



# Update on Charlotte's Tree Canopy

## Results From 2022 Canopy Analysis Project

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November 13, 2023



## Project Overview



- ▶ **County-wide land cover analysis of canopy trends in the City of Charlotte**
  - Includes ETJ
- ▶ **Results will serve as baseline data for future tree canopy efforts & policy work**
- ▶ **Project Partnership – jointly managed by TreesCharlotte and City**
  - Consultant – PlanIT Geo
- ▶ **Project Scope**
  - 2022 canopy cover, & canopy change analysis 2018 – 2022
  - Ecosystem benefits, potential planting area, urban heat, canopy distribution
- ▶ **New *TreePlotter* CANOPY tool to display canopy data for the public**
  - City uses PlanIT Geo's *TreePlotter INVENTORY* software for Tree-by-Tree program



## Project Methodology



- ▶ **2022 Analysis - modern machine learning (AI) & high-quality aerial imagery**
  - Ensures more accurate and uniform comparison in the future
  - 2018 & 2022 NAIP imagery
  
- ▶ **Technology & methodology evolution**
  - Imagery and assessment methods evolving rapidly
  - Ensures “apples to apples” future assessment consistency



## Project Results



- ▶ **Charlotte still has a robust canopy**
  - Significant ecosystem benefits
  
- ▶ **Canopy is still declining**
  - **Declined 0.5%** from 47.8% in 2018
  - Total loss = 969 acres
  - Decline slower than previously thought
  - Canopy efforts having impact
  - Not on path to achieve 50% canopy

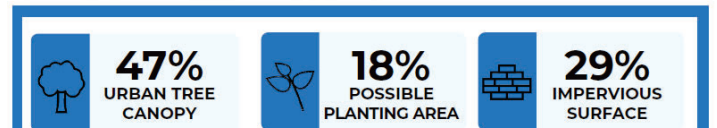
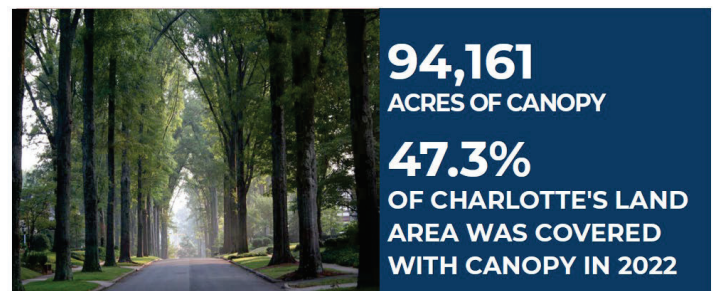


Figure 2. Based on an analysis of 2022 high-resolution imagery, the City of Charlotte contains 47% tree canopy, 18% areas that could support canopy in the future, and 29% total impervious areas.



# Project Results



## ► Residential areas

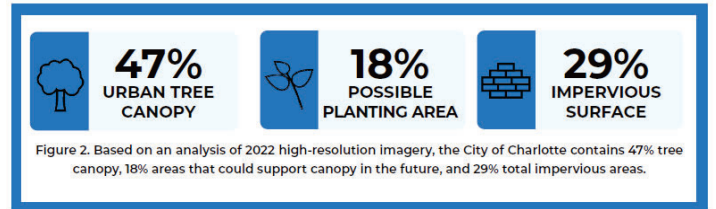
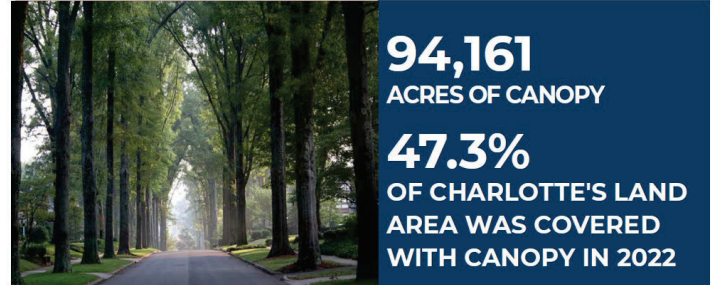
- Highest total – land area, canopy cover, canopy loss, possible planting area (PPA)

## ► Public property & rights-of-way

- Canopy increases in all areas
- City owned properties – 46% canopy

## ► Canopy not distributed equitably

- Gains/loss varied across Charlotte



# Project Results - Citywide



## ► Canopy loss & decline citywide

- Rate of decline slower than 2018 analysis project
- **40% maximum canopy cover in 2050 if “business as usual”**
- Canopy loss occurring city-wide

## ► Canopy gains citywide

- Incremental canopy gains detected in many areas
- Gains offset most of detected canopy loss

## ► Urban heat & impervious

- 29% of Charlotte is impervious surface
- Only 9% of Charlotte's tree canopy covers impervious surface



# City, ETJ, Rights-of-Way



- ▶ **City + ETJ = 49.9% Canopy Cover**
  - ETJ canopy cover = 62.5%
- ▶ **City-Owned Property = 46% Canopy Cover**
  - Increase of 0.3% (32 acres) from 2018 - 2022
  - Possible Planting Area = 14%, or 1,644 acres
- ▶ **City Street Rights-of-Way = 28% Canopy Cover**
  - Increase of 0.21% (59 acres) from 2018 - 2022
  - Possible Planting Area = 16%

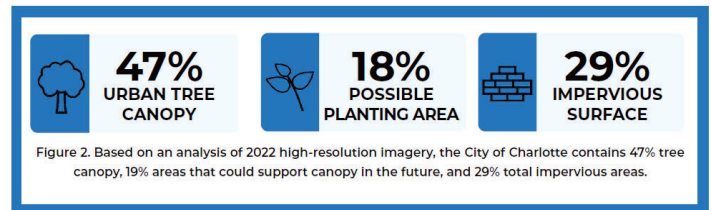


# Peer City Comparison – Early Look



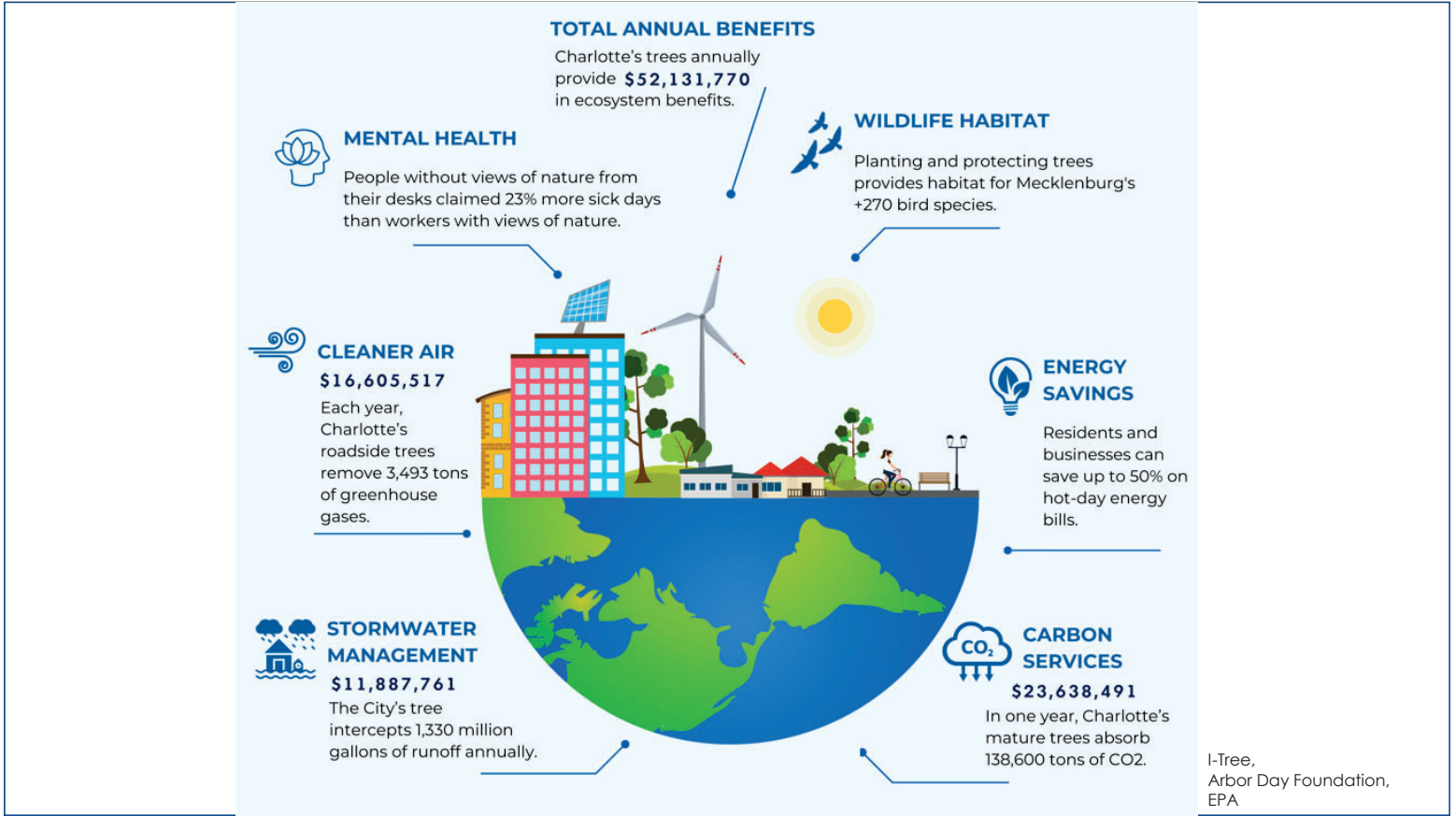
- ▶ **Canopy Cover**
  - Atlanta – 46.5%
  - Austin – 41%
  - Washington, D.C. – 35%
- ▶ **City-wide Canopy Cover Goal**
  - Atlanta - yes, 50% in perpetuity
  - Austin - yes, 50% by 2050
  - Washington, D.C. – yes, 40% by 2032

## Charlotte's Canopy



- ▶ **American Forests Recommends**
  - Universal city-wide coverage goal of 40+ % no longer recommended
  - Goals should be specific to each city, benefit driven, and scalable





## Place Types



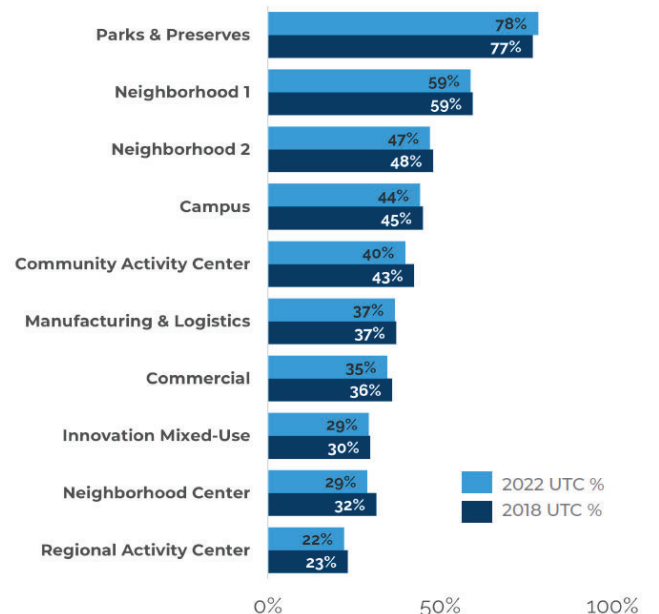
### ► Canopy loss in 9 out of 10 place types

- Parks & Preserves only increase

### ► Neighborhood 1 place type - Greatest

- Land area - 57% of City's total land area
- Canopy cover - 63% of City's total canopy
- Canopy loss – 70% of City total (700 acres)
- Planting area - 66% of City total (25K acres)

### EXISTING URBAN TREE CANOPY (%) BY PLACE TYPES



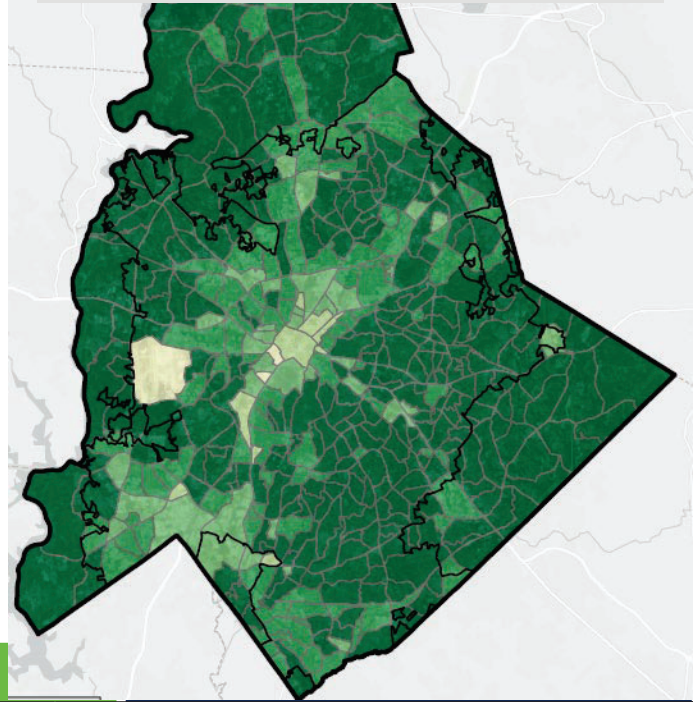
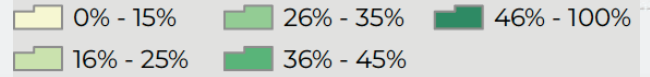


## Neighborhood Profile Areas (NPAs)

### ► Canopy cover

- Canopy isn't distributed equitably
- 50% of NPAs exceed City's 47.3% coverage
- 79% of NPAs canopy cover = 40-70%
- 20% of NPAs canopy cover < 40% (88 NPAs)
- Average PPA for all NPAs = 19%

#### Urban Tree Canopy %

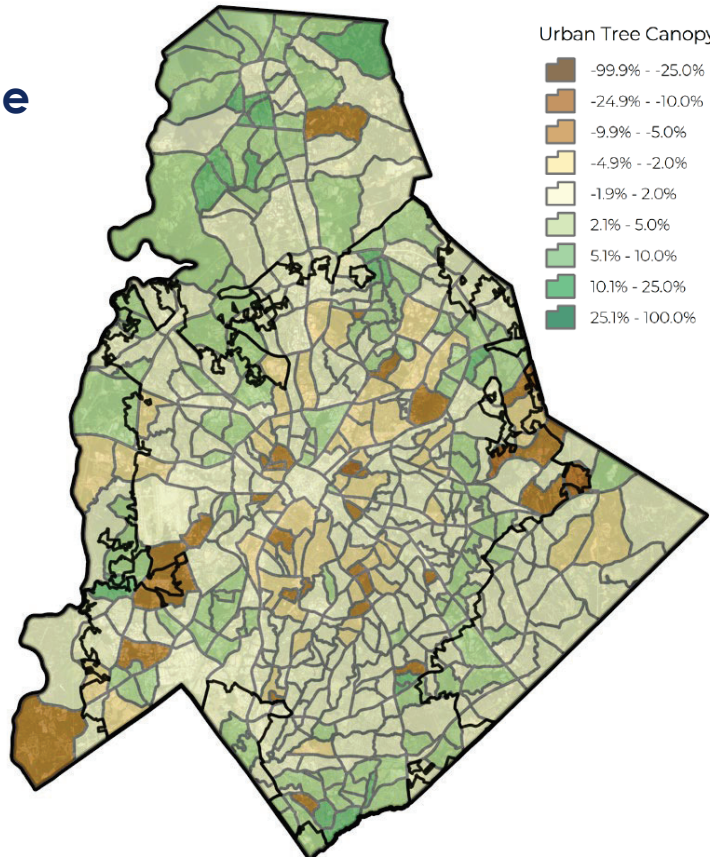
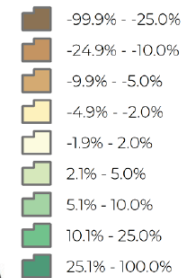


## Neighborhood Profile Areas (NPAs)

### ► Canopy loss

- Occurred city-wide
- 40% of NPAs lost canopy
- Average loss = 2.5%

#### Urban Tree Canopy Change %

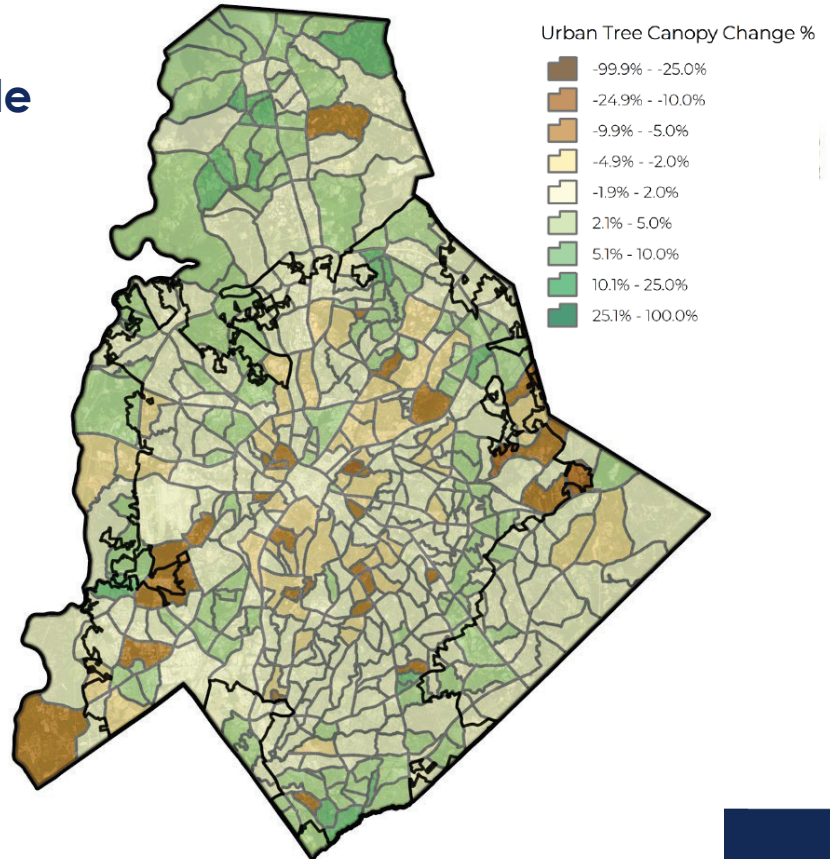




## Neighborhood Profile Areas (NPAs)

### ► Canopy gain

- Occurred city-wide, concentrated near borders
- 51% of NPAs gained canopy
- Average gain = 2.37%



## Important Themes



- Technology and analysis methodology has greatly evolved since completion of 2018 canopy analysis. Path set for consistent canopy analysis and “apples to apples” comparison
- Charlotte’s canopy is robust, resilient, still facing significant challenges
- Canopy decline still occurring, planting and preservation efforts having impact, not on path to achieve 50% Canopy By 2050.....but results indicate 50% still may be achievable
- Canopy equity - prioritize & use as a guiding principle for future policy work
- Additional analysis needed, complete in 2024 within new policy work



## UDO Connection



### ► **Current UDO - increased preservation & planting in residential areas**

- Residential single-lot in-fill development now regulated – plant street trees
- Increased tree save preservation from 10% - 15% in single-family subdivisions
- Heritage tree preservation required on all property and development projects

### ► **New UDO concepts – Increased focus on impervious & urban heat**

- Heritage tree regulation revised to target impervious & temperature issues
- Increased planting requirements to offset urban heat island effects



## Next Steps



### ► **Further review of project results:**

- Staff to review all data and project deliverables
- Consult with canopy partners and stakeholders
- Determine additional canopy analysis needed in future policy work

### ► **Planned policy work: Tree Canopy Action Plan 2.0**

- Update to Canopy Goal & Urban Forest Master Plan
  - Additional analysis
  - Stakeholder/public engagement
  - Recommendations for policy and ordinance concepts