

# Texas Trees Foundation Managing The Need To Be Treed Dallas Tree Equity Planting Map, 2022

March 2023



# AGENDA

01

Dallas Urban  
Forest Health and  
Equity

02

Dallas Tree Equity  
Planting Map  
2022

03

Dallas Equity  
Engagement  
Process

04

Dallas Equity  
Indicators and  
Challenges





# About Texas Trees Foundation

The Texas Trees Foundation (Texas Trees) serves as a catalyst in creating a new green legacy for North Texas through transformational, research-based plans that educate and mobilize the public to activate the social, economic, environmental, and health benefits that trees and urban forestry provide for a better quality of life.



# How do we create cleaner, greener, cooler, and healthier cities?

Urban Forest Preservation & Expansion



Cool Schools Program™



Southwestern Medical District Streetscape & Park Improvement



***Connecting & Celebrating Trees and People***

Texas Trees Foundation

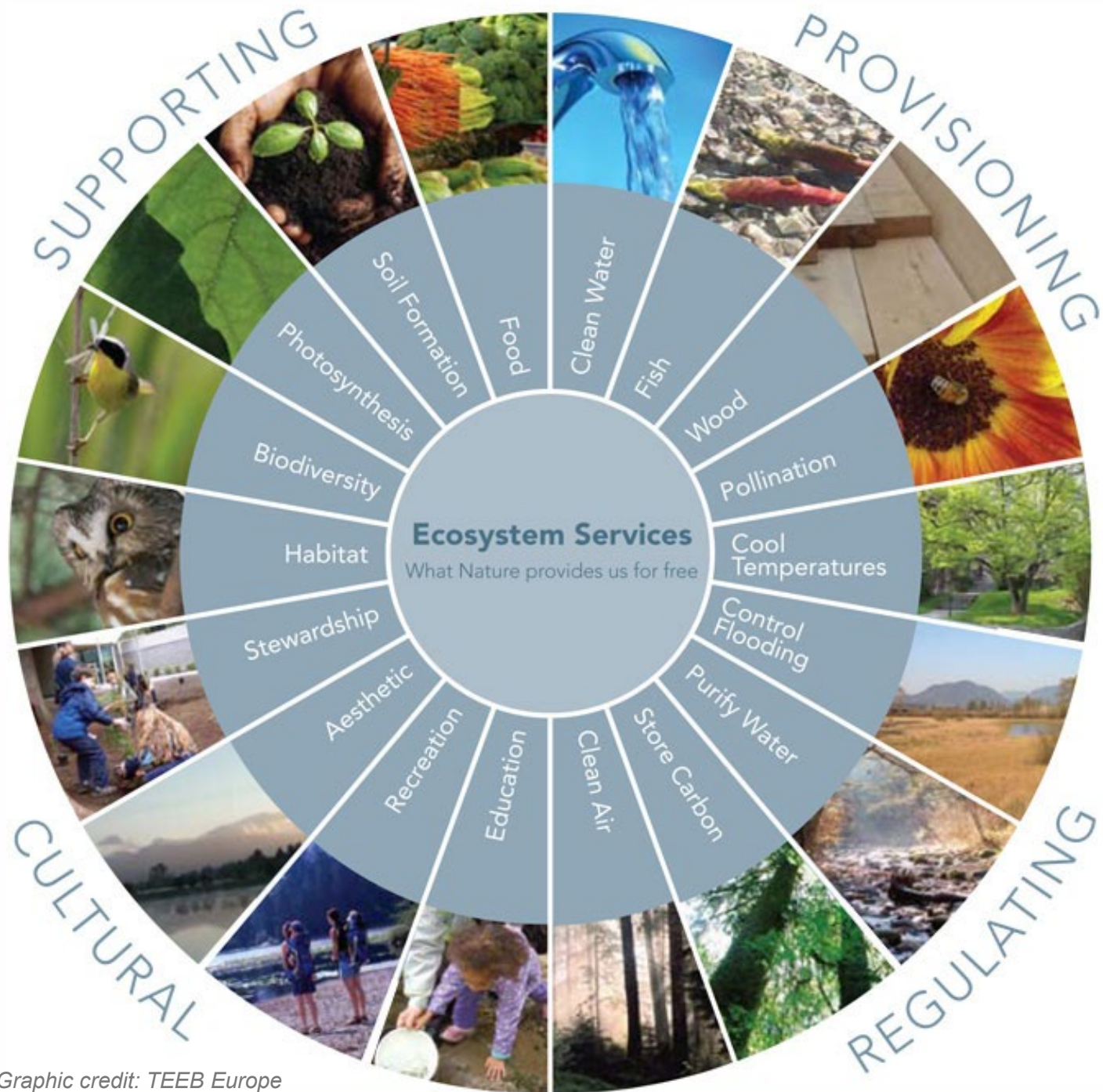


# 01



## Dallas Urban Forest, Health, and Equity





# Urban Forestry

The art, science, and technology of managing trees and forest resources in and around urban community ecosystems for the physiological, sociological, economical, and aesthetic benefits trees provide society (Helms 1998).



# Trees and Human Health and Wellbeing

- Reducing the burden of chronic, lifestyle-related diseases;
- Improving mental and physical health and well-being;
- Promoting physical activity and reducing stress;
- Contributing to social cohesion in cities;
- Improving urban air and water quality for improved human health;
- Reducing heat- and noise-related diseases in cities;
- Improving children's opportunities for healthy development; and
- Providing environmental education.

- See Routledge Handbook of Urban Forestry



Imagine a Green, Inclusive, Safe, Accessible, and Healthy District...

# Urban Heat Island Effect

## WHAT ARE HEAT ISLANDS?

- Structures such as buildings and roads absorb and re-emit sun's heat more than natural landscapes such as forests and water bodies
- This leads to hotter days and even hotter nights in our urban environment







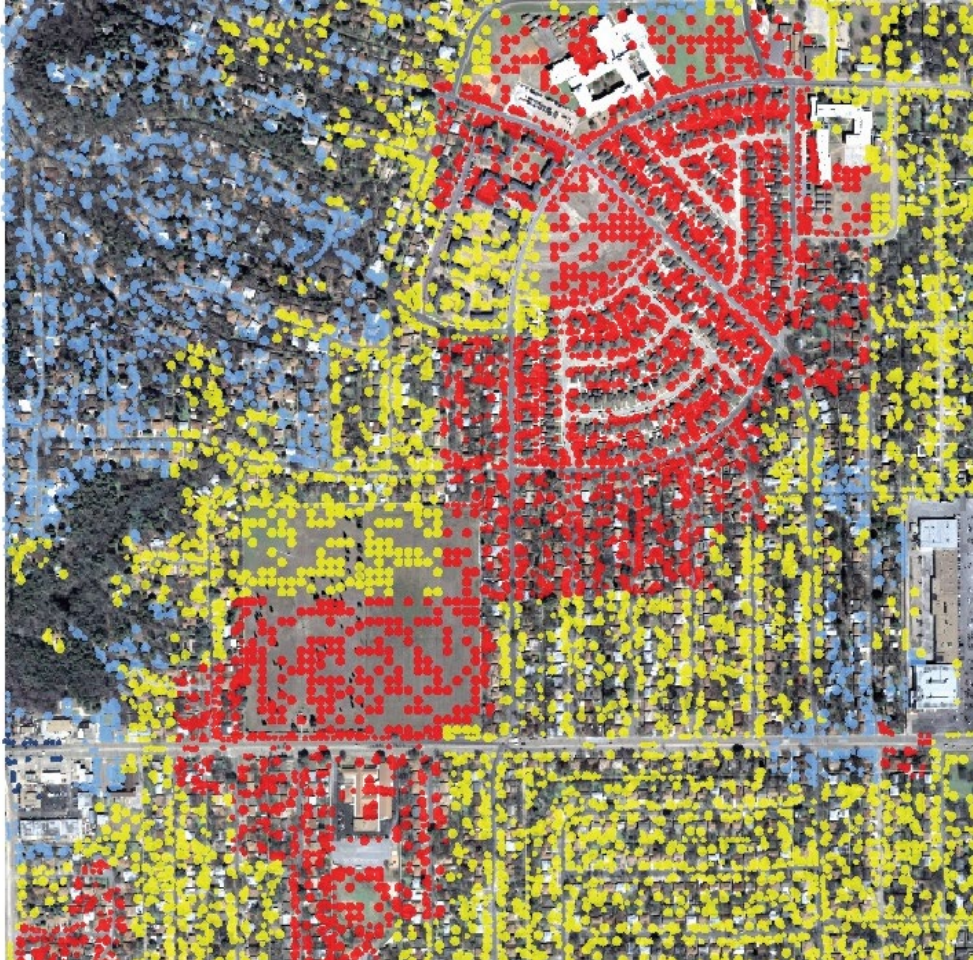
## HOW WE'RE IMPACTED

- More than 80% of Americans live in Urban areas
- Heat waves deter outdoor activity
- Not all community members are equally affected by extreme heat

### Dallas

- 9<sup>th</sup> largest city in the country
- is heating up faster than any other large city in the nation, except Louisville, KY and Phoenix, AZ
- has more than 35% impervious surface

# Urban Heat and the Urban Forest



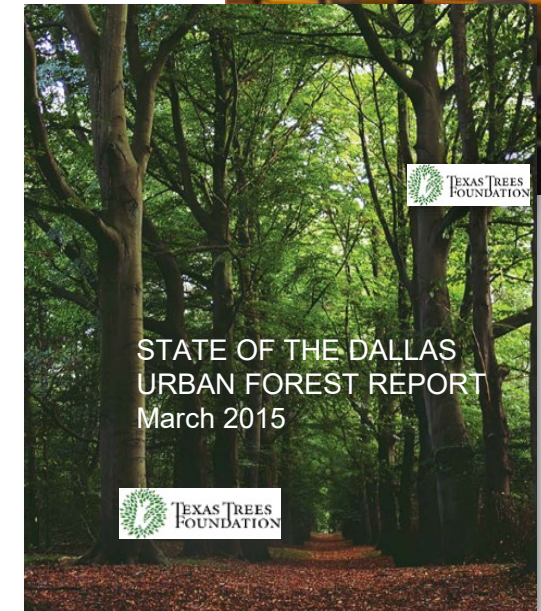
## Surface Temperature Ranges (Degree F)

0-110	121-130	141 + N/A
111-120	131-140	

Tree-planting locations  
color-coded by  
temperature range

US Forest Service  
recommends 40% tree  
canopy cover

**Dallas has 32%**  
**SWMD has 7%**





Microclimate  
Matters to  
Human  
Comfort

Effect of  
Shade on  
Surface  
Temperature

## Select Heat Data Pegasus Park, Parking Lot

SITE	Surface Temp F Shade	Surface Temp F Sun
Grass	101.8	104.7
Light Color Concrete	109.9	122.1
Exterior White Car	114.2	134.6
Woodchip Mulch	107.0	146.1
Exterior Black Car	113.7	157.6

Thursday, July 21, 2022  
Recorded Time: 4:15PM – 4:22PM  
Recorded Air Temperature 100/95F  
Weather Conditions: Sunny  
**Data captured by infrared thermometer**

### Pegasus Park Parking Lot

#### Sensor Locations



#### KEY

TH = Temperature and Humidity Sensor

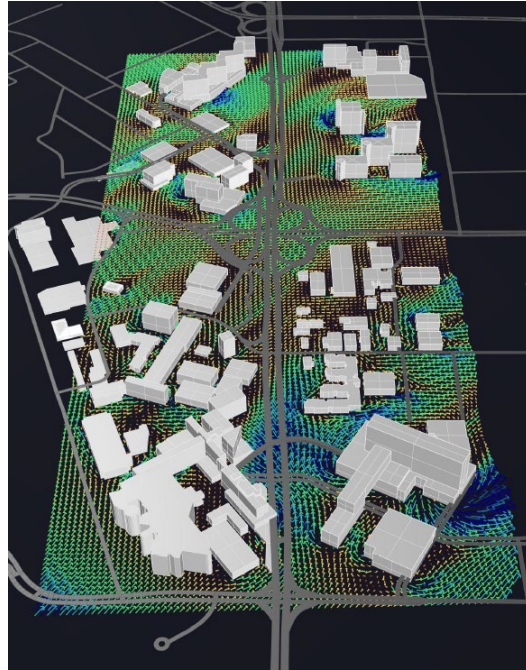
MRT = Mean Radiant Temperature Sensor Globe

Anon = Anemometer (wind flow/direction)

# Evidence-Based Design Applied

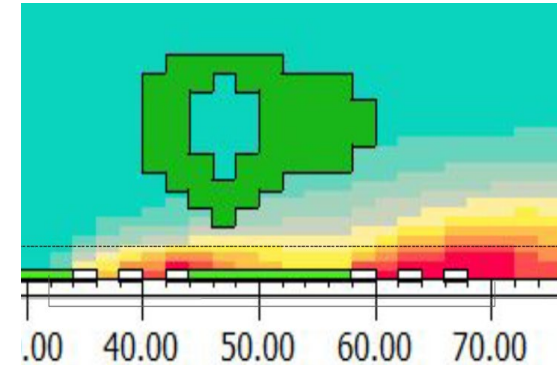
## Measure

Use high resolution satellite imaging and ground-based sensors for ongoing monitoring and analysis.



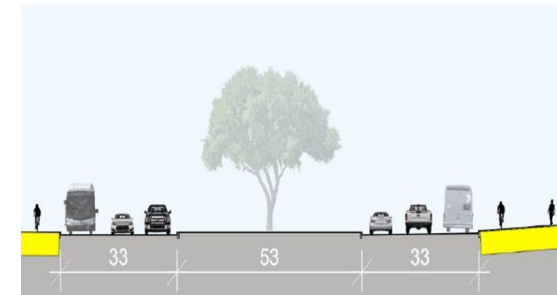
## Modify

Optimize design scenarios to maximize health benefits through iterative modeling process.



## Model

Leverage real time data to create environmental simulations that will be used to predict design outcomes.





# Particulate Matter Study

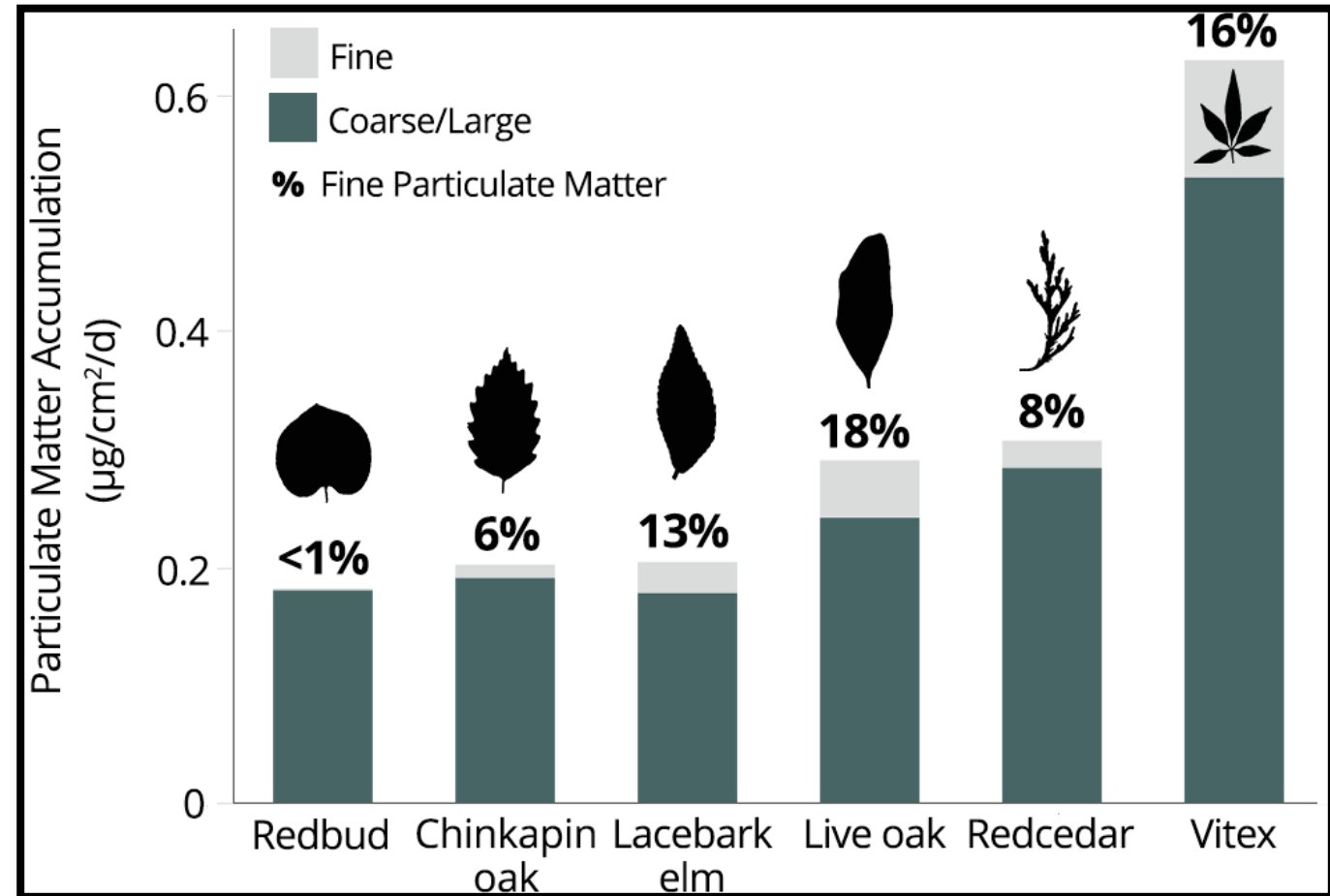
- Conducted around Charles Rice Learning Center in Dallas
- This study examined the efficiency of different tree/plant species in filtering airborne particulate matter (PM)
- Goal of the study is to inform plant species selection for vegetation barriers around urban schools



- Vegetation can serve as a barrier between air pollutants and school children and decrease pediatric asthma rates

# Particulate Matter Study

- Findings indicate that **mixed-species vegetation barriers** are effective at filtering PM due to the seasonal and spatial complementarity of plants with different leaf characteristics, growth form (trees vs. shrubs) and habit (evergreen vs. deciduous)





02



## Dallas Tree Equity Planting Map 2022

# 5 Planting Priority Categories

<b>Demographic</b> Population density People of color (% non-white) Educational attainment	<b>Health</b> Vulnerable populations Heart disease and obesity
<b>Economic Development</b> Home ownership rates Median income Median home value Poverty percentage	<b>Air Quality</b> Future traffic congestion
	<b>Urban Heat Island</b> Average maximum temperature

This report provides an action guide for decision-makers, city staff, developers, builders, and other stakeholders to better identify where trees should be strategically planted



- Various data sets were used in this analysis including tree canopy and vegetated surfaces from previous projects, sociodemographic data from the U.S. Census Bureau's American Community Survey (ACS), health metrics from the Centers for Disease Control and Prevention (CDC), and future traffic congestion from the Texas Department of Transportation (TXDOT). (A full list of data sources can be found on page 26 of the report).
- 929 census block groups within the City of Dallas used. Block groups are used by the U.S. Census Bureau to assure statistical consistency when tracking populations across the US and can be valuable indicators of environmental justice as they are linked with sociodemographic data.



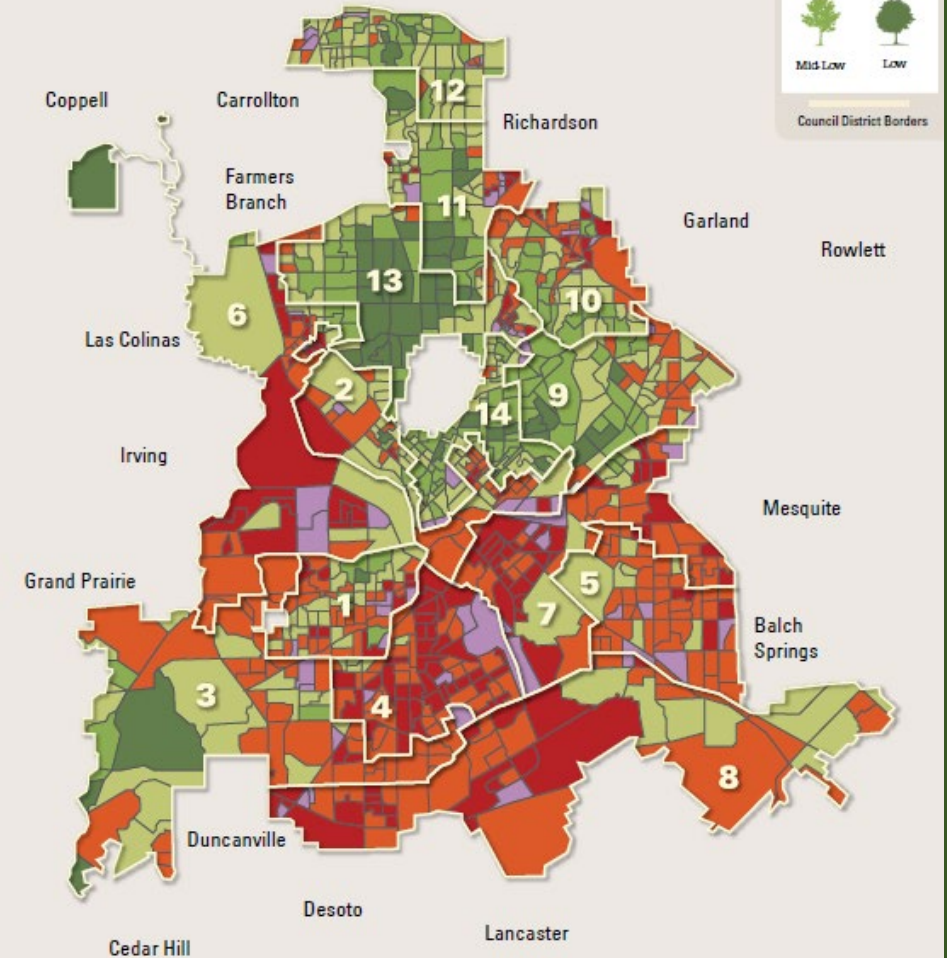
MANAGING THE  
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**TREED**  
DALLAS TREE EQUITY  
PLANTING MAP  
2022



# Dallas Tree Equity Planting Map, 2022

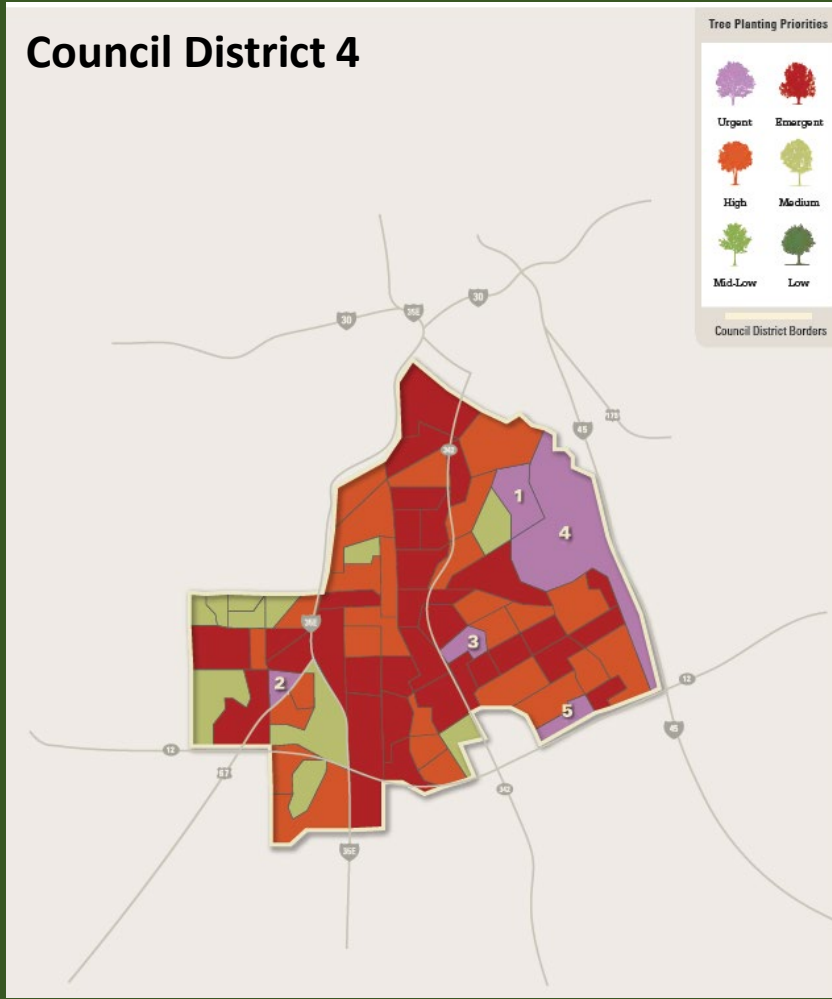
TABLE 4:  
Results of planting prioritization analysis  
for Dallas City Council Districts

Council District	Overall Planting Priority	Tree Canopy (%)	Non-Tree Vegetation (%)	Average Maximum Temp (°F)
District 1	6	31%	21%	98.19°
District 2	7	21%	17%	98.76°
District 3	8	34%	25%	96.44°
District 4	1	36%	27%	98.34°
District 5	5	38%	26%	96.16°
District 6	2	22%	24%	99.04°
District 7	3	29%	26%	96.96°
District 8	4	32%	34%	96.26°
District 9	11	37%	22%	98.01°
District 10	9	26%	20%	96.47°
District 11	10	27%	16%	96.79°
District 12	12	25%	21%	96.66°
District 13	13	34%	17%	97.12°
District 14	14	25%	14%	98.49°

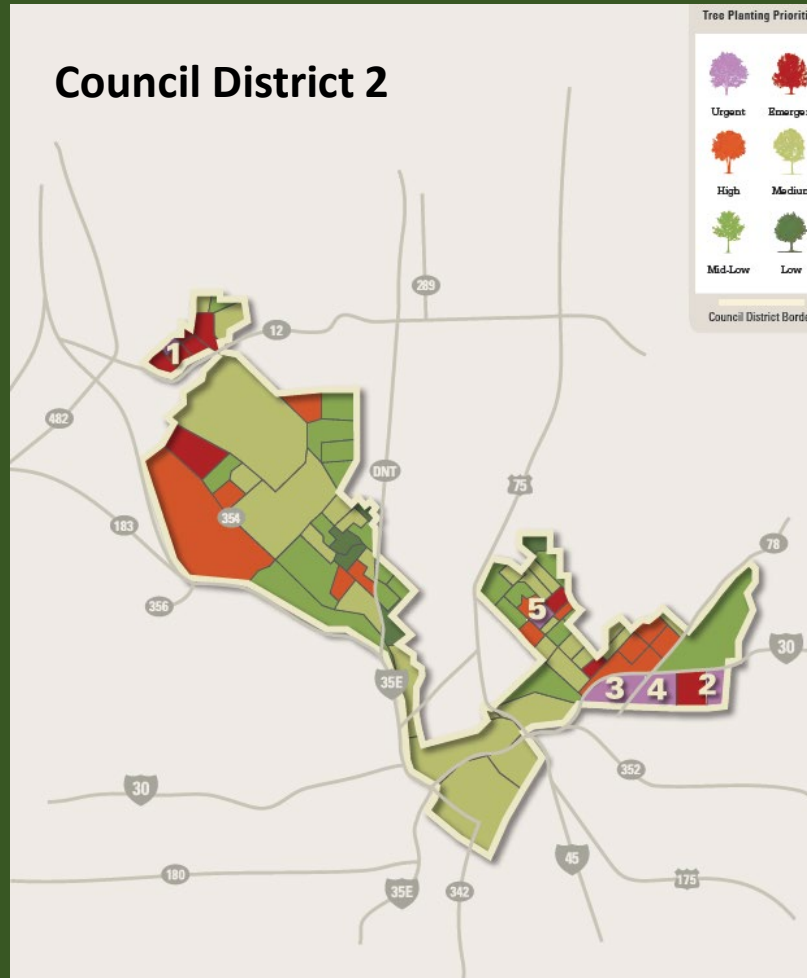


# Need To Be Treed By Council District

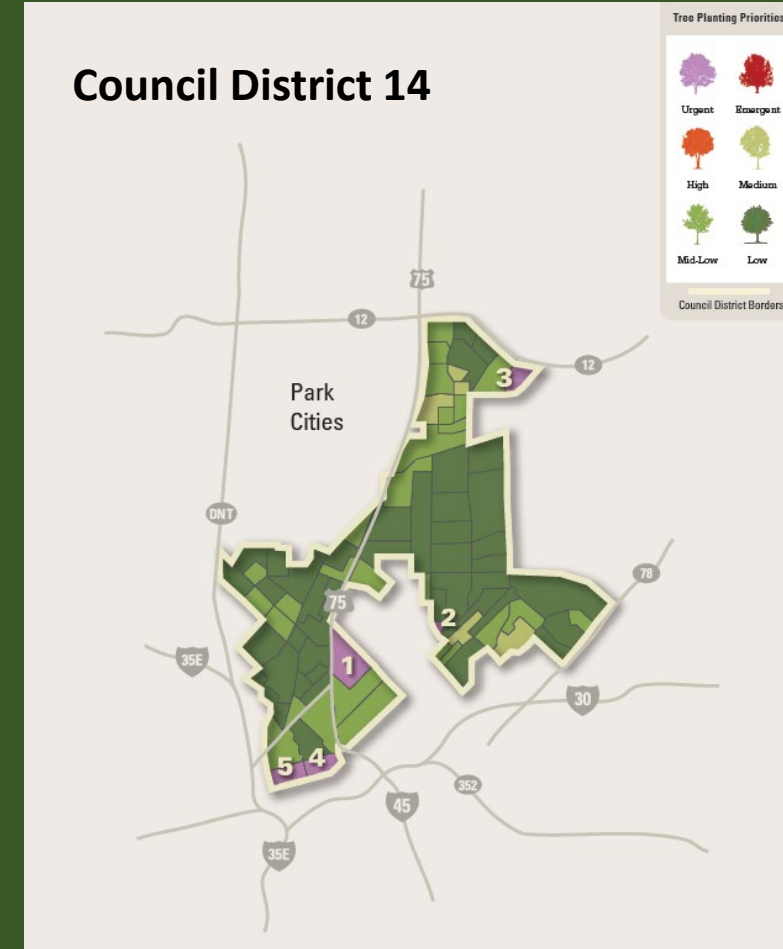
Council District 4



Council District 2



Council District 14





03



## Dallas Equity Engagement Process

# Community Engagement

- Partnering with Councilmembers\* to:
  - Identify tree planting sites
  - Implementing tree planting & tree giveaway locations
  - Providing newsletter articles and announcements
  - Councilmember Neighborhood meetings for TTF presentations
  - Additional key contact information

\*Environmental Commission, Park Board Members, Community Advocates, etc.



# Community Engagement – Grassroot Driven

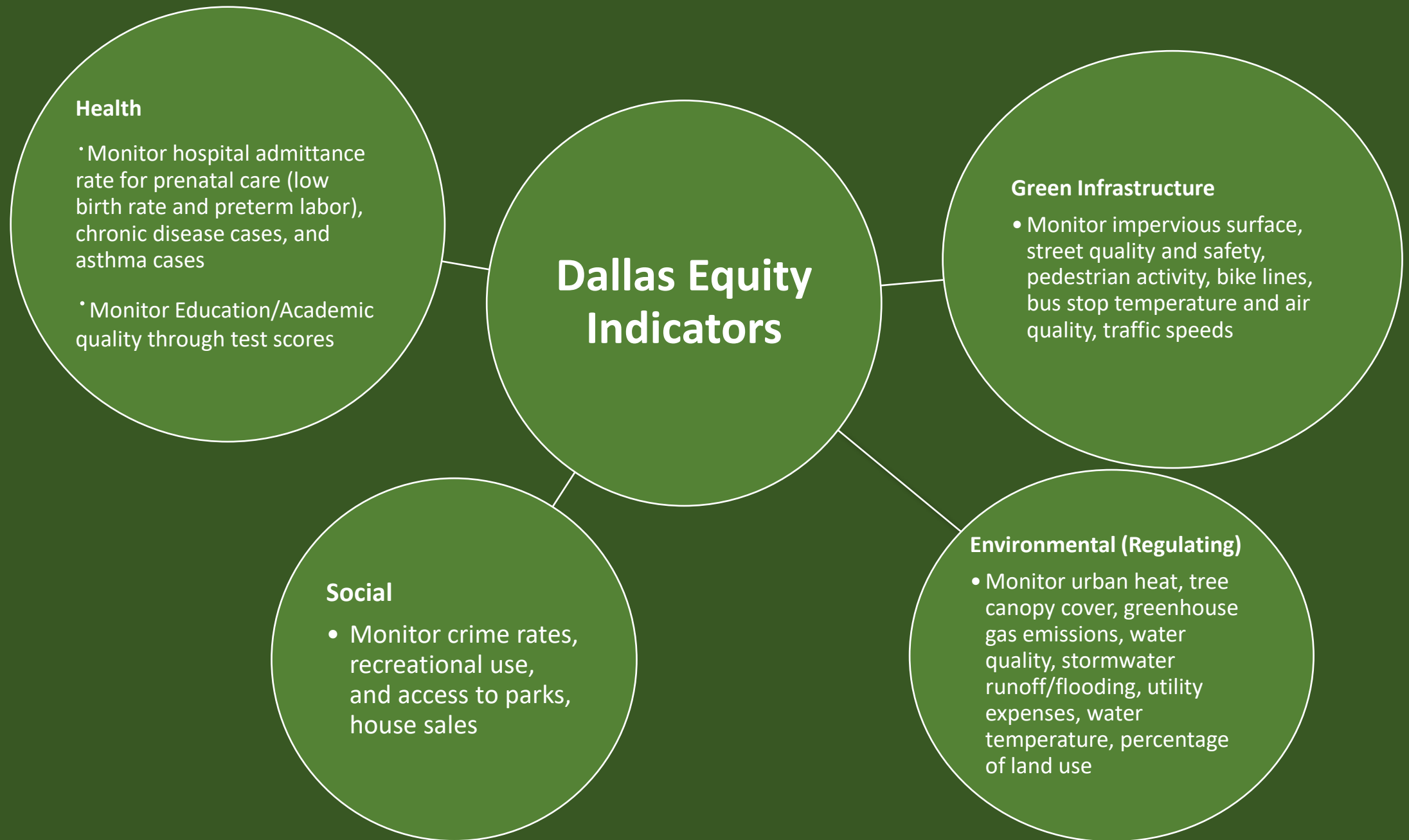
- Community survey:
  - Conduct a community needs assessment
  - Gauge receptiveness to tree planting
  - Identify potential projects
  - Identify commitment from volunteers for planting day
  - In-person, on-line, bilingual
- TTF Neighborhood Coordinator will:
  - Provide Urban Forestry Education
  - Recruit and Train Volunteers
  - Identify planting projects on public & private lands
  - Coordinate & Implement planting projects
  - Plan for long-term maintenance

# 04



## Dallas Equity Indicators





**All these indicators can be monitored to correlate the affects of increased tree canopy cover.**

(Environmental and Sustainability Plan, EVC Recommendation on 2023 Environmental Equity Indicators, Racial Equity Plan, Complete Streets, Vision 0, Dallas Tree Equity Planting Map, 2022, Article X).







**Thank you! Any Questions?**

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