th St (TCEQ)
- Sabine Pass (SETRPC)

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 Memorial MS.
OZONE DATA
Status 2018
Beaumont/Port Arthur (BPA) is currently in compliance with the 2015 revised U.S. EPA Ground-Level Ozone National Ambient Air Quality Standard (NAAQS) of 70 ppb

- No immediate action required
- Continuing to monitor provides early information on possible problems
- NAAQS compliance is based on three-year averaged design values
NAAQS-related Definitions:
A “design value” is a statistic that describes the air quality at a given location relative to the NAAQS. For ozone this is the 99th percentile (4th highest) daily 8-hour maximum average for a given year. Design values are typically averaged for three consecutive years to assess compliance with a NAAQS.

A “critical value” is a measured concentration for a given year that will lead to an exceedance for the three-year period ending that year (i.e., it is a value not to exceed to maintain compliance)
IMPLEMENTING THE 2015 OZONE STANDARD:
Area Designations

– 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 9 ozone monitors but TCEQ considers only 7 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 based on 2014-2016 data from all monitors

– Nederland and Hamshire had the highest averaged design values: 68 ppb

– The expectation of BPA continuing to meet the standard in future years is solid based on the values we have seen in 2017 and 2018, although 2018 was the most significant ozone season seen in recent years
## BPA Compliance with the 2015 Ozone NAAQS

The 2015 NAAQS is met at a monitoring site when the 4\textsuperscript{th} highest daily maximum 8-hour ozone average, averaged over 3 consecutive years (i.e., the design value for 2014-2016), does not exceed 70 ppb.

- No BPA monitor recorded a 2014-2016 design value over 68 ppb.
- No BPA 2016-2018 based design value exceeded 68 ppb, indicating probability of continuing compliance.

<table>
<thead>
<tr>
<th>Monitoring Site</th>
<th>Fourth Highest Daily Max 8-hour Average (ppb)</th>
<th>2014-2016 Average (ppb) Attainment Status Designation Value</th>
<th>2016-2018 Average (ppb)</th>
</tr>
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<tbody>
<tr>
<td>SETRPC Airport</td>
<td>62 65 59 64 72</td>
<td>62</td>
<td>65</td>
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<tr>
<td>Nederland</td>
<td>67 74 63 65 67</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>SETRPC Sabine Pass</td>
<td>67 64 67 67 71</td>
<td>66</td>
<td>68</td>
</tr>
<tr>
<td>Hamshire</td>
<td>67 68 69 63 69</td>
<td>68</td>
<td>68</td>
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<tr>
<td>West Orange</td>
<td>63 62 58 61 73</td>
<td>61</td>
<td>64</td>
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<tr>
<td>Port Arthur West</td>
<td>63 75 64 64 70</td>
<td>67</td>
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<tr>
<td>Beaumont</td>
<td>65 69 60 67 68</td>
<td>65</td>
<td>65</td>
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<tr>
<td>SETRPC Mauriceville(^1)</td>
<td>68 65 60 67 68</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>SETRPC Port Arthur(^1)</td>
<td>56 70 59 67 71</td>
<td>62</td>
<td>66</td>
</tr>
</tbody>
</table>

\(^1\)This monitoring site information is not included in NAAQS designation determination.
Number of Days 8-hr Ozone Daily Max > 0.070 ppm
2000-2019
in Beaumont-Port Arthur, TX

Note: Based on ALL sites
Source: U.S. EPA AirData <https://www.epa.gov/air-data>
Generated: April 15, 2019
SULFUR DIOXIDE DATA
Status to Date
TCEQ SO\textsubscript{2} Monitoring Site – Jefferson County

- Site designation CAMS 1071, located at 7\textsuperscript{th} Street and Texaco Island Road in Port Arthur, Jefferson County

- Established in late 2016 to determine NAAQS compliance; TCEQ will use 2017-2019 data to demonstrate attainment status of 2010 SO\textsubscript{2} NAAQS (99\textsuperscript{th} Percentile of 1-hour daily maximums, averaged over 3 years, ≤ 75 ppbv). The 99\textsuperscript{th} Percentile is equivalent to the fourth highest value for an annual monitoring data set.

- 99\textsuperscript{th} Percentile value for 2017 was 86 ppbv; for 2018 the value was 61 ppbv

- 2019 results will need to be ≤78 ppbv (Critical Value) to demonstrate compliance

- Other TCEQ, SETRPC SO\textsubscript{2} monitoring sites are present in Jefferson County but CAMS 1071 has highest readings overall
2017 through 2019 YTD to Date Daily 1 Hour Maximum Values in Beaumont - Jefferson County

Daily 1hr max SO2 (ppb)


75ppb NAAQS

Air Quality Status and Trends
TCEQ SO₂ Monitoring Site – Orange County

– CAMS 1083, located at 2239 1st Street in City of Orange, Orange County

– Established in late 2016 to monitor NAAQS compliance; TCEQ will use 2017-2019 data to demonstrate attainment of SO₂ NAAQS (99th Percentile of 1-hour daily maximums, averaged over 3 years, ≤ 75 ppbv). The 99th Percentile is equivalent to the fourth highest value for an annual monitoring data set

– 99th Percentile value for 2017 was 80 ppbv; value for 2018 was 84 ppbv

– 2019 results will need to be ≤ 61 ppbv (Critical Value) to demonstrate compliance

– No other active SO₂ monitoring sites in Orange County
VOLATILE ORGANIC COMPOUNDS (VOCs) DATA
Status 2018
Summary of VOC Sampling at SETRPC Network

Stainless steel canister sampling at 7 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)
acetaldehyde, 1,3-butadiene, benzene, and isoprene are the only chemical compounds found at average levels above one-tenth of the respective AMCV
Average Benzene Levels in BPA for 2018

VOC Benzene Yearly Averages, ppbv

- West Orange: 0.05
- Mauriceville: 0.13
- Airport: 0.15
- Beaumont: 0.34
- Port Neches: 0.25
- Cove School: 0.29
- Port Arthur: 0.03

AMCV
Continuous Monitoring Summary for Hourly Benzene, Styrene, and 1,3-Butadiene Levels at Jefferson Memorial M.S. Monitoring Site 2018

<table>
<thead>
<tr>
<th></th>
<th>Short-Term AMCV (ppb)</th>
<th>Max 1-Hour Value (ppb)</th>
<th>Long-Term AMCV (ppb)</th>
<th>2018 Average (ppb)</th>
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</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>180</td>
<td>49.8</td>
<td>1.4</td>
<td>0.31</td>
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<tr>
<td>Styrene</td>
<td>5,200</td>
<td>3.8</td>
<td>110</td>
<td>0.13</td>
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<tr>
<td>1,3-Butadiene</td>
<td>1,700</td>
<td>20.6</td>
<td>9.1</td>
<td>0.19</td>
</tr>
</tbody>
</table>

Max 1-Hour Values:
Benzene 4/27/18, 2:00; wind direction 37° (NE), wind speed 1.4 mph
Styrene 8/13/18, 11:00; wind direction 176° (S), wind speed 7.2 mph
1,3-butadiene 11/1/18, 19:00; wind direction 323° (NW), wind speed 5.1 mph
Questions/Comments

For more information, including access to the SETRPC Air Quality Database web site, which contains 30 years of air quality and meteorological data from the Beaumont/Port Arthur area, please contact Bob Dickinson at bdickinson@setrpc.org

James Clarke
Senior Project Manager
AECOM
james.o.clarke@aecom.com
# 2018 Ozone Action Day Program
May 1 – October 31

<table>
<thead>
<tr>
<th>Ozone Action Day</th>
<th>Max 8-Hr</th>
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<tr>
<td>April 28</td>
<td>77</td>
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<tr>
<td>May 7</td>
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<td>May 15</td>
<td>72</td>
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<td>May 16</td>
<td>73</td>
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<td>July 26</td>
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<td>July 27</td>
<td>87</td>
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<td>July 28</td>
<td>73</td>
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<td>August 2</td>
<td>60</td>
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<td>August 3</td>
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<td>August 23</td>
<td>71</td>
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<table>
<thead>
<tr>
<th>Ozone Exceedance But No Ozone Action Day</th>
<th>Max 8-Hr</th>
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<tbody>
<tr>
<td>May 8</td>
<td>73</td>
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<tr>
<td>May 17</td>
<td>77</td>
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<table>
<thead>
<tr>
<th>Ozone Exceedance Before/After Ozone Action Day Season</th>
<th>Max 8-Hr</th>
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</thead>
<tbody>
<tr>
<td>April 25</td>
<td>77</td>
</tr>
</tbody>
</table>
# Ozone Action Day | Ozone Exceedance Day | Monitors and Max 8-Hr Values (ppb)
--- | --- | ---
1 | Before Season | Wednesday, April 25 | Mauriceville (77), Sabine Pass (76), West Orange (75), Hamshire (72), Beaumont (71), Airport (71)
2 | Yes | Saturday, April 28 | Mauriceville (77), Beaumont (75), Airport (73), Nederland (73), West Orange (72), Sabine Pass (71)
3 | No | Tuesday, May 8 | West Orange (73), Mauriceville (72)
4 | Yes | Tuesday, May 15 | Port Arthur (72), Airport (72)
5 | Yes | Wednesday, May 16 | West Orange (73), Mauriceville (72)
6 | No | Thursday, May 17 | Hamshire (77), Port Arthur (77)
7 | Yes | Thursday, July 26 | Port Arthur (78), Port Arthur (75), Airport (75), Sabine Pass (74)
8 | Yes | Friday, July 27 | Airport (87), Beaumont (83), Port Arthur (82), Port Arthur (80), West Orange (77), Nederland (76), Sabine Pass (71)
9 | Yes | Saturday, July 28 | West Orange (73)
10 | Yes | Thursday, August 23 | Port Arthur (71), Hamshire (71)
Beaumont/Port Arthur
2018 8-Hour 70 ppb Ozone Exceedances
2018 Daily Maximum 8-Hour Ozone Ozone Action Day Season

Ozone, ppb

- Unhealthy
- Unhealthy for Sensitive
- Moderate
- Good

Dates:
- 4/1/2018
- 5/1/2018
- 6/1/2018
- 7/1/2018
- 8/1/2018
- 9/1/2018
- 10/1/2018
## Average 4th Highest 8-Hour Ozone Value (ppb)
(Attainment when all design values $\leq 70$ ppb)

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<td>T-Beaumont</td>
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<td>67</td>
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**NAAQS: 70 ppb**

**As of 12/31/18**