



TREEBALTIMORE

INCREASING TREE CANOPY AT THE CITY LEVEL



BALTIMORE CITY
RECREATION & PARKS

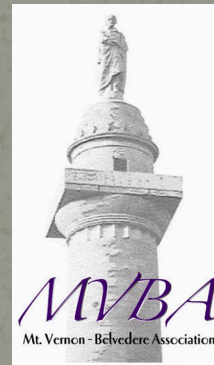
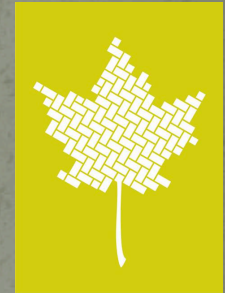


TreeBaltimore

- Mayoral Initiative
- Baltimore City Recreation and Parks – Urban Forestry
- Evolved into a Partnership
 - Fed, State and Local Gov
 - Non-profits and for profit
 - Citizens



WHO IS TREEBALTIMORE?

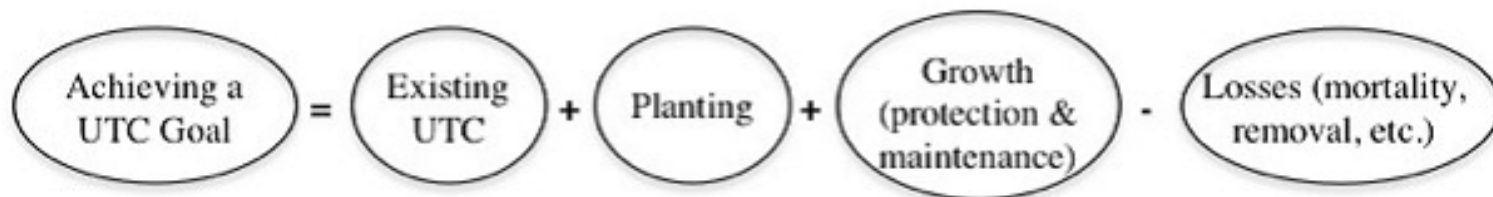


Tree Planting to Leadership



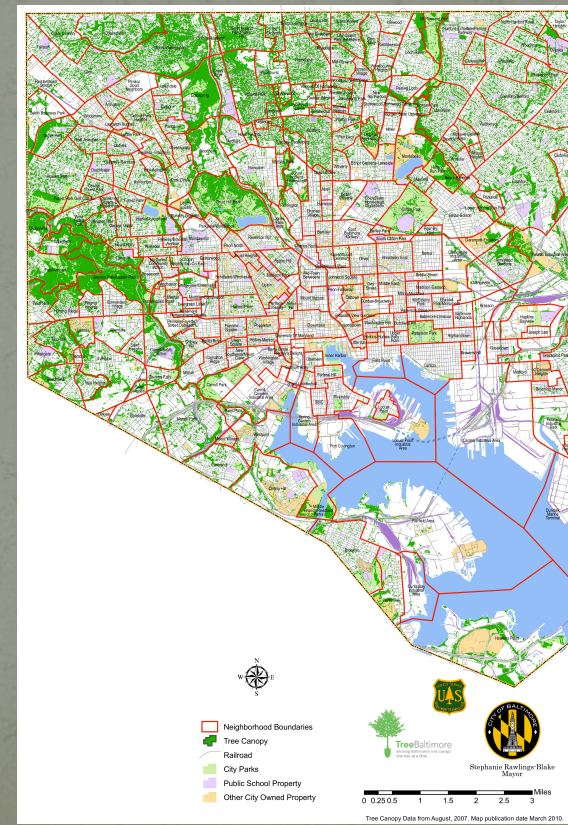
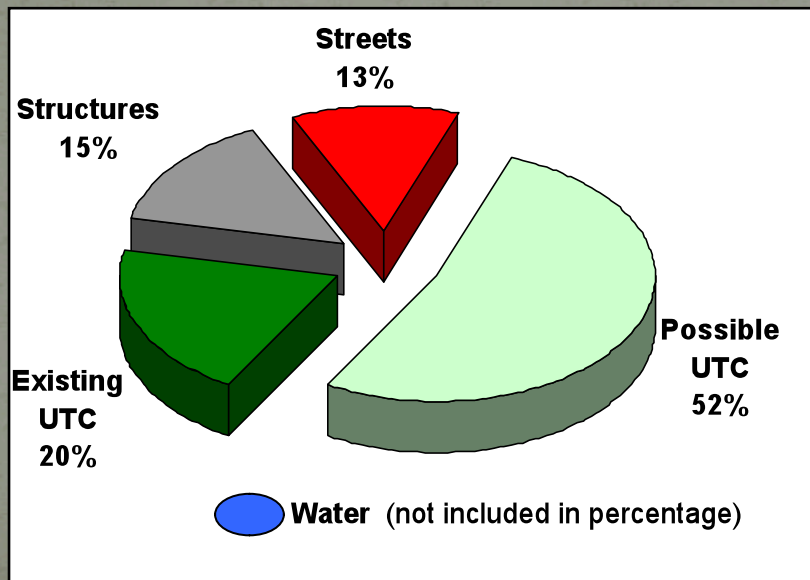
Goals

- 40% UTC
 - Set in 2007 – UTC 20%
- Improving the health canopy
 - New programs in recent years



CANOPY GOALS

- IN 2007, BALTIMORE SET A GOAL OF DOUBLING THE UTC FROM 20% TO 40% BY 2037.
- 27% - 2011
- 28% - 2018



CANOPY GOALS

- 28% TO 40% REQUIRES *ESTABLISHMENT* OF 25,000+ TREES A YEAR
- CURRENTLY 8 - 10,000 TREES *PLANTED* PER YEAR



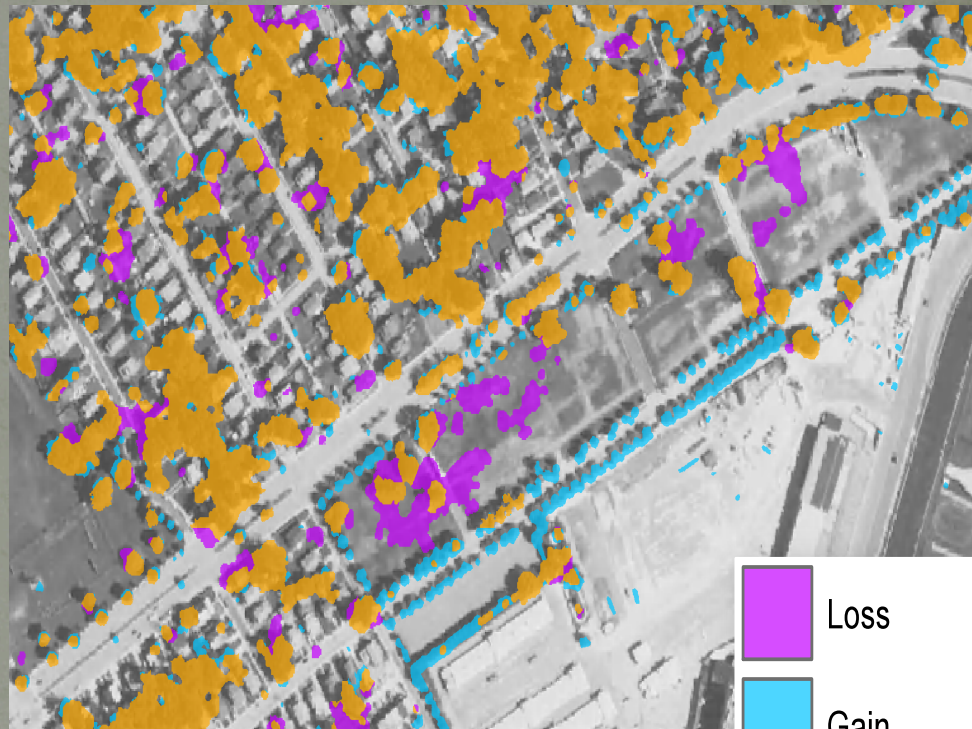
UTC

WHAT IS AN URBAN TREE CANOPY?



UTC 2017

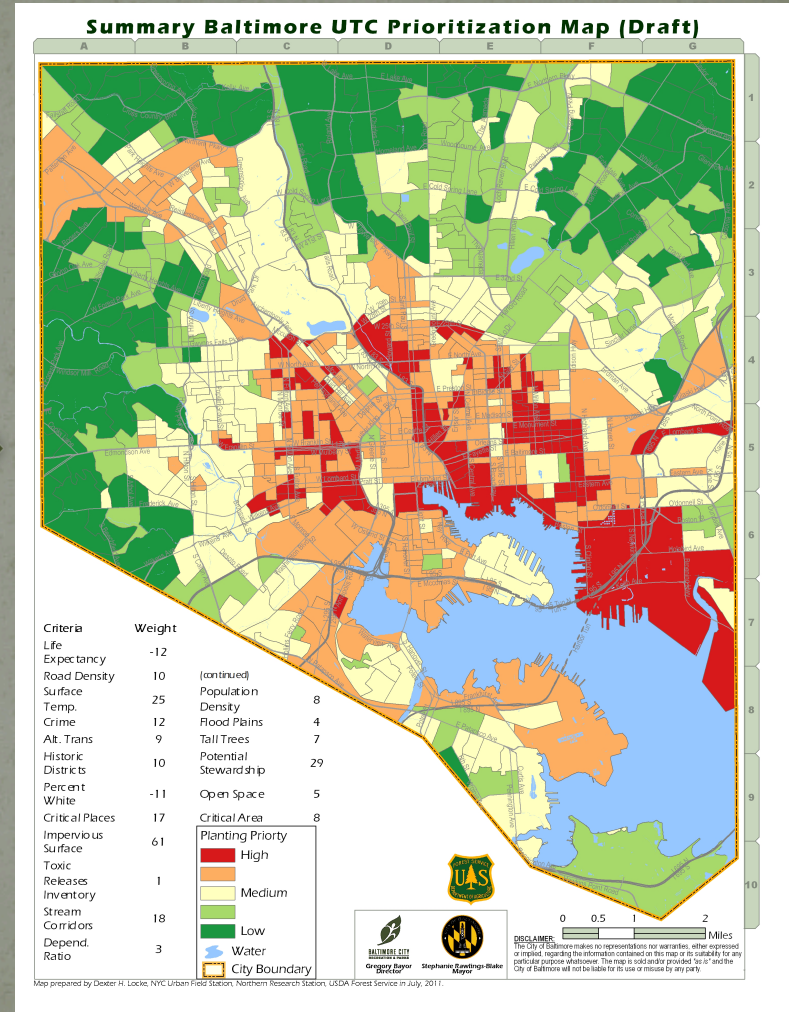
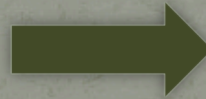
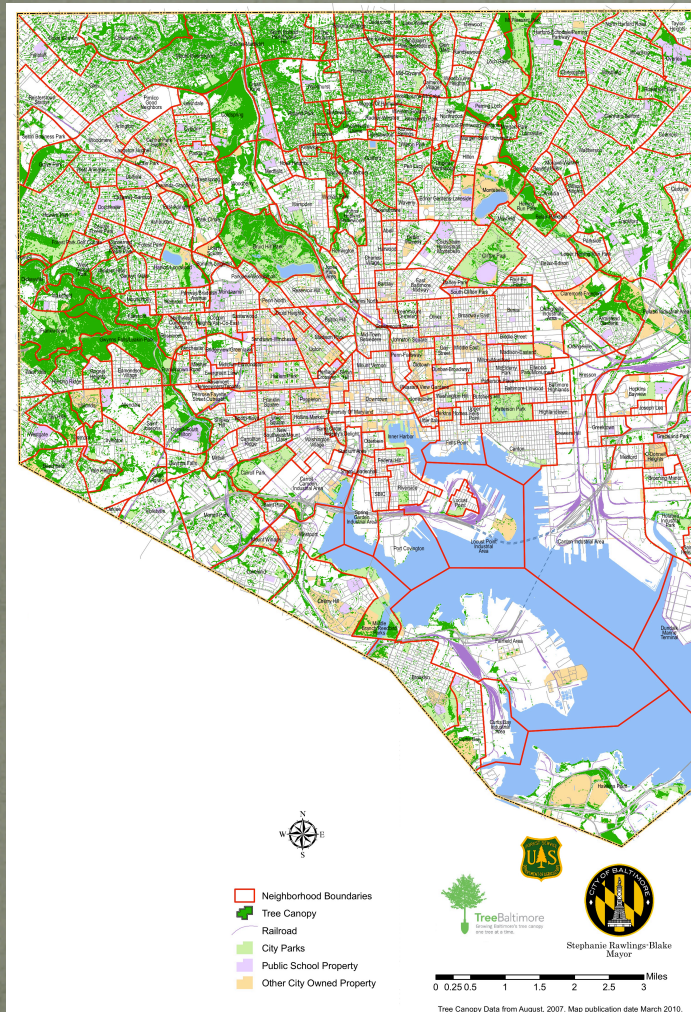
- USFS New Data Analysis
- Increase from 27% to 28%
- USFS has not analyzed a city in the US that has seen an increase.
- Tested 3 times



LiDAR & NAIP Imagery Data
2015 overlaid on 2007



UTC LEAD TO PRIORITY MAP

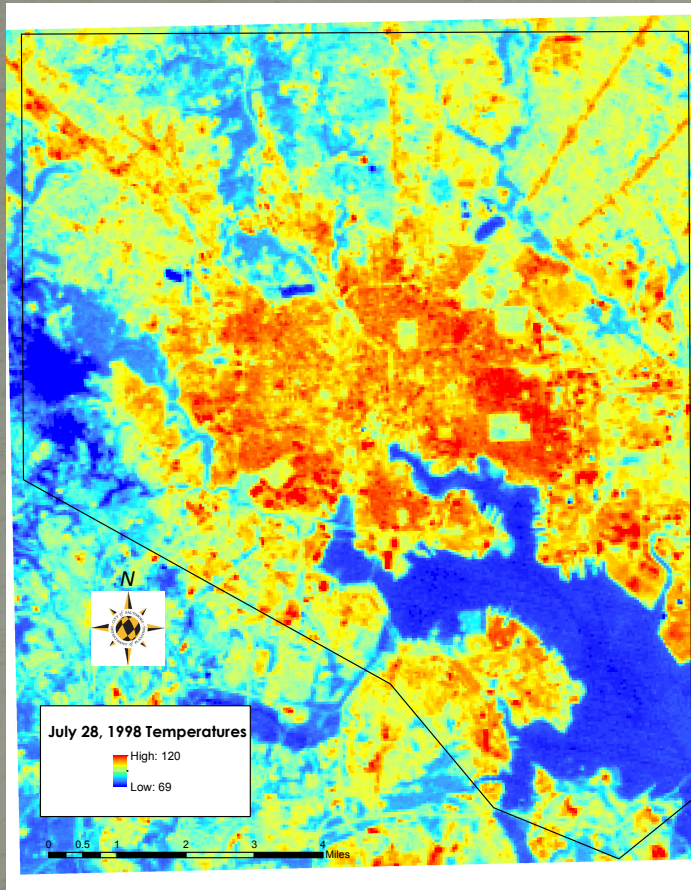


PRIORITY PLANTING MAP

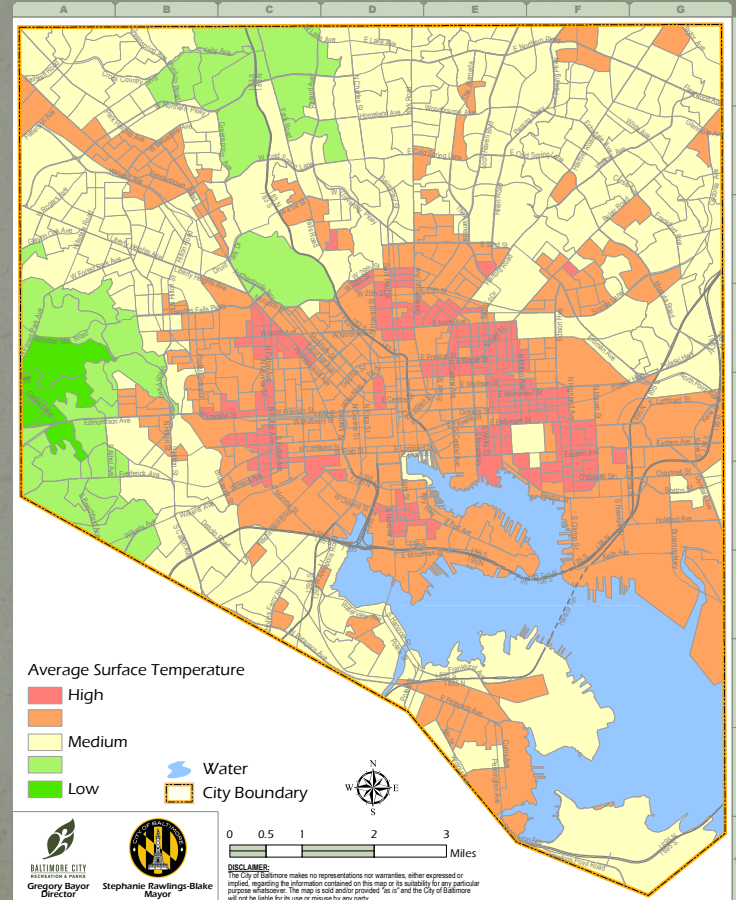
| Major Criteria | | Criteria Variables | (please fill out) ↓ |
|-------------------------------|--|--------------------|------------------------|
| Public Health & Safety | Life expectancy (Inverse) | | |
| | Asthma by zip code | | |
| | Dependency Ratio | | |
| | Urban Heat Island using surface temperature | | |
| | Crime: Robbery, Burglary, Theft | | |
| | Transportation Connections | | |
| Environmental Justice | Toxic Releases Inventory | | |
| | Percent White (Inverse) | | |
| | Percent Parks | | |
| Water Quality | Percent Impervious Surface | | |
| | Stream corridors | | |
| | Flood Plains | | |
| | Critical Area | | |
| Air Quality & Noise Pollution | Road Density | | |
| Critical Places | Schools, hospitals, libraries, recreation centers, and elderly care facilities | | |
| | Population density (per square mile) | | |
| Community Presence | Potential stewardship (positive) | | |
| Aesthetic | Restore Historical Sites | | |
| | Street Alley (New or Restored) | | |
| Design | Historic Districts | | |
| Economic | Real estate Value | | |
| Biodiversity | Ecosystem dynamics | | |
| | Invasive Issues | | |
| Replacement | Percent of tree canopy that is over 50 feet | | |
| | Ash/other species challenged by disease | | |
| Education | ???? | | |

| |
|--|
| Green indicates that we can include this in prioritizing planting locations |
| Red indicates that we do not have the data or have not performed the needed analysis for inclusion, please select another variable |
| Beige indicates that that we can include this in prioritization planting locations, and this is a new variable |

PRIORITY PLANTING MAP

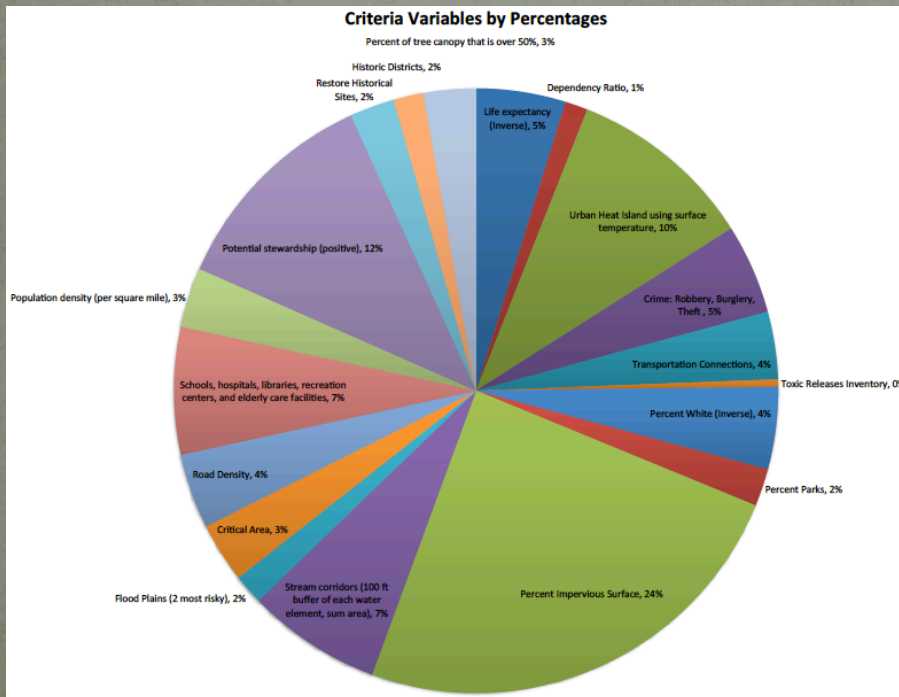


Average Surface Temperature on July 28, 1999



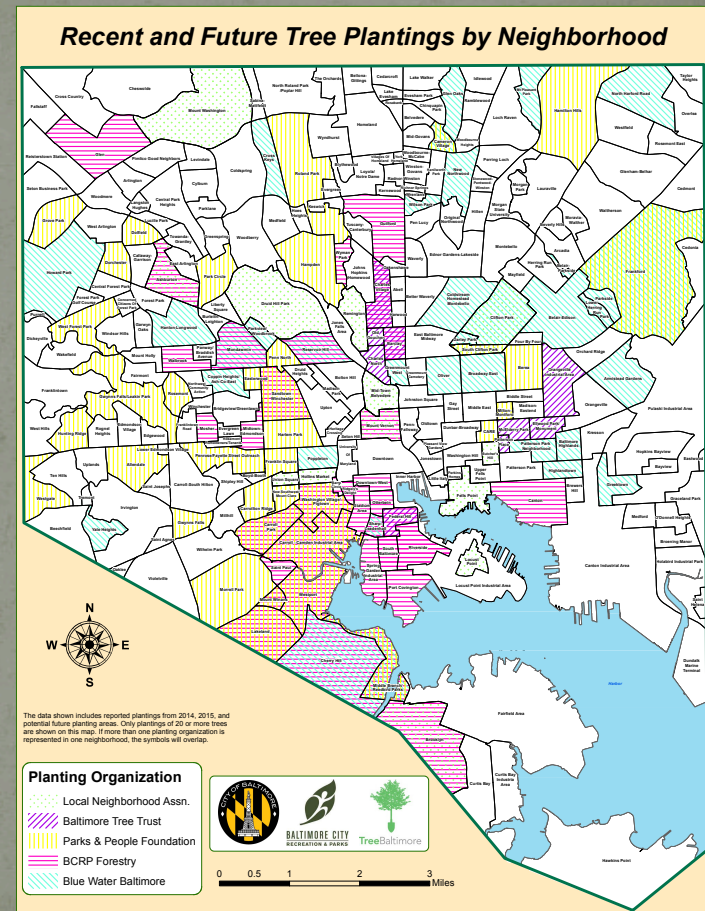
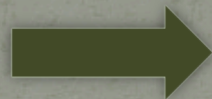
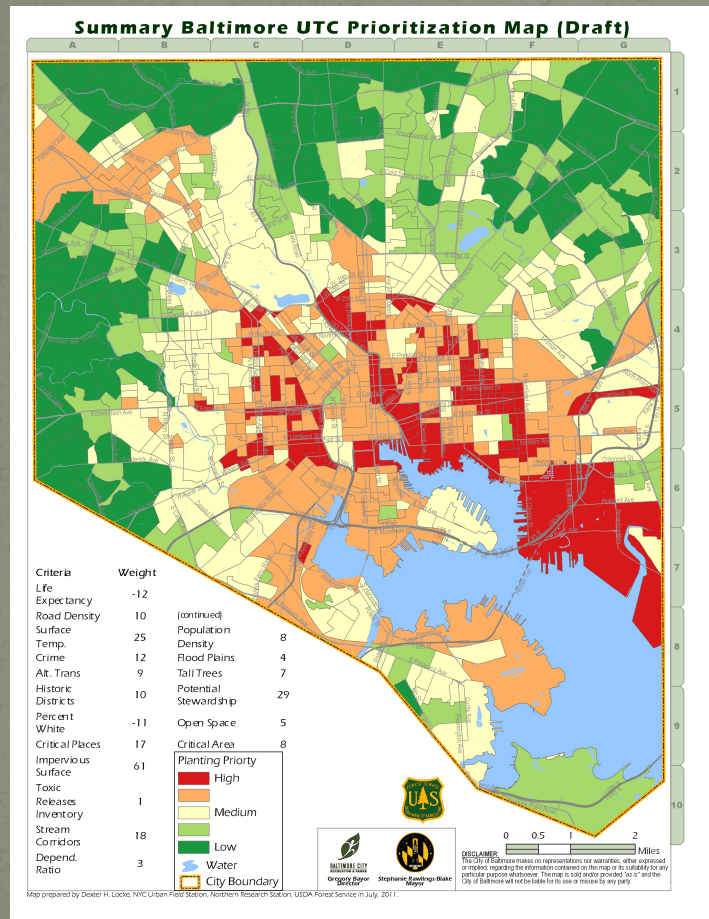
PRIORITY PLANTING MAP

- Why do you plant trees?
- ~30 Partners

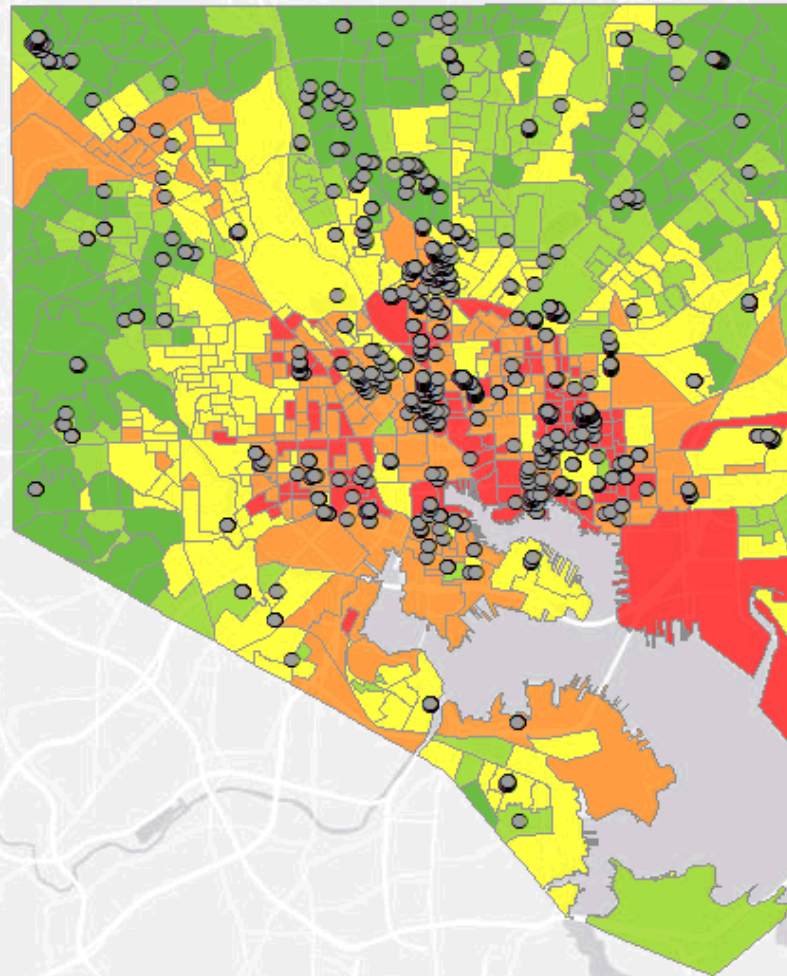


| Major Criteria | Criteria Variables | TOTALS | PERCENT |
|-------------------------------|--|------------|---------------|
| Public Health & Safety | Life expectancy (Inverse) | 12 | 4.8% |
| | Dependency Ratio | 3 | 1.2% |
| | Urban Heat Island using surface temperature | 25 | 10.0% |
| | Crime: Robbery, Burglery, Theft | 12 | 4.8% |
| | Transportation Connections | 9 | 3.6% |
| Environmental Justice | Toxic Releases Inventory | 1 | 0.4% |
| | Percent White (Inverse) | 11 | 4.4% |
| | Percent Parks | 5 | 2.0% |
| Water Quality | Percent Impervious Surface | 61 | 24.4% |
| | Stream corridors (100 ft buffer of each water element, sum area) | 18 | 7.2% |
| | Flood Plains (2 most risky) | 4 | 1.6% |
| | Critical Area | 8 | 3.2% |
| Air Quality & Noise Pollution | Road Density | 10 | 4.0% |
| Critical Places | Schools, hospitals, libraries, recreation centers, and elderly care facilities | 17 | 6.8% |
| | Population density (per square mile) | 8 | 3.2% |
| Community Presence | Potential stewardship (positive) | 29 | 11.6% |
| Aesthetic | Restore Historical Sites | 6 | 2.4% |
| Design | Historic Districts | 4 | 1.6% |
| Replacement | Percent of tree canopy that is over 50% | 7 | 2.8% |
| | Total | 250 | 100.0% |

PRIORITY PLANTING

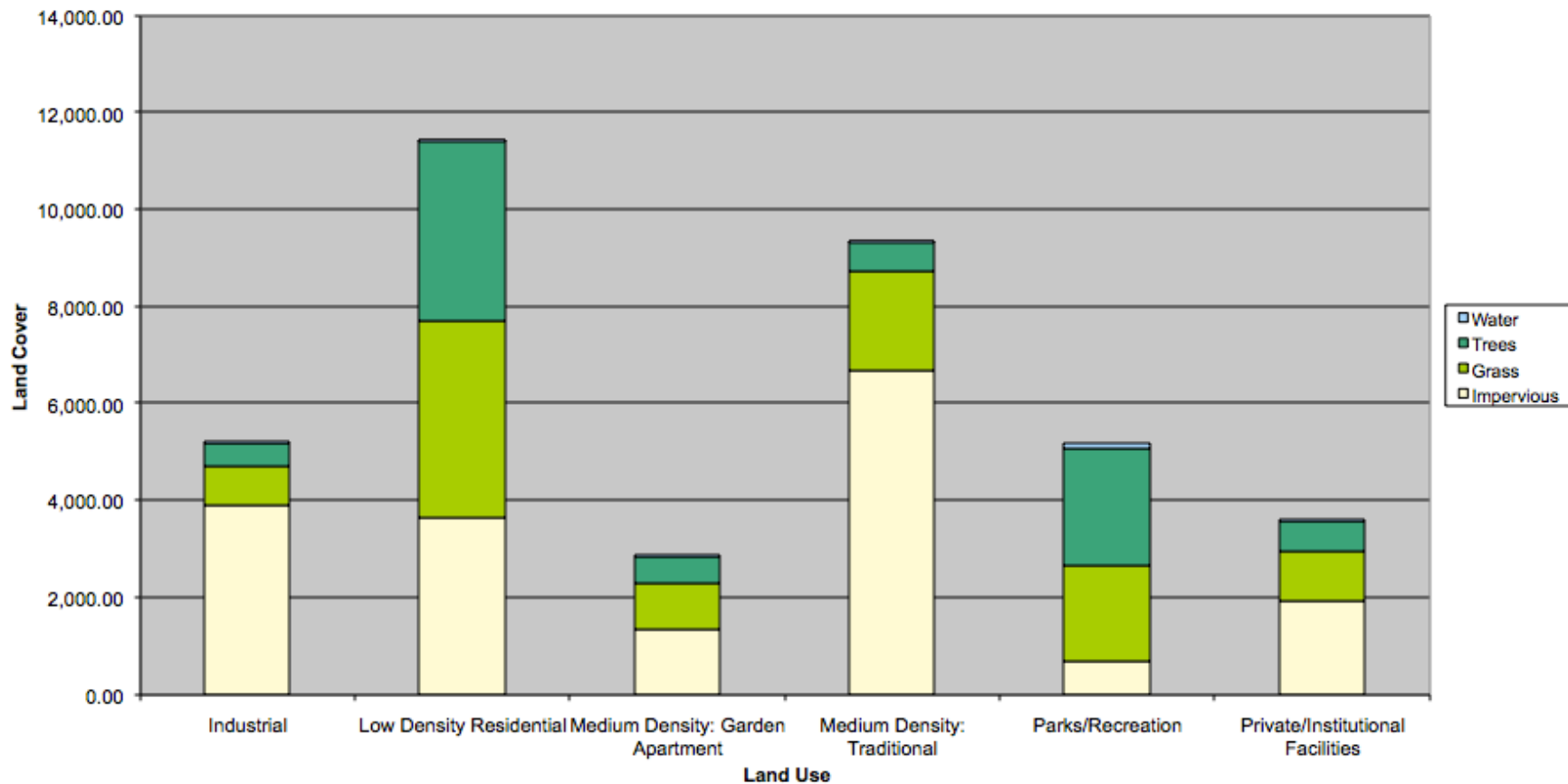


TARGETING PRIORITY NEIGHBORHOODS



PROGRAM TARGETS

Acreage of Land Cover by Land Use



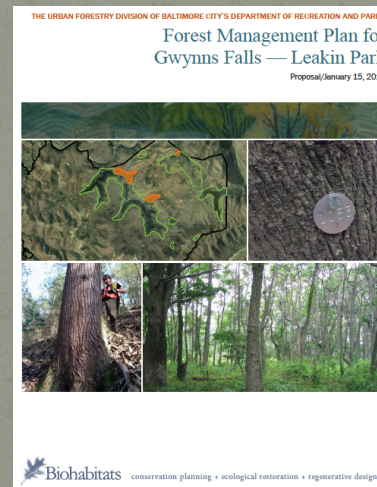
Baltimore's Tree Programs

- Tree Give-A-Ways
- TreeNeighborhood
- Tree Plantings
- Fruit Trees
- Education
- Engagement
- Promote Advocacy



Forestry Programs

- Forest Management Plan
 - Gwynn Falls Leakin Park
- Camp Small
 - Zero Waste Facility
- EAB Plan
 - Treat 400 trees
 - Remove 5,000 trees
 - 5 years
- Proactive Pruning
- Tree Inventory



Baltimore City Tree Inventory

- First full street tree inventory for the city
- The inventory will include trees as well as vacant and potential planting spaces in city street right of way (ROW) and all trees in maintained area of city parks.
- Data collection began April 2017
- Data collection will occur during leaf-on season only
- The entire city should be inventoried by fall 2018

Data Collected for Trees and Planting Sites

Location Data

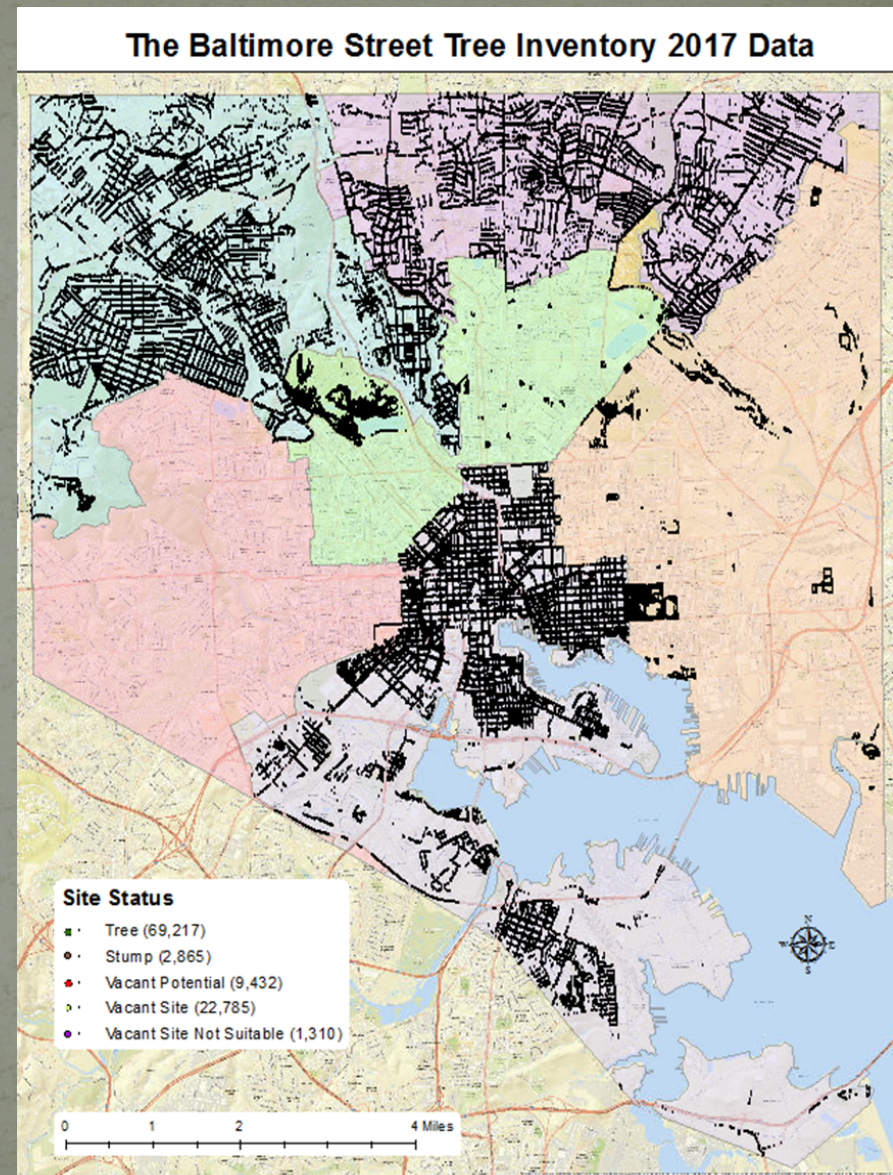
- ▶ Street Address
- ▶ Side of address
- ▶ Coordinates
- ▶ Location Type (Street or Park)
- ▶ Space Type (Tree Lawn, Median, Island, Planter, etc.)
- ▶ Hardscape
- ▶ Space length and width
- ▶ Overhead utilities present
- ▶ Notes

Tree Data

- Unique ID
- Species
- Diameter (DBH) to .1 inch
- Estimated Height
- Number of Stems
- Condition
- Recommended Maintenance
- General Observations
- Notes

Progress

- Approximately 50% of the city has been inventoried
- Between April and October of 2017 Data was collected for:
 - 69,217 Trees
 - 2,865 Stumps
 - 22,785 Vacant Sites
 - 9,432 Vacant Potential Sites



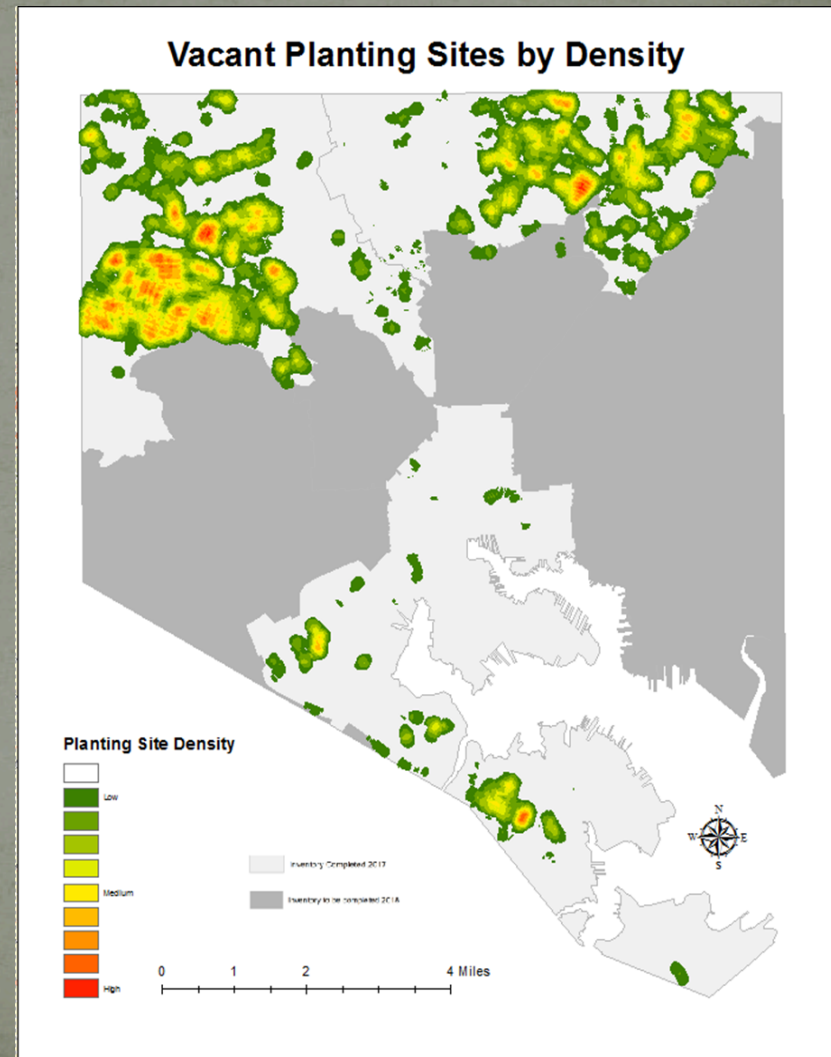
How we are using the data collected

- Planning and prioritization of proactive and reactive maintenance
- Data from the inventory used in planning and assigning maintenance includes:
 - Maintenance needs
 - Condition
 - DBH (Size if the tree measured as trunk diameter at 4.5' above the ground)
 - Overhead Utilities Present
 - Hardscape



Tree inventory data used for planning of future tree plantings

- Vacant and potential site information
- Space type
- Space size (Length/Width)
- Species composition
- Utilities



Thoughts for the future

- Frequency of data acquisition
 - Yearly would be ideal for tracking loss post storm and assisting with tree inventory maintenance
- Use of LiDAR data for QA/QC on tree inventory data.
- Use of tree inventory data as a control to potentially isolate spectral signatures for different species, or even just to isolate individual tree crowns for city trees.

Connecting data

- Inventory
- UTC
- Prioritization

Questions?

