



CITY OF SAN ANTONIO
METROPOLITAN HEALTH DISTRICT

Air Quality & Ozone Attainment



Community Health, Environment, & Culture Committee
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November 9, 2021

Outline



- Health & Environmental Impacts of Poor Air Quality
- Air Quality Monitoring & Status
- Ozone Attainment Master Plan
- Ozone Moderate Nonattainment

Health Impacts



Respiratory

- Asthma
- Chronic obstructive pulmonary disease
- Bronchitis
- Emphysema

Cardiovascular

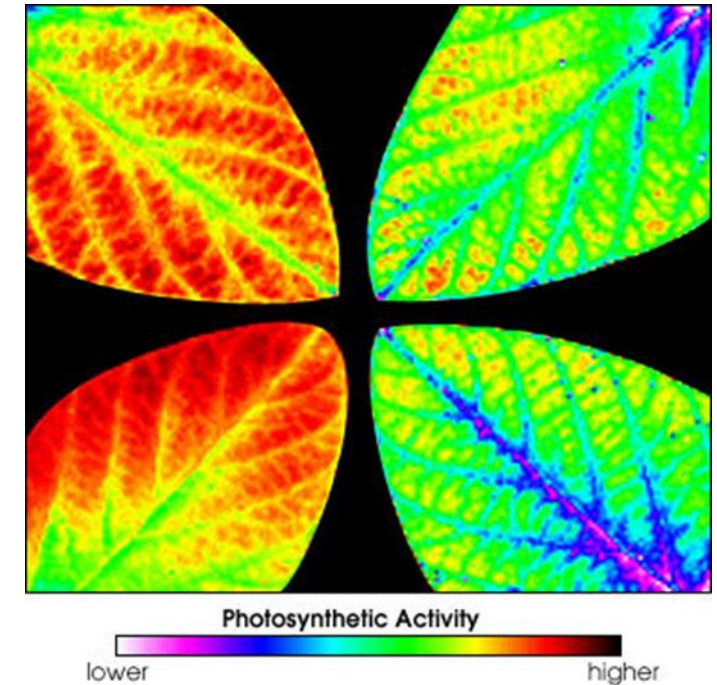
- Coronary Heart Disease
- Congestive Heart Failure
- Coronary artery disease



A Growing Threat to Environmental Biodiversity



- Air pollution to include Ozone damages plants and trees harming everything from soil microbes, to insects, to wildlife.
- Warmer weather increases ground-level Ozone, a problem that is predicted to worsen.
- Ozone does more damage to plants than all other air pollutants combined.



Fluorescence imaging reveals the difference in photosynthetic activity between soybean leaves grown in healthy conditions (left) and those grown in chambers with elevated ozone levels (right)

Source: Yale School of the Environment

Air Quality Monitoring & Status



- Metro Health operates and maintains 34 monitors at 20 different sites in Bexar, Wilson, and Karnes Counties.
- Monitor 5 Air Pollutants
 - Nitrogen Dioxide, Particulate Matter, Sulfur Dioxide, Carbon Monoxide, and Ozone
 - All in attainment except for Ozone
- Air Pollution Control Program



Ozone Marginal Non-Attainment



Background

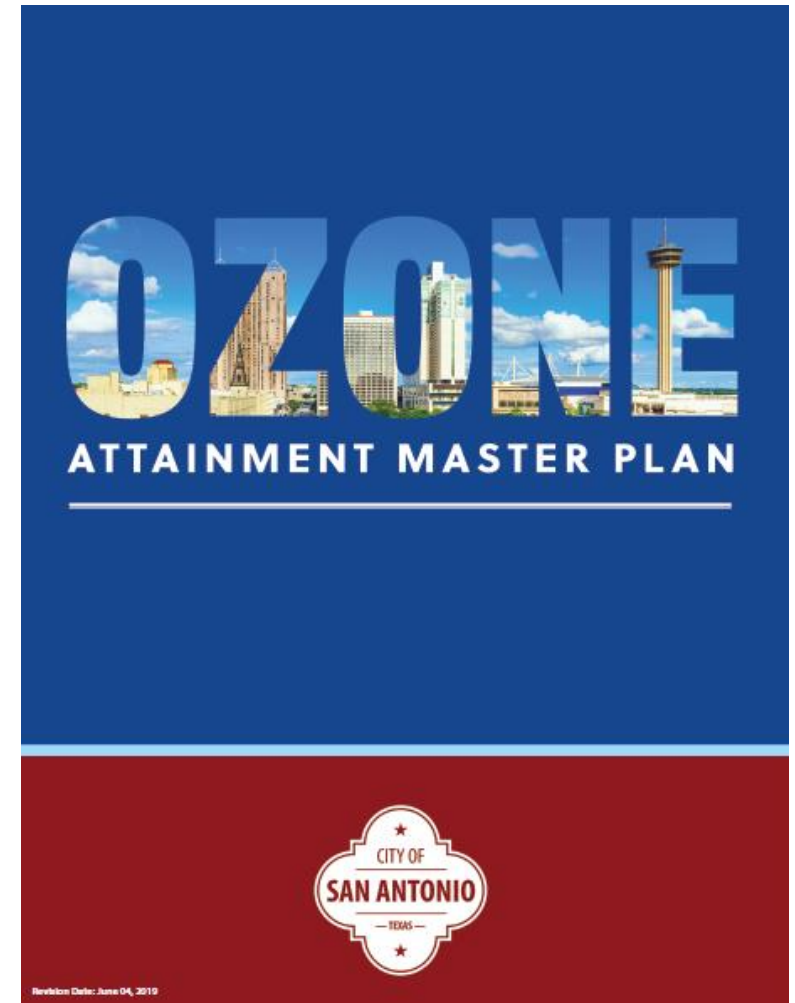
- The U.S. Environmental Protection Agency (EPA) lowered the ozone standard from 75 parts per billion (ppb) to 70ppb on October 1, 2015.
- On September 24, 2018, the EPA officially announced Bexar County in “Marginal Nonattainment.”
- Marginal Nonattainment communities are those closest to being within the attainment standard of 70 ppb.



Ozone Attainment Master Plan



- Communication and Marketing
- Volkswagen (VW) Beneficiary Mitigation
- Ozone Best Practices
- Point Source Identification and Mitigation
- Business Community
- Policy, Advocacy, and Funding



Identification of Point Sources and Mitigation



Southwest Research Institute

Point Source Identification Findings

- Even well-managed sites can still unknowingly emit ozone precursors
- Helicopter monitoring did not uncover any large emission sources that were not already registered with TCEQ
- There is no “smoking gun”



SOUTHWEST RESEARCH INSTITUTE

Mitigation and Control Strategies

- Quantify, rank and reduce emissions from NO_x and VOCs
- Identify and eliminate fugitive emission sources
- Improve employee outreach, education, and community involvement
- Use alternative fuels and energy sources

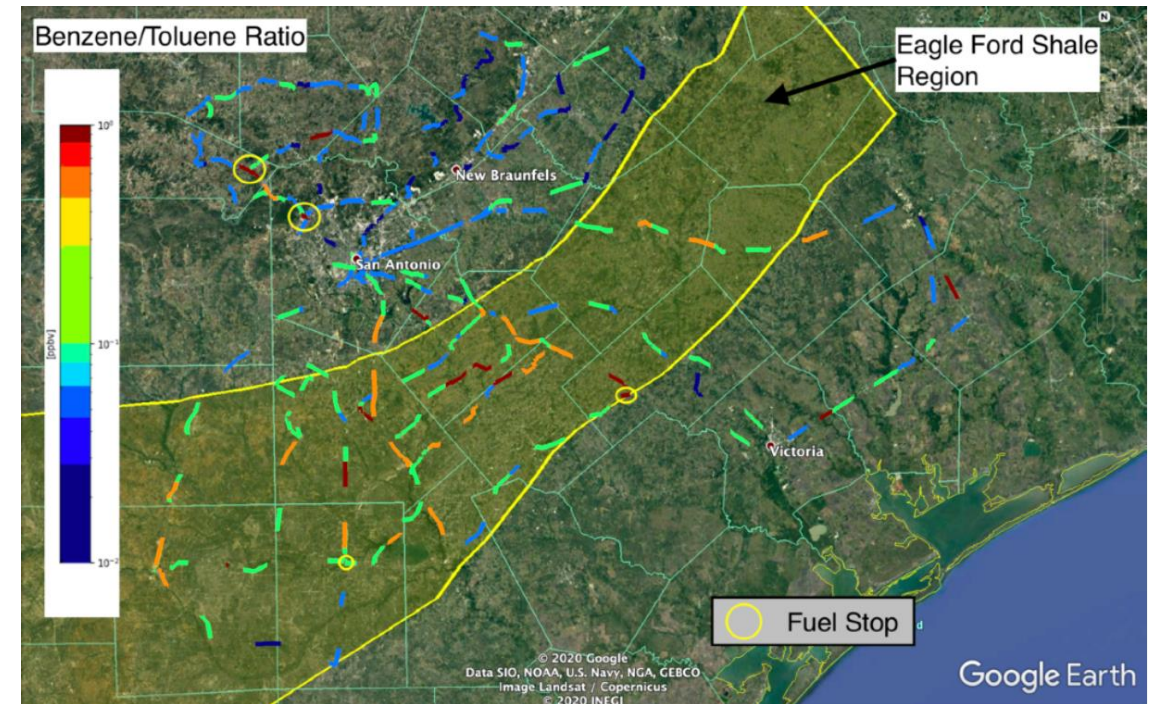
Identification of Point Sources



Entanglement Technologies, Inc.

Out of County Study Findings

- Highest concentrations were detected within Bexar county
- A predominance of oil- and gas-related emissions were detected within the Eagle Ford region
- Elevated NO_x concentrations were found in areas of high vehicle traffic



Compound ratios provide a straightforward means of preliminary source attribution. Of the compounds measured, the benzene/toluene ratio provides the highest sensitivity. A B/T ratio ~ 1 is consistent with a variety of oilfield emissions. Eagle Ford showed consistently enhanced B/T ratios over the course of multiple days and repeated measurements. This is consistent with the known large-scale hydrocarbon extraction within this region.

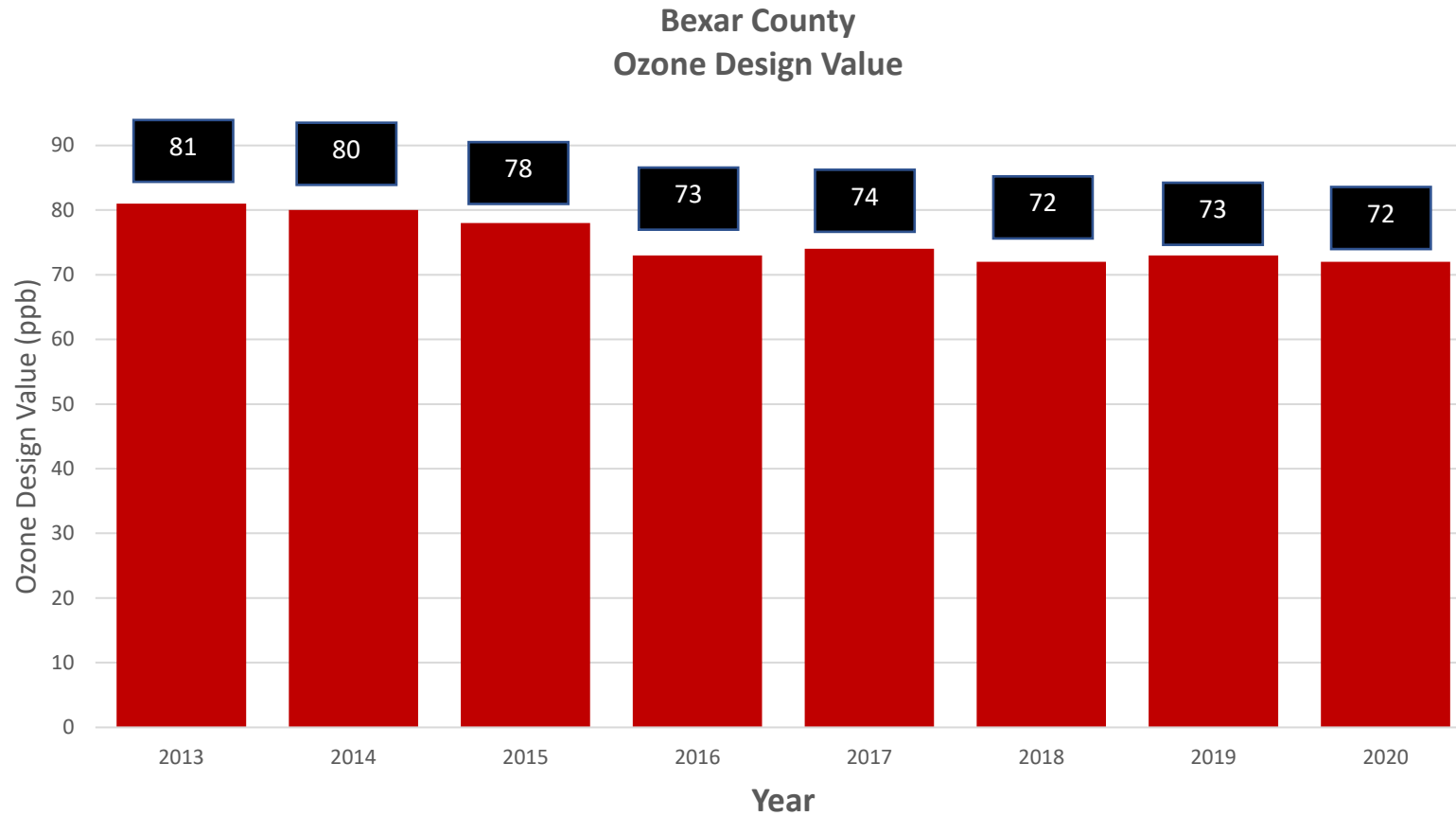
Source: Entanglement Technologies, Inc.



Moderate Nonattainment

- Bexar County did not achieve Ozone attainment.
 - The 2020 Design Value was **72 ppb** (avg of 2018, 2019, 2020)
- EPA will most likely reclassify Bexar County to Moderate Nonattainment status in early 2022.

Bexar County Ozone Design Values (2013-2020)



Moderate Nonattainment – EPA Requirements



- Nonattainment New Source Review Permitting
- Attainment Demonstration SIP Revision
- Reasonable Further Progress
- Vehicle Emissions Inspection and Maintenance

Moderate Nonattainment Designation



Metro Health will focus on:

- Ozone Technical Committee
- Business and community engagement and education
- Gas Cap Replacement Initiative



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Thank you!

Questions?