



February Air Quality Health Monitoring Task Force Meeting

North Central Texas Council of Governments

February 26, 2021

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North Central Texas
Council of Governments



City of Dallas

Dallas Air Quality Initiatives

**North Central Texas Council of
Governments
Task Force
February 26, 2021**

Susan Alvarez
Office of Environmental Quality &
Sustainability



- Why it Matters?
- State of the Science
- Related CECAP Actions
- Air Quality Initiatives
 - TCEQ Regulatory Program
 - Breathe Easy Dallas
 - SW Medical District
 - SM Wright
 - Air North Texas
 - Emission Reductions





WHY IT MATTERS.....



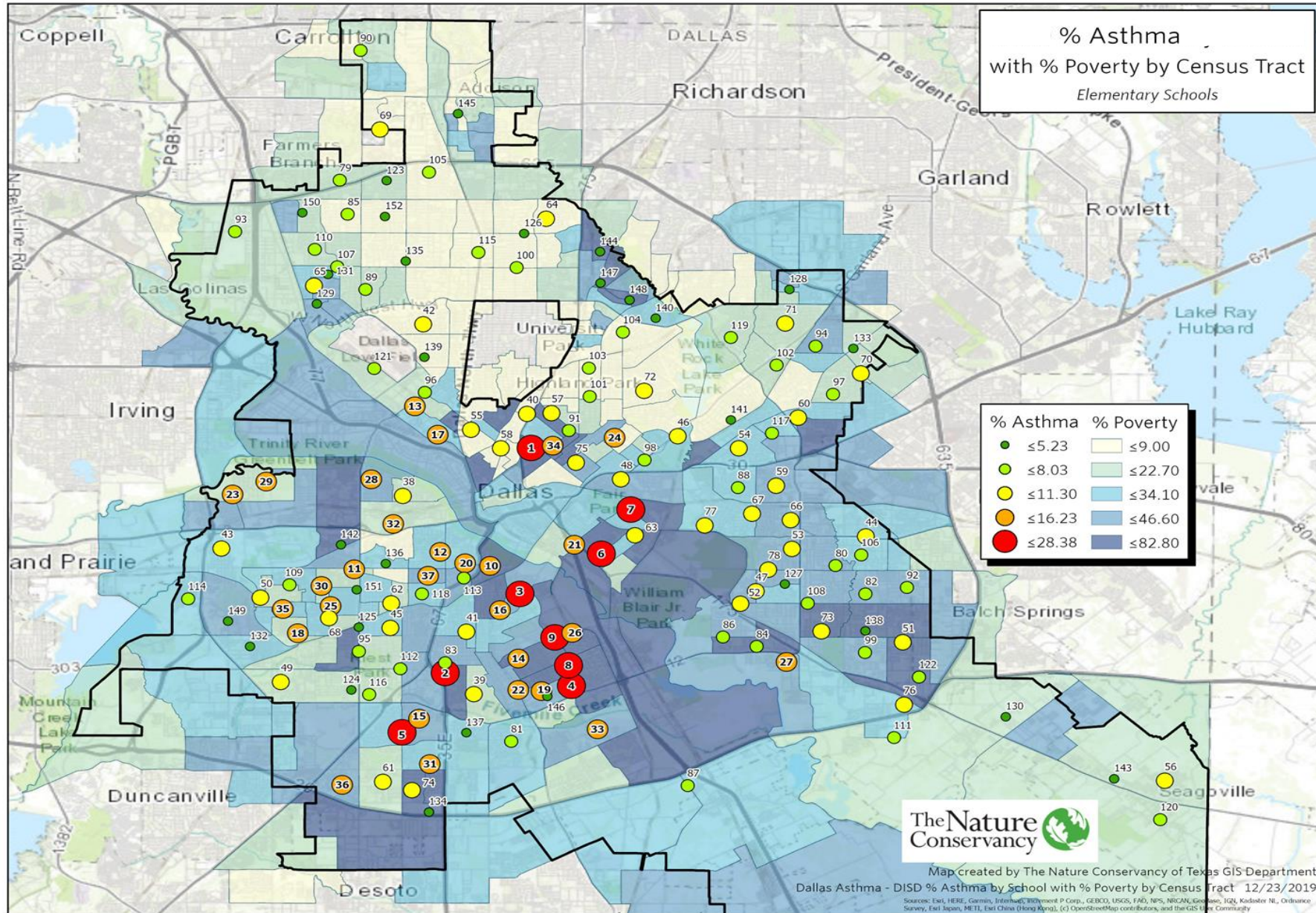
Why It Matters



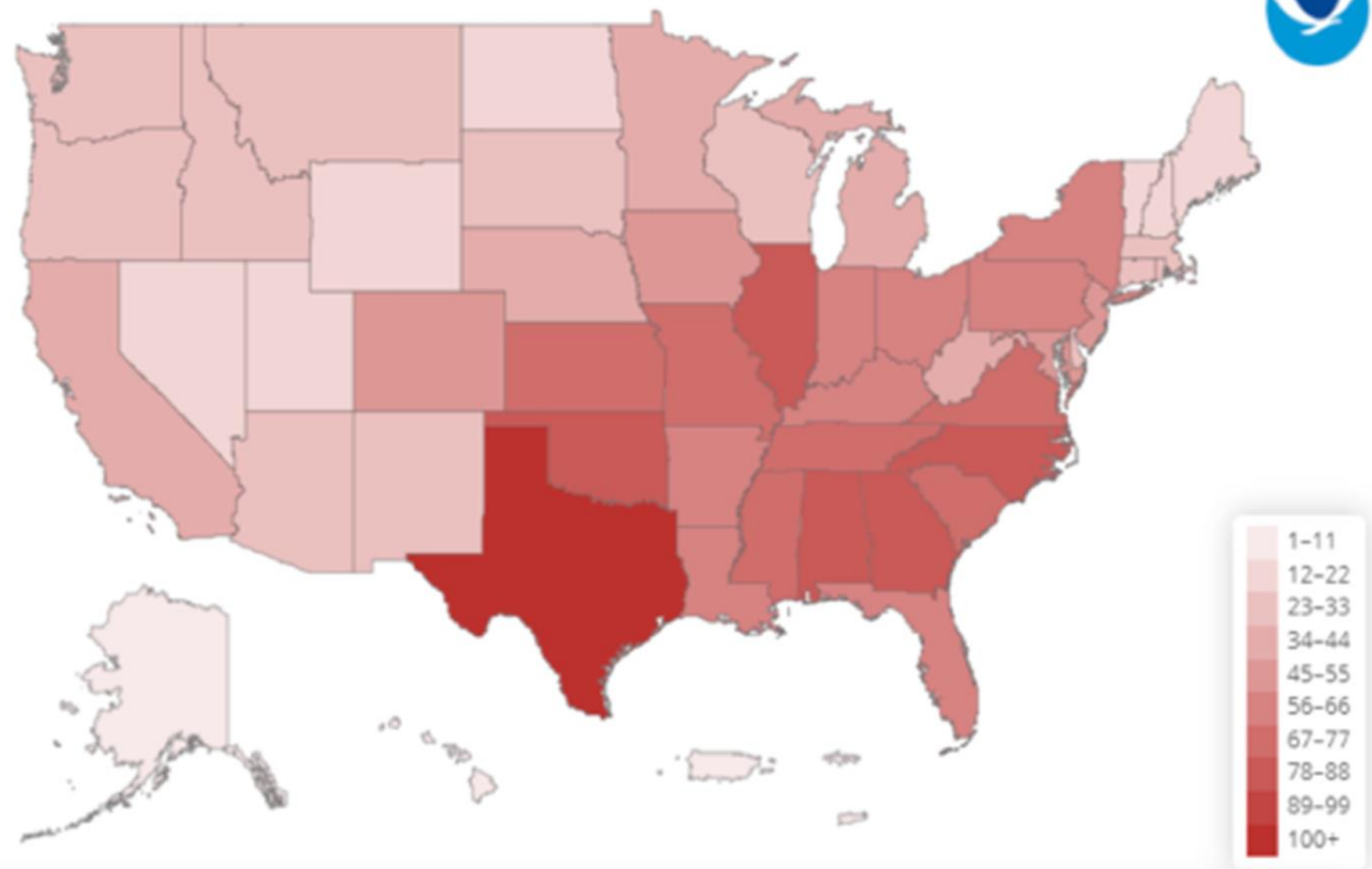
- While air quality in North Texas is generally improving, in north Texas, ten counties including **Dallas consistently do not meet the 2008 Federal air quality criteria for ground-level ozone.**
- Recent information from NCTCOG indicates region is ***moving from designation of “non-attainment” to “severe non-attainment”*** based on 2019-2020 data, supporting need for action NOW.
- In 2018, Dallas- Fort Worth was ranked 16th in the American Lung Association’s *25 Most Ozone-Polluted Cities.*
- The report estimates 159,749 cases of pediatric asthma, 432,736 cases of adult asthma, and 4,058 cases of cardiovascular diseases.



Air Quality Equity Concerns



1980-2019 Billion-Dollar Weather and Climate Disasters (CPI-Adjusted)



United States

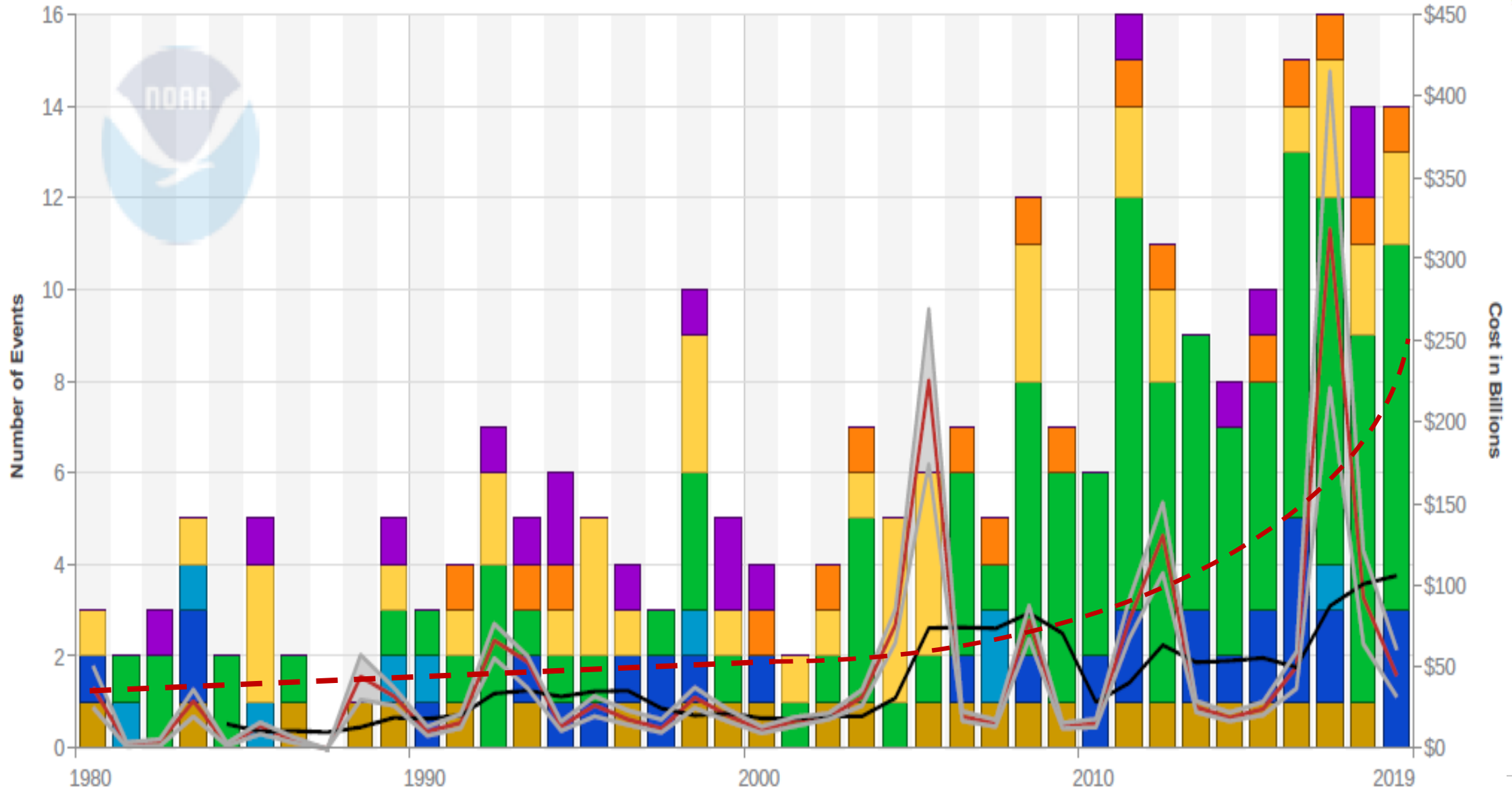
Drought: 26	Flooding: 32	Freeze: 17	Severe Storm: 113
Tropical Cyclone: 44	Wildfire: 17	Winter Storm: 17	All Disasters: 1,258



United States Billion-Dollar Disaster Events 1980-2019 (CPI-Adjusted)



- Drought Count
- Flooding Count
- Freeze Count
- Severe Storm Count
- Tropical Cyclone Count
- Wildfire Count
- Winter Storm Count
- All Disasters Cost
- Costs 95% CI
- 5-Year Avg Costs



Updated: January 8, 2020



STATE OF THE SCIENCE.....

“There is no value to any measurement or measured data unless you know by what measure”

– W. Edwards Deming



Criteria Pollutants & NAAQS



- There are major air pollutants that the EPA has designated as criterial pollutants
- Each of these pollutants is a health risk
- The EPA uses the latest research available to designate safe levels of these pollutants
- This safe level is called the National Ambient Air Quality Standard or NAAQS





Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide		Primary	8 hours	9 ppm	Not to exceed more than once per year
			1 hour	35 ppm	
Nitrogen Dioxide		Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
			Annual	53 ppb	Annual Mean
Ozone		Primary	8 hours	70 ppb	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particulate	PM2.5	Primary	Annual	12 ug/m3	annual mean , averaged over 3 years
		Secondary	Annual	15 ug/m3	annual mean , averaged over 3 years
		Primary & Secondary	24 hour	35 ug/m3	98th percentile, averaged over 3 years
	PM10	Primary & Secondary	24 hour	150 ug/m3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3 hour	0.5 ppm	Not to be exceeded more than once per year



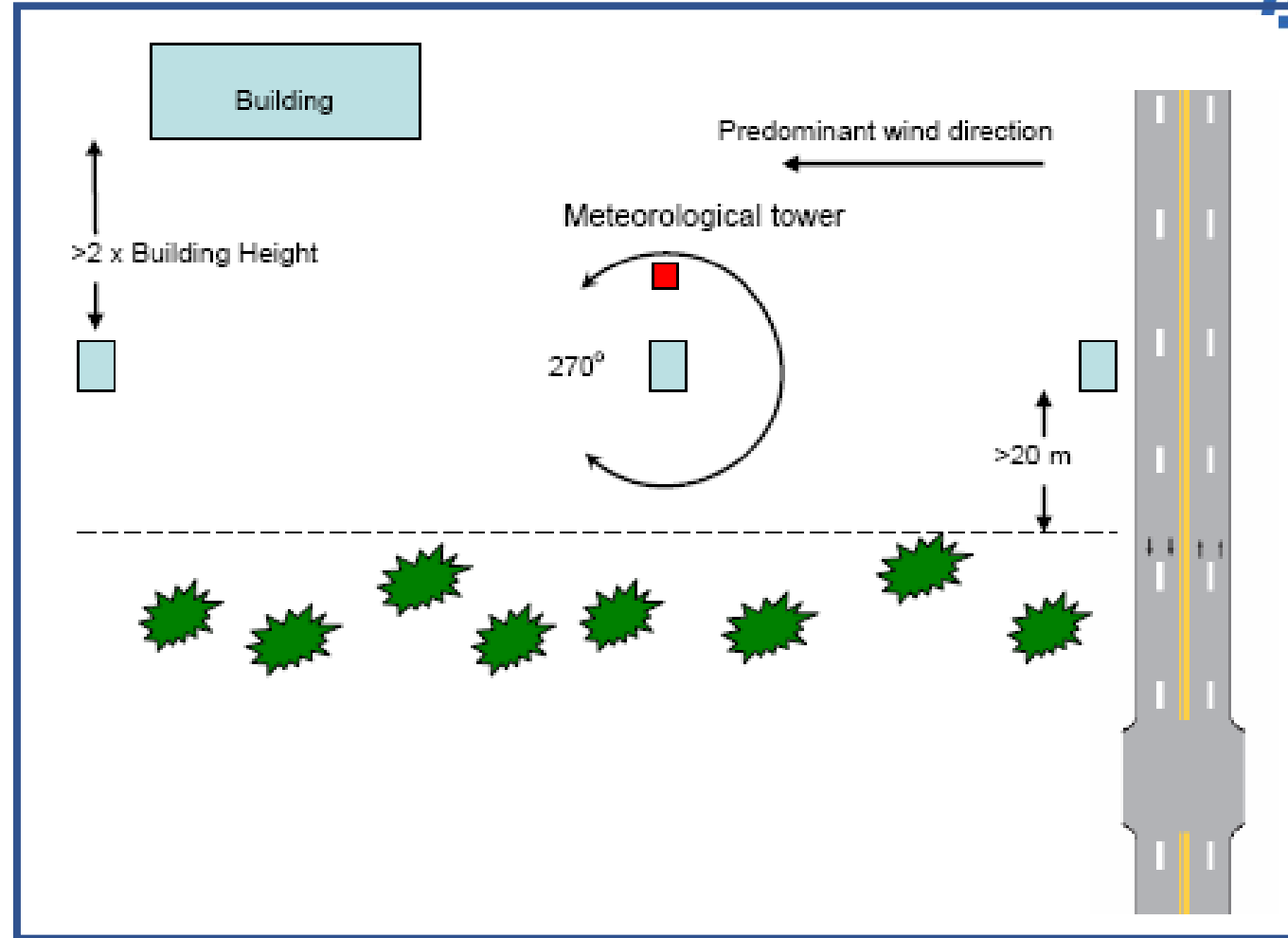
- A recent June 22, 2020, Memorandum concerning Air Quality Sensors prepared by Anne Isdale, the Principal Deputy Assistant Administrator of the EPA Office of Air and Radiation, discusses the use of air sensor data for National Ambient Air Quality Standard (NAAQS) compliance.
- It describes steps the EPA is taking to better understand the data quality, interpretation, and management of these Air Quality sensor data, including QAPPs to allow data qualification.
- The memo indicates that the EPA remains committed to promoting innovation and advancing technology and will take an “agile approach” in working with partners to conduct the necessary research to ensure efforts support understanding of new measurement and information technologies.



Air Quality Equipment Siting



- Topography
- Landuse
- Cover
- Prevailing Winds
- Potential Sources
- Potential for data anomalies



Source: FHWA. 2020.

https://www.fhwa.dot.gov/ENVIRONMENT/air_quality/air_toxics/research_and_analysis/near_road_study/protocol/protocol03.cfm



Calibration.....



Pollutant	Adjusted R ² Range Between the Calibrated AQY1 vs. Reference Monitor Data (mean and median value)	Reference Monitor Mean vs. Calibrated AQY1 Mean Difference in % (actual value)
O ₃	0.56 to 0.97 (mean = 0.84, median = 0.90)	-19% (5.2 ppb)
NO ₂	0.00 to 0.58 (mean = 0.35, median = 0.37)	+23% (1.7 ppb)
PM _{2.5}	0.20 to 0.59 (mean = 0.32, median = 0.33)	-24% (2.2 ug/m ³)
PM ₁₀	0.36 to 0.54 (mean = 0.47, median = 0.49)	-11% (2.3 ug/m ³)

DRAFT





CECAP Goal 8 - Air Quality





GOAL 8: ALL DALLAS' COMMUNITIES BREATHE CLEAN AIR



Targets

Ground Level Ozone

- Meet NAAQS attainment standard by 2030
- Maintain status through 2050

Air Pollutants

- Meet NAAQS attainment status through 2030*

* *NAAQS = National Ambient Air Quality Standards*

Includes lead, carbon monoxide, nitrogen dioxide, particulate matter [PM₁₀μm], particulate matter [PM 2.5μm], and sulfur dioxide

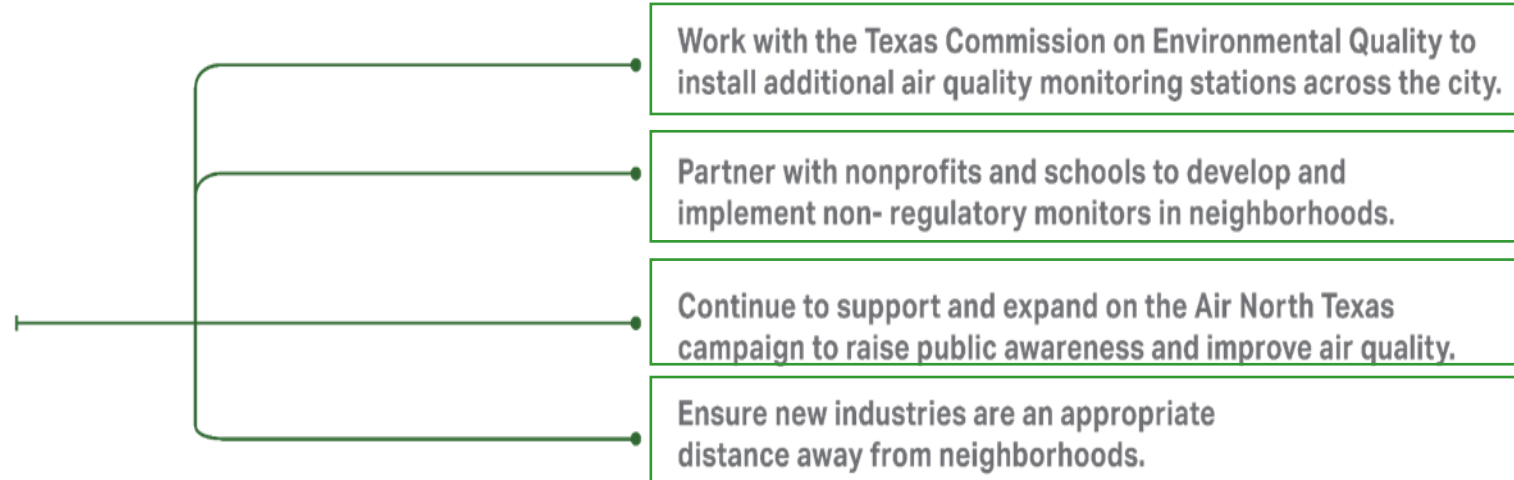




GOAL 8: ALL DALLAS' COMMUNITIES BREATHE CLEAN AIR.



Take a comprehensive approach to addressing air quality at the neighborhood level



OEQS + External Partners: TCEQ, NCTCOG, The Nature Conservancy, Texas A&M University Transportation Institute, Center for Applied Research for Transportation, Emissions, and Health, Parkland, Children's Health and Many Others





Actions Underway: Air Quality



Action	FY 20-21 Milestones
AQ1: Work with the Texas Commission on Environmental Quality to install additional air quality monitoring stations across the city. ✓	<ol style="list-style-type: none">1. Work with TCEQ to identify location for installation of a new monitoring station2. Install new monitoring station at Dallas Pilgrim Drive as approved by TCEQ in FY 19-203. Continue to make data available to the public
AQ2: Partner with nonprofits and schools to develop and implement non-regulatory monitors in neighborhoods. ✓	<ol style="list-style-type: none">1. Work with The Nature Conservancy and Texas Trees Foundation to site and install non-regulatory monitors in neighborhoods based upon public health and other data2. Select locations in coordination with stakeholders3. Use resulting neighborhood level data to track progress for air quality improvement
AQ3: Continue to support and expand on the Air North Texas campaign to raise public awareness and improve air quality. ✓	<ol style="list-style-type: none">1. Continue to support Air North Texas Campaign2. Expand on Air North Texas Campaign3. Tailor communication to suit needs of each community
AQ4: Ensure new industries are an appropriate distance away from neighborhoods.	<ol style="list-style-type: none">1. Develop a map of environmental data, and known environmentally impacted parcels by performing analysis of residential and industrial properties, highlighting Racially and Ethnically Concentrated Areas of Poverty (RECAP) areas



AIR QUALITY INITIATIVES

- TCEQ Regulatory Program
- Breathe Easy Dallas
- SW Medical District
- SM Wright
- Air North Texas
- Emission Reductions





Air Pollution Control: Local Air Programs

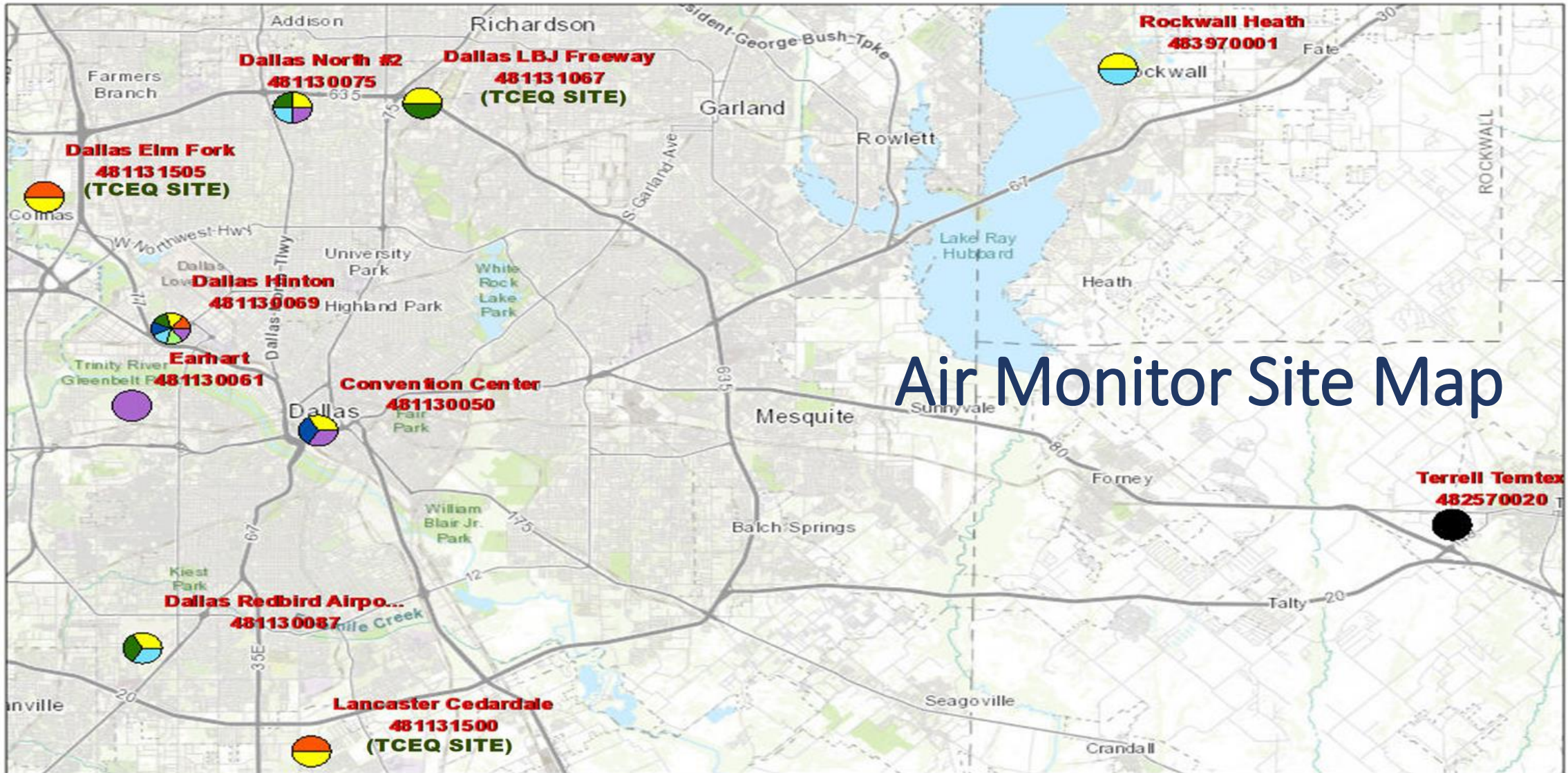
- City operates two dedicated local air programs: (1) Air Quality Compliance; and (2) Ambient Air Monitoring
- Both programs are in OEQS and funded in whole or in part by State of Texas with grants of ~\$500,000 for compliance and ~\$900,000 for air monitoring
- Over 25 years of local air monitoring and compliance in coordination with state and federal agencies



OEQS Air Quality Compliance Program

- Cooperative arrangement operating with authority of TCEQ as approved by City Council annually
- Review air permit applications
- Respond to complaints
- Site inspections (>600 in FY19-20)
- ~2,300 active New Source Air Permits, Registrations or IDs currently within the City limits





Air Monitor Site Map

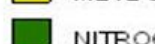
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AQS ACTIVE SITES



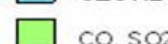
AIR_TOXICS_VOC

METEOROLOGICAL



PM_{2.5}

OZONE



CO_SO2_H2S_TNMOC

LEAD

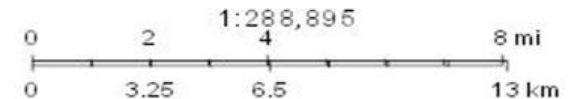


CHROMIUM_VI

AQS ACTIVE SITES

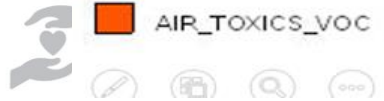


AIR_TOXICS_VOC



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri

Texas Parks & Wildlife, Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS | TCEQ |



DHS Biowatch Program



- OEQS also performs air monitoring under the Department of Homeland Security Biowatch program
- BioWatch was started in 2003 to provide early warning of bio-terrorist attack to more than 30 cities



Ambient Air Monitoring Program (AAMP)



- Common criteria air pollutants monitored include:
 - Ozone
 - Particulate Matter
 - Carbon monoxide
 - Nitrogen Oxides
- Seven air monitors are strategically located throughout the City



Ambient Air Monitoring Program Addition

- **New South Dallas Site!**
- The City has EPA and TCEQ approval to install PM10 and PM2.5 air monitors in the Southern Sector of Dallas near I-45 Industrial Corridor
- The location will help monitor particulate matter coming from concrete batch plants and other industrial businesses





- City has managed local air quality monitoring and compliance for over 25 years
- Office of Environmental Quality and Sustainability (EQS) manages programs under TCEQ Grants:
 - Ambient Air Monitoring Program (AAMP) (\$755,602)
 - Air Compliance Program (ACP) (\$505,117)



Air Quality Initiatives



Breathe Easy Dallas

Healthy air. Healthy kids.

Advancing the scientific understanding and application of local air monitoring for improved public health outcomes among high-risk populations.



Project Goals



- To better understand **performance of low-cost sensors** and how to utilize this data for public health objectives, including improved outcomes for high-risk populations.
- To **gather high quality local data** characterizing air quality across multiple pollutants, and multiple locations.
- To **contribute to local and regional datasets** that support spatial analysis of air quality and public health measures, including relationships and variability.
- To better **understand the role that local air quality may play in risk for pediatric asthma.**
- **To contribute-** through convening, research, and capacity building- to local and regional initiatives focused on improving air quality and public health.



Phase I: Performance Analysis of the Low-cost sensors (Completed)



This study utilizes data gathered from the 12 AQY1 sensors co-located at the Hinton regulatory monitor for the past year and data reported from the Hinton regulatory monitors during the same time period, to

- Investigate how the AQY1 low-cost sensor readings compare against reference regulatory station readings in different conditions (e.g. temperature, relative humidity) and for different pollutants;
- Identify the optimal time needed for calibration to match reference regulatory station readings as closely as possible.

Pollutants measured include: Ozone (O_3), Nitrogen Dioxide (NO_2), Particulate Matter with 10 micrometers or less in diameter (PM_{10}) and Particulate Matter with 2.5 micrometers or less in diameter ($PM_{2.5}$).



Phase II: One Year Air Quality Characterization and Geospatial Comparison



- Gather high quality local data characterizing air quality across multiple pollutants, and multiple locations.
 - Pollutants measured include: Ozone (O_3), Nitrogen Dioxide (NO_2), Particulate Matter with 10 micrometers or less in diameter (PM_{10}) and Particulate Matter with 2.5 micrometers or less in diameter ($PM_{2.5}$).
- Better understand the role that local air quality may play in risk for pediatric asthma.
- Contribute to local and regional datasets that support spatial analysis of air quality and public health measures, including relationships and variability.
- Contribute to local and regional initiatives focused on improving air quality and public health.



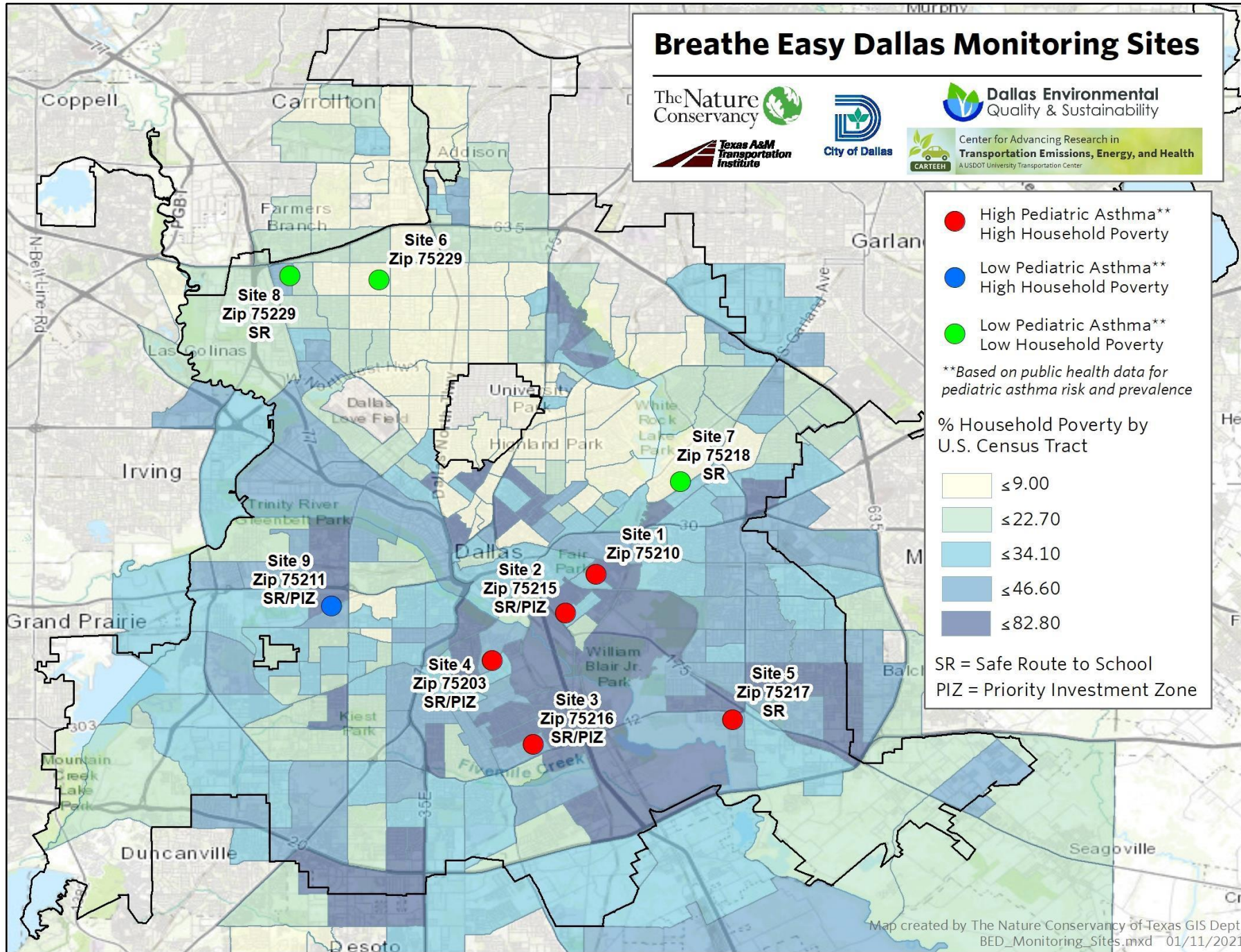


Breathe Easy Dallas Monitoring Sites



Dallas Environmental Quality & Sustainability

Center for Advancing Research in Transportation Emissions, Energy, and Health
A USDOT University Transportation Center



- High Pediatric Asthma**
High Household Poverty
- Low Pediatric Asthma**
High Household Poverty
- Low Pediatric Asthma**
Low Household Poverty

**Based on public health data for pediatric asthma risk and prevalence

% Household Poverty by U.S. Census Tract

- ≤ 9.00
- ≤ 22.70
- ≤ 34.10
- ≤ 46.60
- ≤ 82.80

SR = Safe Route to School
PIZ = Priority Investment Zone



Breathe Easy Dallas Air Monitor Sites



	Site	ZIP	Flasher location	SR	PIZ
High Pediatric Asthma ** High Poverty	1	75210	T.G. Terry Park		
High Pediatric Asthma ** High Poverty	2	75215	Exline Recreation Center	Y	Y
High Pediatric Asthma ** High Poverty	3	75216	Cummings Recreation Center	Y	Y
High Pediatric Asthma ** High Poverty	4	75203	Bonnie View Rd.	Y	Y
High Pediatric Asthma ** High Poverty	5	75217	Gayglen Dr	Y	
Low Pediatric Asthma ** Low Poverty	6	75229	Northaven Park & Greenbelt		
Low Pediatric Asthma ** Low Poverty	7	75218	Warren Ferris Cemetery	Y	
Low Pediatric Asthma ** Low Poverty	8	75229	Marcus Park Recreation Center	Y	
Low Pediatric Asthma ** High Poverty	9	75211	Jacqueline Dr	Y	Y

** Based on public health data for pediatric asthma risk and prevalence. SR= Safe Routes to School PIZ= Priority Investment Zone



An additional 3 monitoring sites will be installed at the at the Southwestern Medical District
as a part of the SWMD Streetscape Initiative with the Texas Trees Foundation (TTF).

Neighborhood Installation- City owned flashers



Schematic: Breathe Easy Dallas Air Monitor Installation on School Flasher Pole

WITH AQY1 SYSTEM INSTALLED

BEFORE

TO BE INSTALLED

Photovoltaic Panel
(47" x 21.3" x 1.4")
16.5 lbs

Battery Box (with battery)
(20.6" x 17.5" x 12.0")
60 lbs

Monitor Cage
(19" x 10" x 7") 5 lbs

AQY1 monitor
(7" x 8.5" x 5")
3 lbs



SWMD Installations- City owned intersection poles



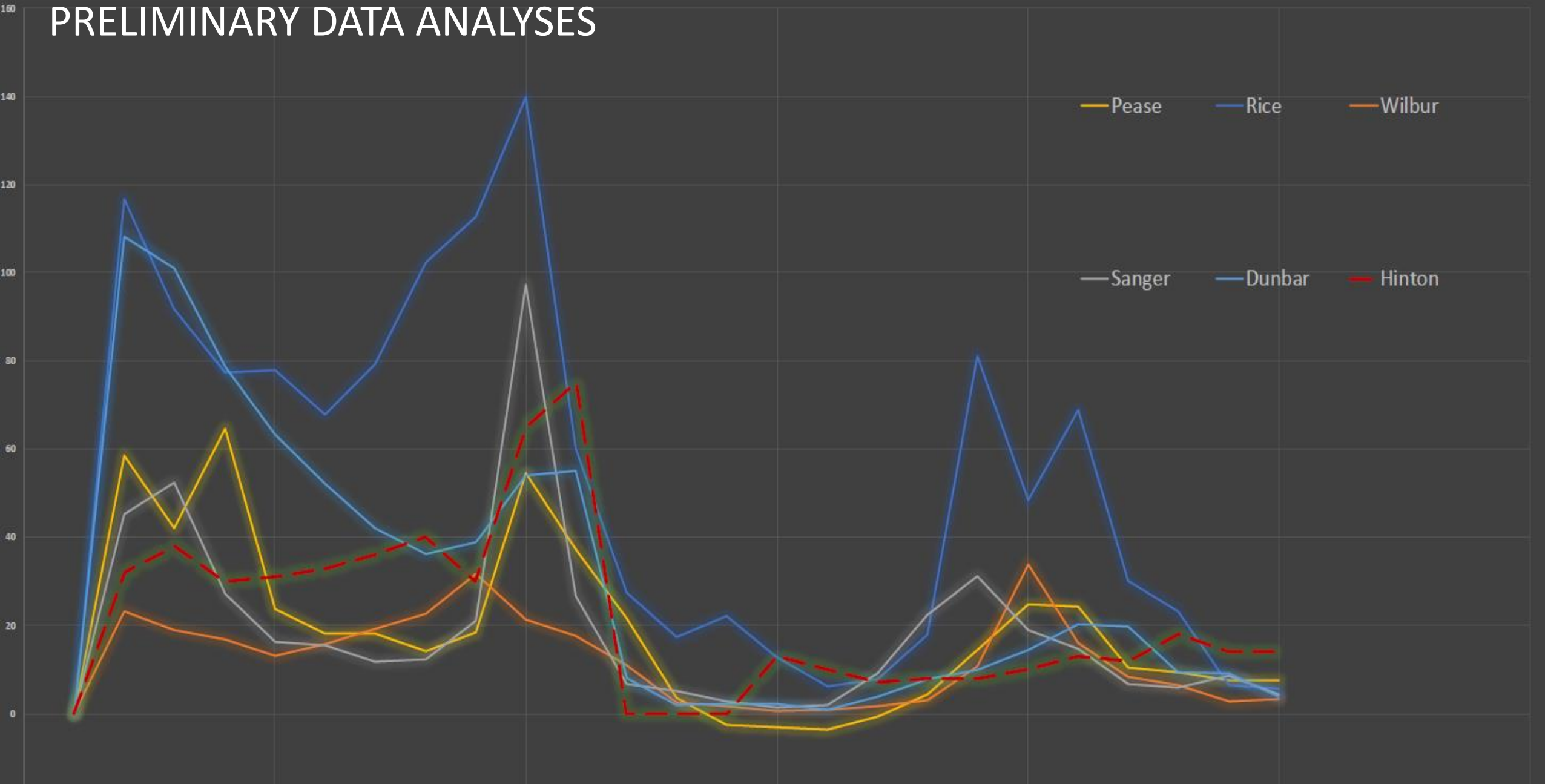
- Medical District Drive/Harry Hines
- Inwood Road/Harry Hines
- Mockingbird/Harry Hines



Figure 7: AQY and Solar Power Installation

Particulate less than 10 μm (PM₁₀)

PRELIMINARY DATA ANALYSES



Blue Star Recycling - Dashboard



- Created to provide transparency and accountability of the site cleanup to neighbors and the public: visit <https://bit.ly/bluestardashboard>
- Dashboard Includes:
 - Background Information
 - Agreed Final Judgment
 - Timeline
 - Removal Progress
 - Air Quality Monitoring
 - Stormwater Management Info



“Blue Star Recycling”



Dallas: Air Quality Dashboard

Select a Date to see changes 1/18/2021

Air Quality Monitor 1



Air Quality Monitor 3



Air Quality Monitor 2



TCEQ Reference Station



Alternative Commute Program



Or, Try Parking It



ENCOURAGES
EMPLOYEES TO
USE
ALTERNATIVES
TO ONE
PERSON/ONE
CAR COMMUTE



REDUCES
POLLUTION AND
TRAFFIC
CONGESTION
AND SAVES
COMMUTERS
MONEY



ALTERNATIVE
COMMUTE
OPTIONS INCLUDE:
PUBLIC
TRANSPORTATION,
CAR-POOLING,
BICYCLING,
ELECTRIC
VEHICLES/HYBRID
VEHICLES, AND
FLEX DAYS/WORK
FROM HOME



CITY
EMPLOYEES
TRACK THEIR
COMMUTES
THROUGH TRY
PARKING IT
WEBSITE AND
OEQ



- Online – Desktop or mobile app
- Alternative Commutes – Earn points that can be redeemed for rewards
- Safe – NCTCOG will NOT sell your information to a third party
- Data collected through Try Parking It helps NCTCOG estimate transportation emissions





Alternative Fueled Vehicles (AFV)

- Includes vehicles that pollute less, or in some cases do not pollute
- Hybrid vehicles, electric vehicles, natural gas fueled vehicles, and E-85 vehicles are in the City fleet
- AFVs help reduce mobile source emissions and meet emission reduction targets





City Green Building Program & Energy Efficiency Retrofit Program

- Since 2003, the City has built 32 LEED Silver standard or better
- Each LEED building uses significantly less energy than a standard building resulting in less pollution from power plants
- The City is also retrofitting older buildings with energy efficient lighting/HVAC



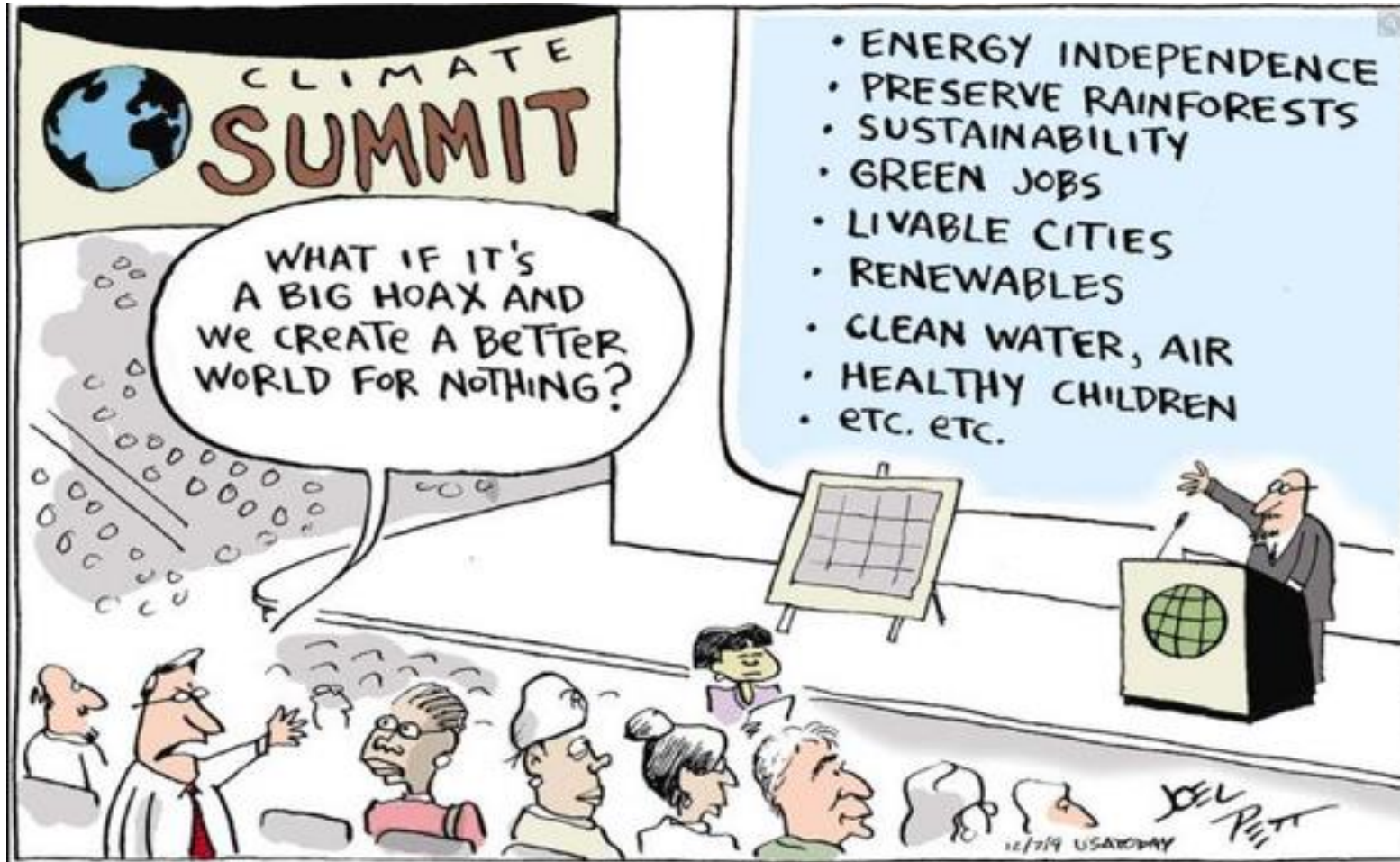
Renewable Energy Policy



- In April 2019 the City Council adopted a Green Energy Policy
- This policy requires:
 - The purchase of 100% renewable energy for municipal operations
 - The City will “seek and sustain” on and offsite renewable energy projects
 - The City will seek to sustain and promote renewable energy projects and partnerships



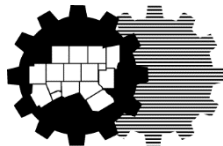
QUESTIONS?



Freight Land-Use Compatibility Analysis Update

Air Quality Health Task Force Meeting
February 26, 2021

Morgan Tavallaee



WORKSCOPE

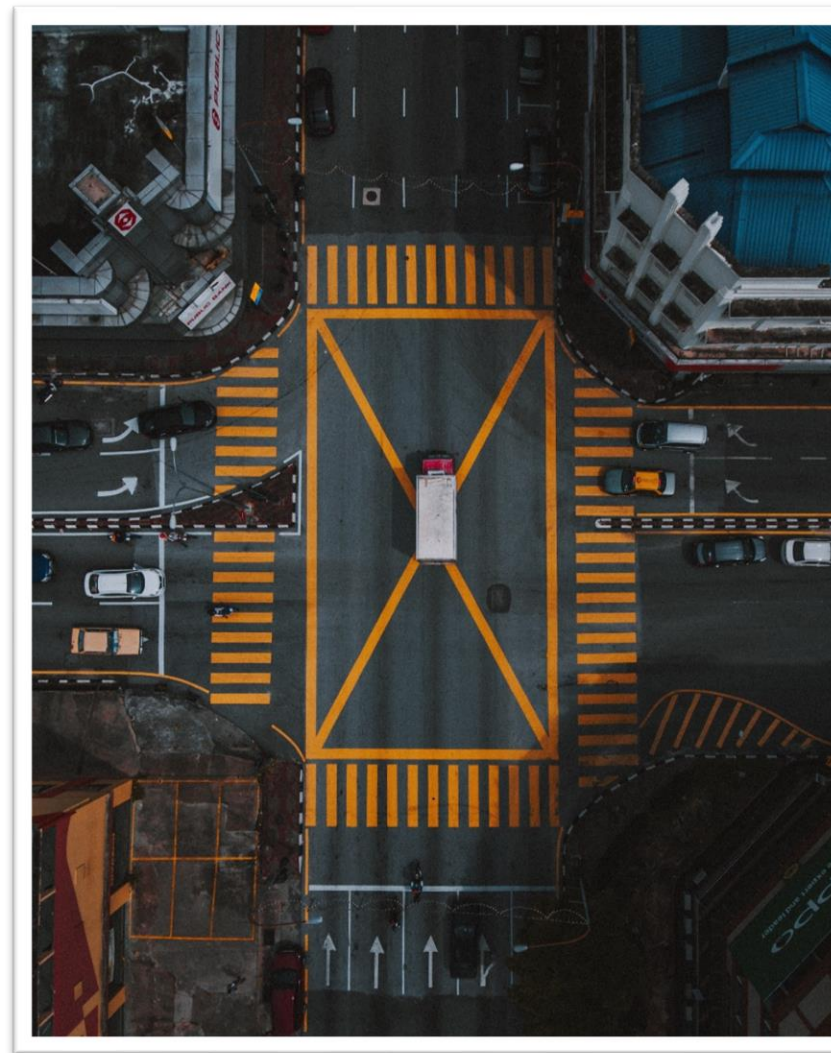
Literature Review

- FHWA Freight and Land-Use Handbook
- TRB Publications
- Comprehensive Plan Review

Data Collection

- Site Visits
- Freight Facility and FTZ Inventory
- Potential Freight Land-Use Identification
- Policy Research

Freight Land-Use Analysis



DATA COLLECTION

Example of Land-Use Conflict

Conflicts:

- Residential and freight on same street
- DC bays facing neighborhood
- Driveways of both empty onto the same street
- Inadequate fencing



DATA COLLECTION

Example of a Successful Mitigation Strategy

Design Features:

- Residential and freight on same street
- Freight activity obscured by fencing and vegetation
- Freight facility does not empty onto residential street
- Open greenspace and raised berm act as a buffer
- Arrayed trees and a sidewalk with plenty of space on either side



DATA COLLECTION

Additional Data Collection Activities

Land-use policy and regulatory review of regional municipalities (complete)

Regional freight facility inventory (complete)

Team collaboration & input (in progress)

- Sustainable Development
- Safety
- Air Quality
- Modeling/Roadway
- Environmental Justice

GIS land-use and zoning review (complete)

Developing a localized toolkit for the praxis of sustainable logistics as it pertains to land use (in progress)

ANALYSIS

Conduct Analysis of Regional FODs

Identify additional relevant information/considerations through team collaboration

Identify Potential Incompatible Land Uses in and Near Regional FODs

Identify City Ordinances Governing Land-Use Types and Build Policy Toolkit

Restrictions on:

- Lighting
- Noise
- Vibration



Workscope

Literature
Review

Data
Collection

Analysis

Environmental
Justice

Policy
Toolkit

Results and
Recommendations

Next Steps

Q&D

FREIGHT- RELATED ENVIRONMENTAL JUSTICE ISSUES

Environmental Justice in the context of Freight and Land Use-

“the geographically equitable distribution of the benefits and burdens of government policies, programs, and investments, and to ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.” *Freight and Land Use Handbook*, Federal Highway Administration, 2012, pg. 1-4

Purpose-

Identify locations in the region where there is a potential for a disproportionate negative impact to occur as a result of freight land use or land development near populations protected by Environmental Justice laws & policies.



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FREIGHT- RELATED ENVIRONMENTAL JUSTICE ISSUES

This analysis addresses the following-

- Prevalence of freight facilities in EJ areas
- Proximity of freight facilities to schools
- Presence of freight railroads in EJ areas
- Rail crossing grade separation efforts in EJ areas
- Spatial distribution of freight land use conflict sites in EJ areas
- Proximity of freight facilities to historical and cultural assets
- Proximity of freight facilities to sensitive ecological features

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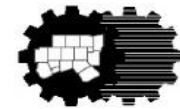
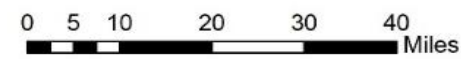
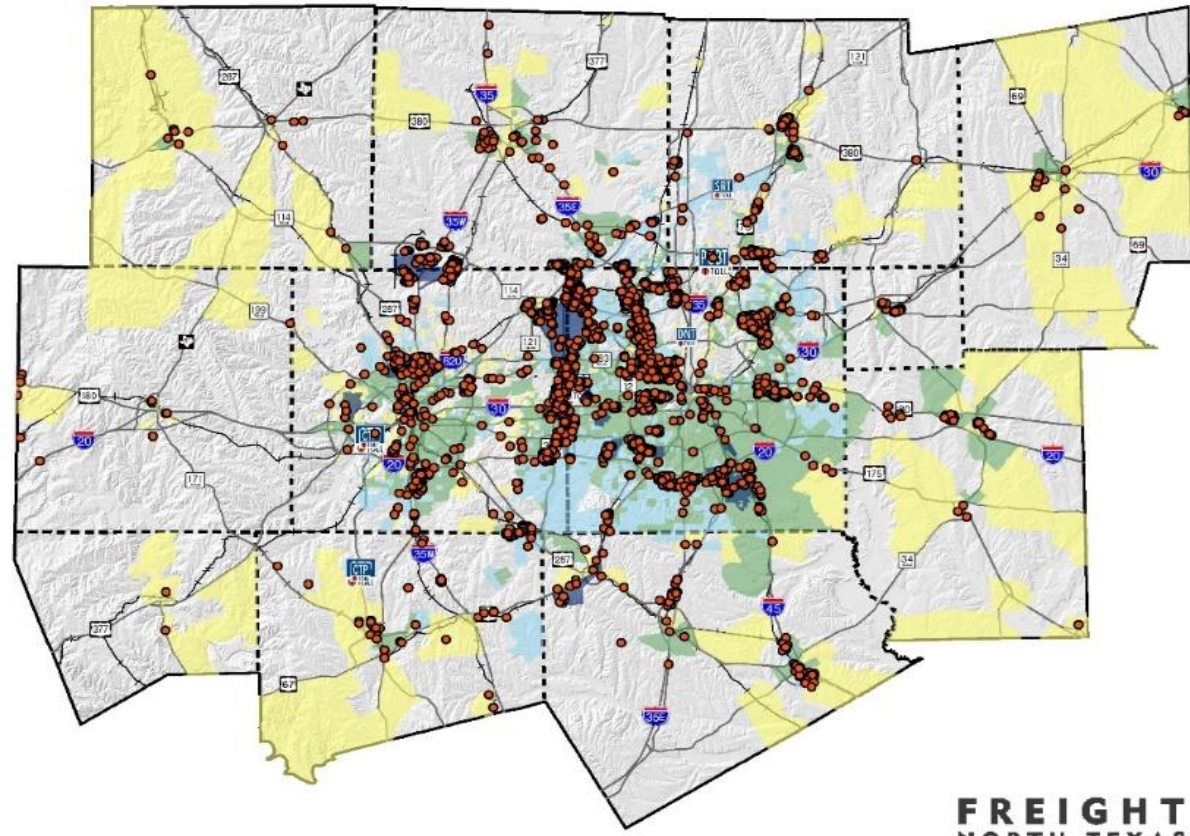
Next Steps

Q&D

FREIGHT- RELATED ENVIRONMENTAL JUSTICE ANALYSIS

Freight Development And EJ Areas

- Legend**
- Freight Facilities in MPA
 - Freight-Oriented Developments
 - EJ Population Census Tracts**
 - Above Regional Average: Poverty
 - Above Regional Average: Minority Population
 - Above Regional Average: Both Minority Population & Poverty
 - Major Highways
 - Railroads
 - - - County Boundaries
 - ▭ MPA Boundary



North Central Texas Council of Governments



FREIGHT NORTH TEXAS



FREIGHT- RELATED ENVIRONMENTAL JUSTICE ISSUES

Findings-

- Freight facilities are on average 1.66 miles closer to schools in EJ areas compared to non-EJ areas.
- 43.99% of all regional freight rail miles run through EJ communities.
- 73% of regional distribution, manufacturing and warehousing facilities are in EJ areas.

Recommendations of areas to emphasize-

- School Proximity to freight facilities and railroad infrastructure.
- Freight infrastructure proximity to historical, social and cultural assets.
- Proximity and interaction with nearby ecological features.

Municipalities are encouraged to utilize the strategies outlined in the **Freight Planning Policy Toolkit** in order to mitigate negative externalities and ensure that vulnerable populations are not negatively affected by land use conflicts.



POLICY TOOL-KIT

Purpose - Identify key policies for municipalities to consider when seeking to improve the quality of freight land uses within their jurisdiction.

Four-step freight policy process - local level

Step 1 - Develop a **community** vision for freight and industrial land use

Step 2 - Comprehensive strategy of freight facility site selection and evaluation of existing and planned transportation infrastructure

Step 3 - Site design regulations in accordance with the previous two steps

Step 4 - Communities codify the desired ordinances, initiate needed planning programs and execute relevant freight infrastructure development strategies



USING THIS TOOL-KIT

- Designed to be easily referenced on an as-needed basis
- To assist local governments in evaluating these policies, a rating description was developed that addresses the cost, time and level of impact that policy implementation would have on freight network conditions
- This rating tool can be used at any time during the four-step process



POLICY RATING DETAILS

Three Sections

1. Cost
2. Time Required
3. Impact

Ranked low, medium or high based on specific guidelines

Examples

1. Freight Inclusion in Community Outreach Programs
 - Cost: Low
 - Time Required: Low
 - Impact: Medium
2. Address Local Truck Parking Availability
 - Cost: Medium-High
 - Time Required: Medium
 - Impact: Medium



RESULTS AND RECOMMENDATIONS

The Output of this Study will Include:

- Regional inventory of warehousing, distribution, and shipping centers
- Urban freight land-use preservation assessment
- Regional FOD designation criteria
- List of potential sites for future freight activities
- Best land-use practices for the region's FODs
Includes environmental and air quality improvement strategies
- Ordinance recommendations for FOD land use and design criteria
- Factsheets/educational materials illustrating the importance of compatible land uses

NEXT STEPS

To be completed:

- Policy Toolkit
- Final Report



Workscope

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Results and
Recommendations

**Next
Steps**

Q&D

QUESTIONS & DISCUSSION

Workscope

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Policy
Toolkit

Results and
Recommendations

Next Steps

Q&D

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JHathcock@nctcog.org

Health Data

NCTCOG Known Data Sources:

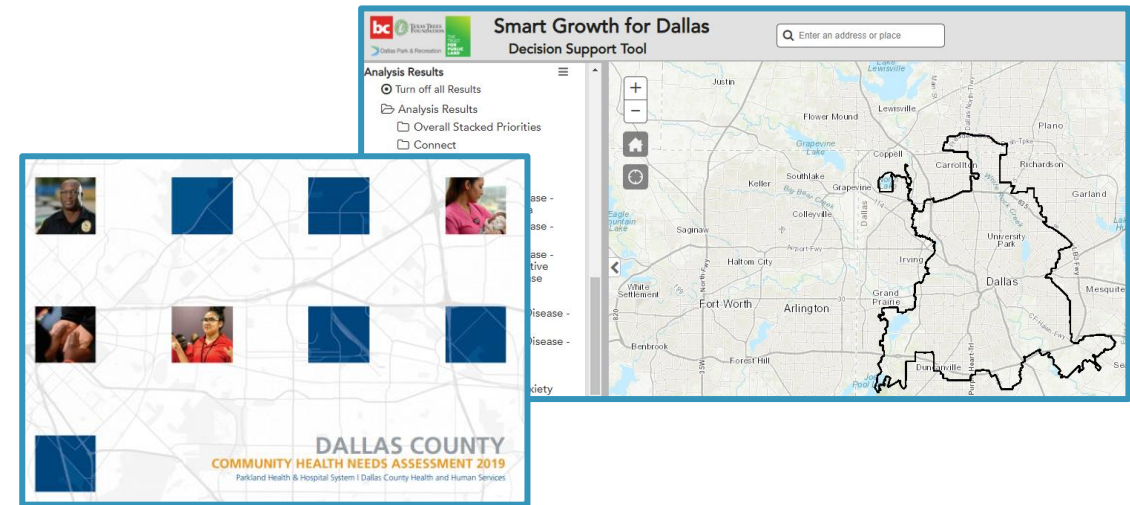
★ Texas Department of State Health Services (DSHS) Asthma Hospitalization and Outpatient Data – *Annual Data by County*

★ Smart Growth for Dallas Tool – *Annual Data for City of Dallas*

https://web.tplgis.org/smart_growth_dallas/

★ Dallas County Community Health Needs Assessment – *Annual Data for Dallas County (at a Zip Code Level)*

<https://www.parklandhospital.com/Uploads/Public/Documents/PDFs/Health-Dashboard/CHNA%202019.pdf>



We are looking for Daily (or weekly) Health Data!

Asthma occurrence/outpatient visits and/or COPD Hospital Discharges data by county/city or smaller geographic scale



Air Quality Monitoring Strategies and Modeling of Chronic Health Risks Related to Traffic-Related Air Pollution

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Overview

- Develop Sketch Planning Methodology for Project Level Emissions
- Meteorological Data
- Meteorological Analysis strategy
- Access to CDC Data
- Future Steps

Sketch Planning Methodology for Project Level Emissions Analysis

- Use operating mode profiles based on facility type and congestion level
- Determine emissions by vehicle type
- **Develop model to determine vehicle mix by link for network**
- Determine average daily emissions based on AADT for each link

Meteorological Data

- AERMET
- AERSURFACE
- Need *Hexagon ERDAS IMAGINE*
 - UTA ineffective license knowledge and communication
- Develop dispersion profiles by season or more temporally disaggregate

Future Steps

- Integrate MOVES emission rates with network links, link volumes, and vehicle mixes to generate transportation emissions network-wide for major arterials and freeways.
- Use R-LINE w/Emissions and Meteorological data to develop exposure plumes for transportation network
- Estimate background AQ exposure data
- Finalize chronic exposure data and send to CDC for fusion to NHIS data
- Finalize requirements for using restricted data center