

Cambridge Urban Forest Master Plan

Public meeting #1

October 03, 2018



REED HILDERBRAND



PROJECT SCOPE

ANALYTICS / RESEARCH

PRACTICE

REGULATORY / POLICY RESEARCH

OPEN HOUSE

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OPEN HOUSE

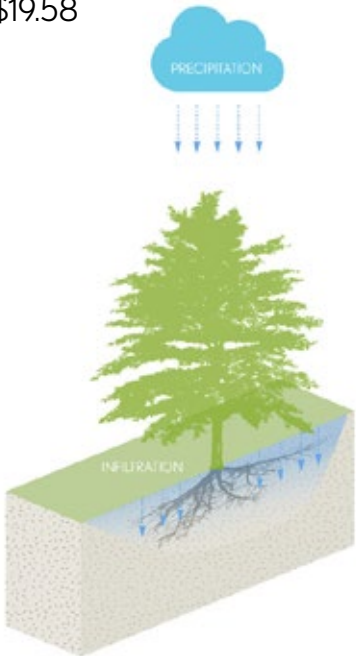
To maintain, plan, build, and sustain a healthy, connective urban forest at a time when the urban forest is more important than ever before.

HEALTHY AND CONNECTED SYSTEMS



THE BENEFITS OF THE URBAN FOREST

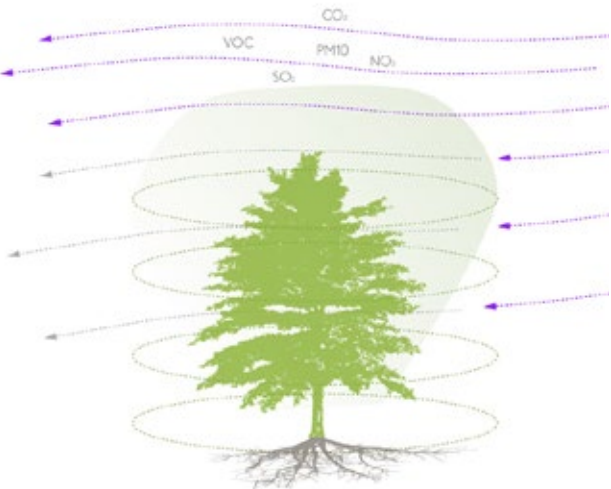
STORMWATER
Stormwater: \$19.58



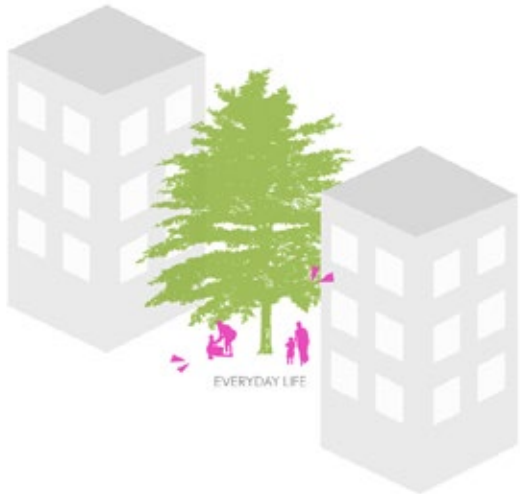
ENERGY SAVED
Energy: \$65.91



CO₂ & AIR QUALITY
CO₂: \$2.21
Air Quality: \$12.81



PROPERTY VALUE
Add Value: \$276.55



Ecosystem services for an average Pin Oak in Cambridge

Source: i-Tree Streets - Annual Savings for Average Pin Oak in Cambridge

Cultural Value

THE CONDITION OF OUR URBAN FOREST



OPEN PIT



PLANTING BED



MULCH



TREE GRATE



FLEXIPAVE

THE CHALLENGES OF PLANTING IN THE PUBLIC REALM



MASS AVE BETWEEN HUDSON ST AND SHEPARD ST

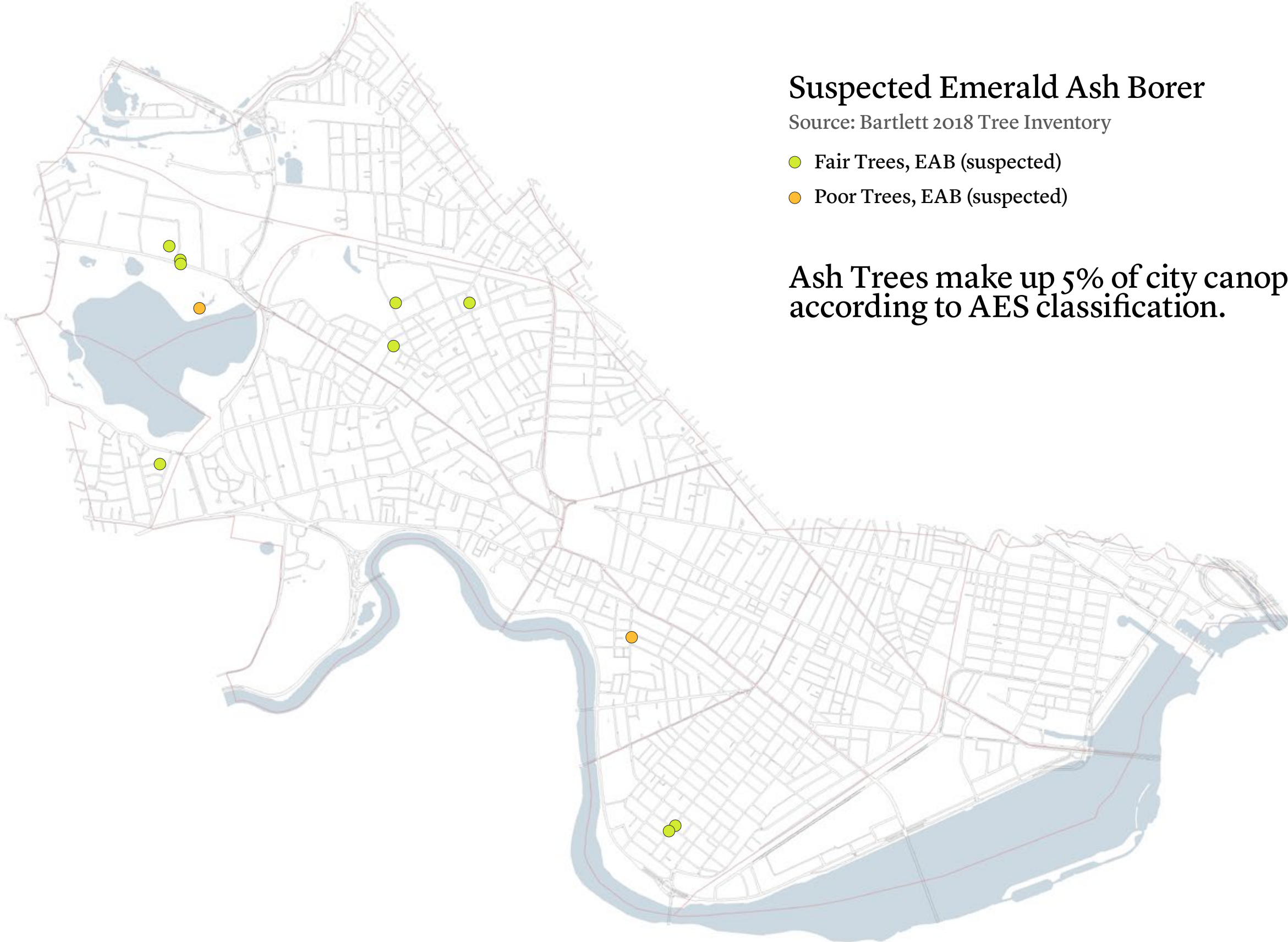


MASS AVE BETWEEN MARTIN ST AND HUDSON ST



EXETER PARK TREE WELL

OUR FOREST IS AT RISK – PESTS AND DISEASES



Suspected Emerald Ash Borer

Source: Bartlett 2018 Tree Inventory

- Fair Trees, EAB (suspected)
- Poor Trees, EAB (suspected)

Ash Trees make up 5% of city canopy according to AES classification.

[Public Works](#) > [News and Events](#) > [News](#) > Emerald Ash Borer (EAB) Confirmed in Cambridge

Emerald Ash Borer (EAB) Confirmed in Cambridge

8/23/2018

CAMBRIDGE, Mass. – August 23, 2018 - On Monday, August 20, 2018, the Department of Conservation and Recreation (DCR) confirmed that Emerald Ash Borer (EAB) has been found in Cambridge. EAB is particularly concerning because of the speed at which it kills Ash trees, generally within 1-3 years. Standing dead ash trees present a public safety risk due to how quickly their brittle branches will fail.

The City of Cambridge was the first municipality in New England to develop a comprehensive treatment strategy to protect the ash tree population on city property. Healthy Ash trees on city property, including street trees, have been protected from EAB through proactive treatments of TreeAzin over the past 3 years. TreeAzin is a product derived from seed extracts of the Neem tree and is administered by injection at the trunk of the tree. TreeAzin is listed by the Organic Materials Review Institute (OMRI) for use in organic production in the U.S. This pesticide is not hazardous to humans or animals. For more information on the City's treatment program for EAB, please visit: cambridgema.gov/EAB

How do I know if I have an Ash tree?

According to University of Connecticut College of Agriculture, Health and Natural Resources Tree Guide, Ash trees have four identifying features:

1. Ash trees have compound leaves comprised of 7 to 11 leaflets.
2. The twigs are smooth, rigid and grayish and resemble bones
3. The bark of mature trees is deeply furrowed
4. They have opposing branches



I have an Ash tree. What do I do?

If you have an ash tree on your property, please consider one of the following:

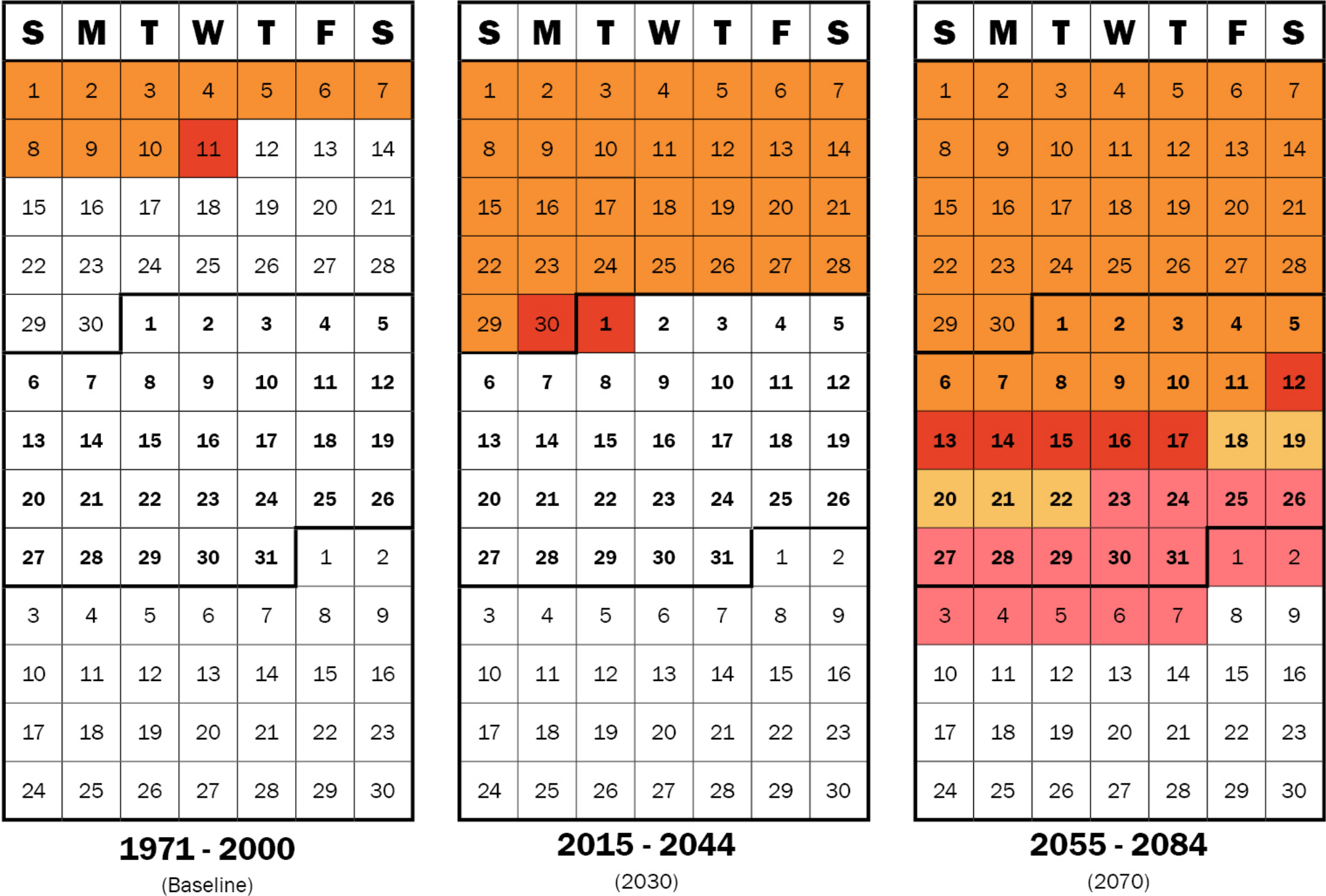
- **Treat**- If you have not yet begun a treatment program, we recommend that you work with a certified arborist to develop an ongoing treatment plan for your Ash tree. It is far more cost-effective to treat a healthy Ash tree than it is to remove it. You can find a certified arborist at www.massarbor.org
- **Remove**- Dead and dying trees become a risk for public safety. Remove and replace unhealthy Ash trees with different species. Doing nothing may put you and your property at unnecessary risk

For additional questions or concerns regarding Emerald Ash Borer in Cambridge, contact the City's Urban Forestry staff at cambridgetree@cambridgema.gov.

Aspects of climate change that impact the urban forest:

- Increasing temperatures
- More frequent drought
- Increased flooding (Precipitation / Sea Level Rise)
- New pests and diseases

OUR FOREST IS AT RISK – CLIMATE CHANGE

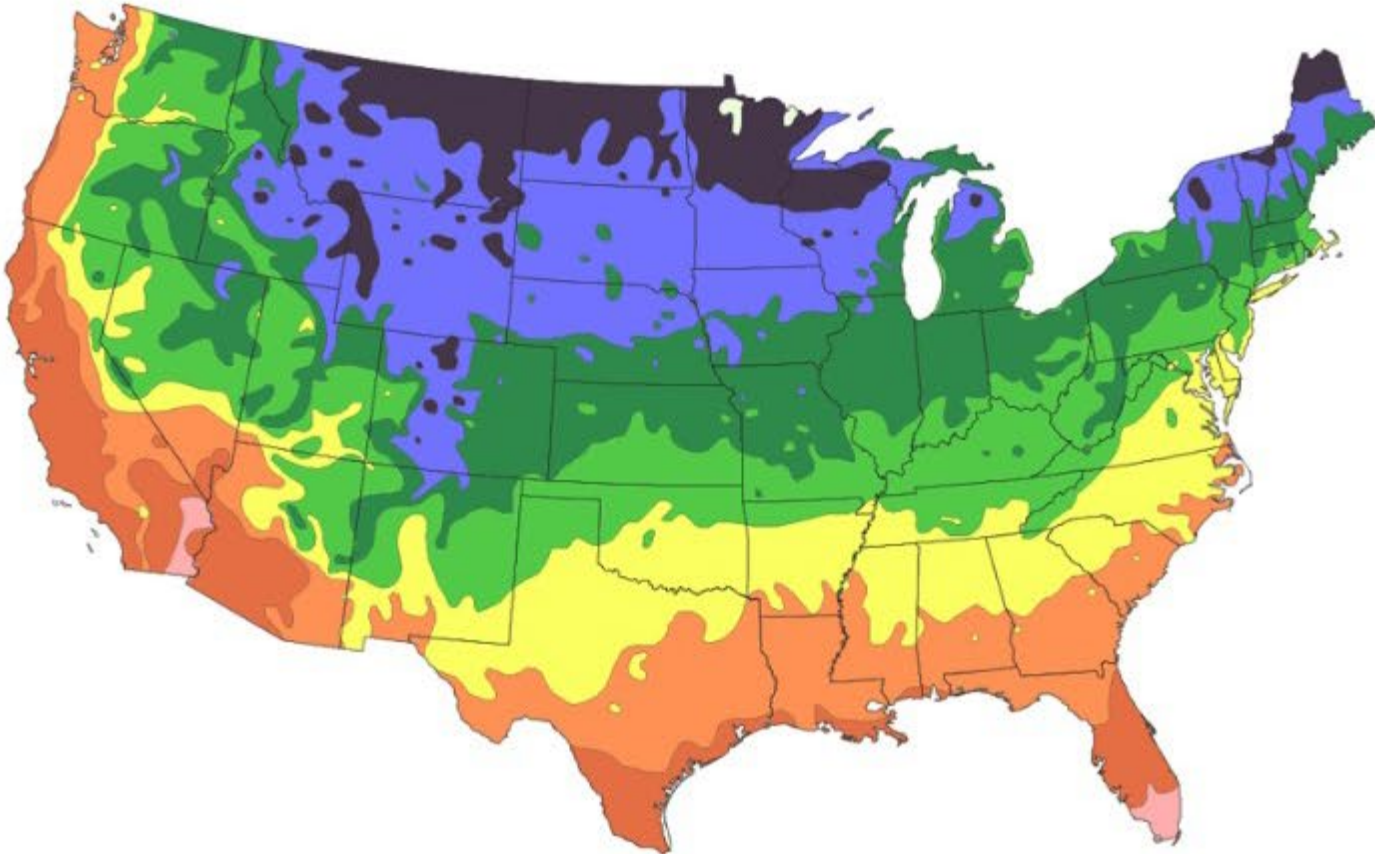


Above 90°F - Low Scenario
 Above 90°F - High Scenario
 Above 100°F - Low Scenario
 High 100°F - High Scenario

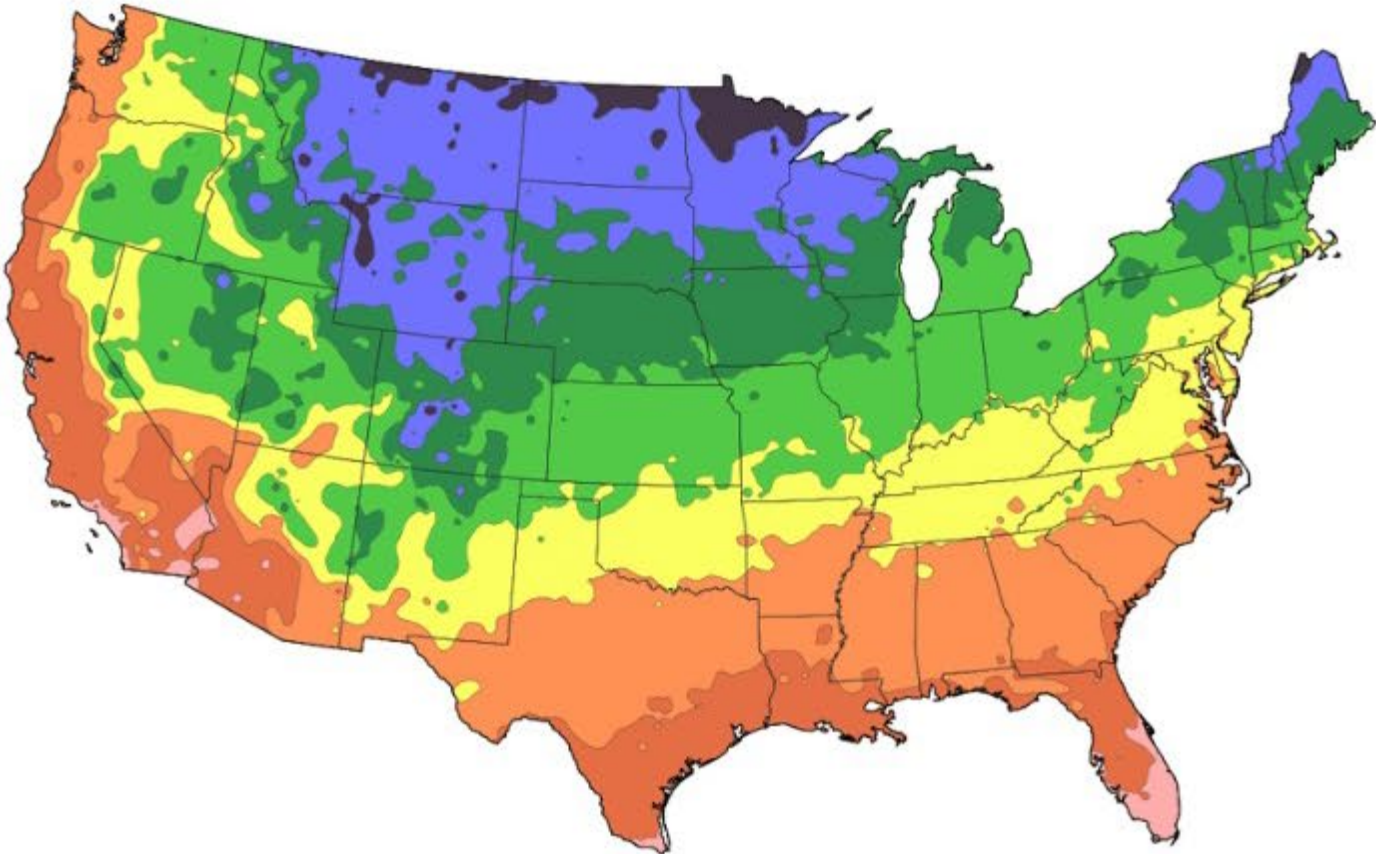
*Summer is considered to be the 91 days of June through August

Source: CCVA

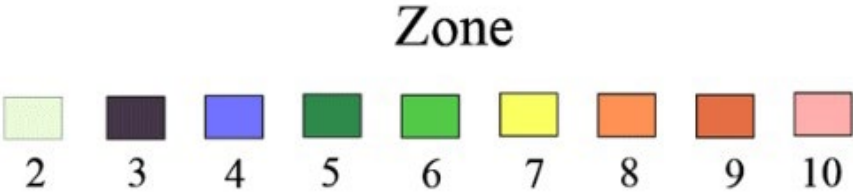
OUR FOREST IS AT RISK – CLIMATE CHANGE



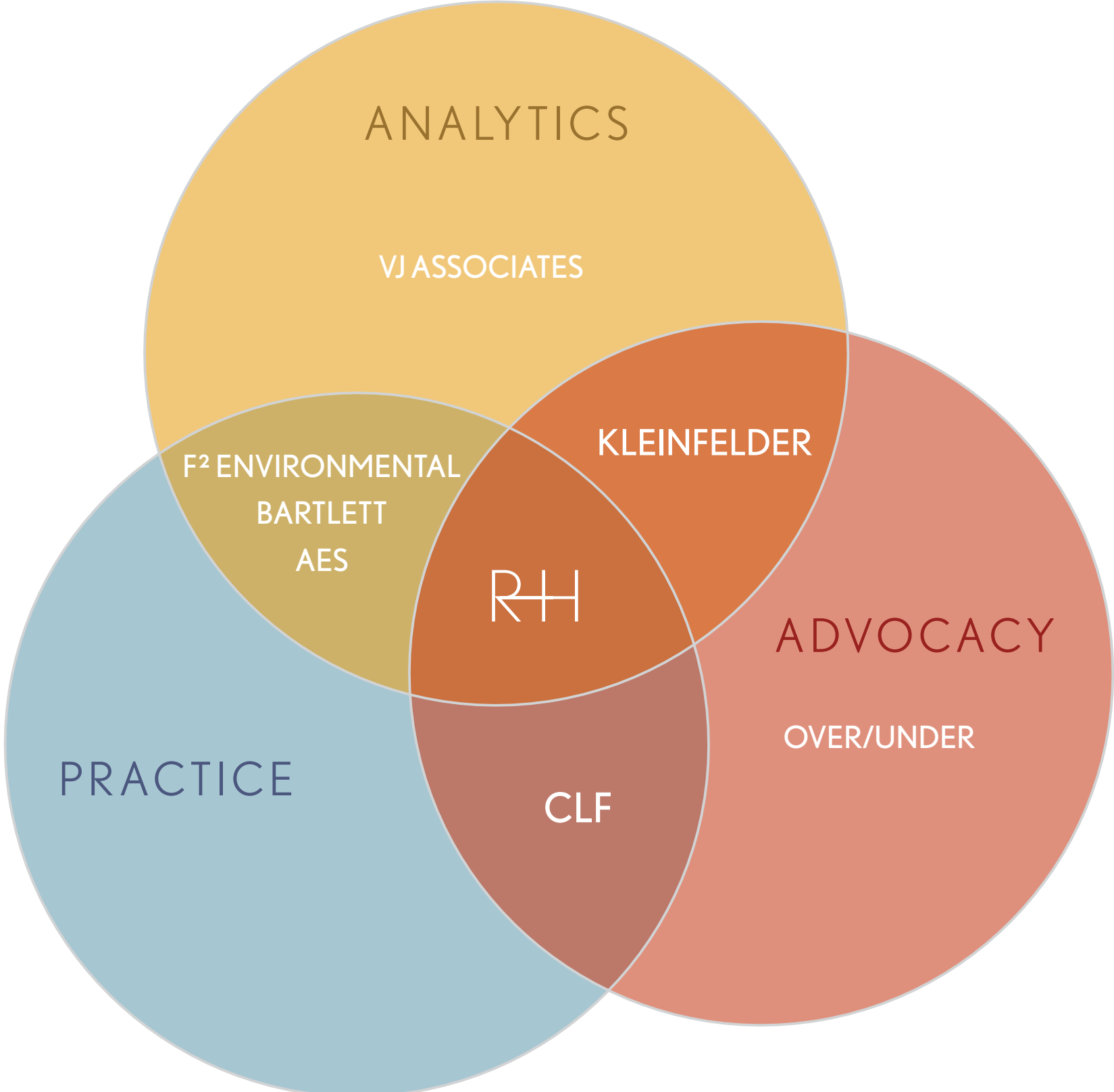
1990 USDA Plant Hardiness Zone Maps



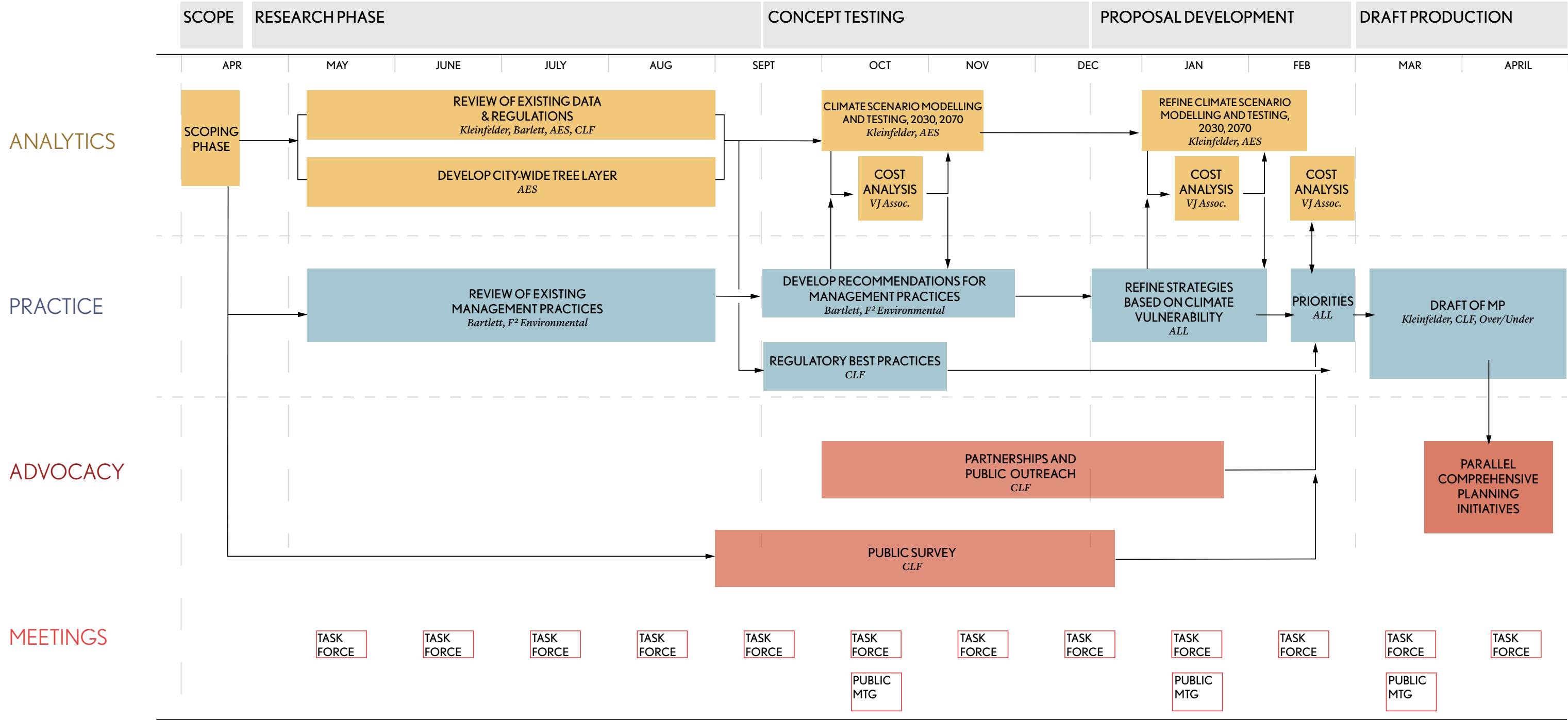
2015 USDA Plant Hardiness Zone Maps



PROJECT TEAM



PROJECT SCHEDULE



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OPEN HOUSE

Today, Cambridge has **25.3%** of its land area covered by canopy.

Cambridge has had an average net loss of **31 acres** of canopy cover every year.

At this rate, canopy cover will be **16.2% in 2030.**

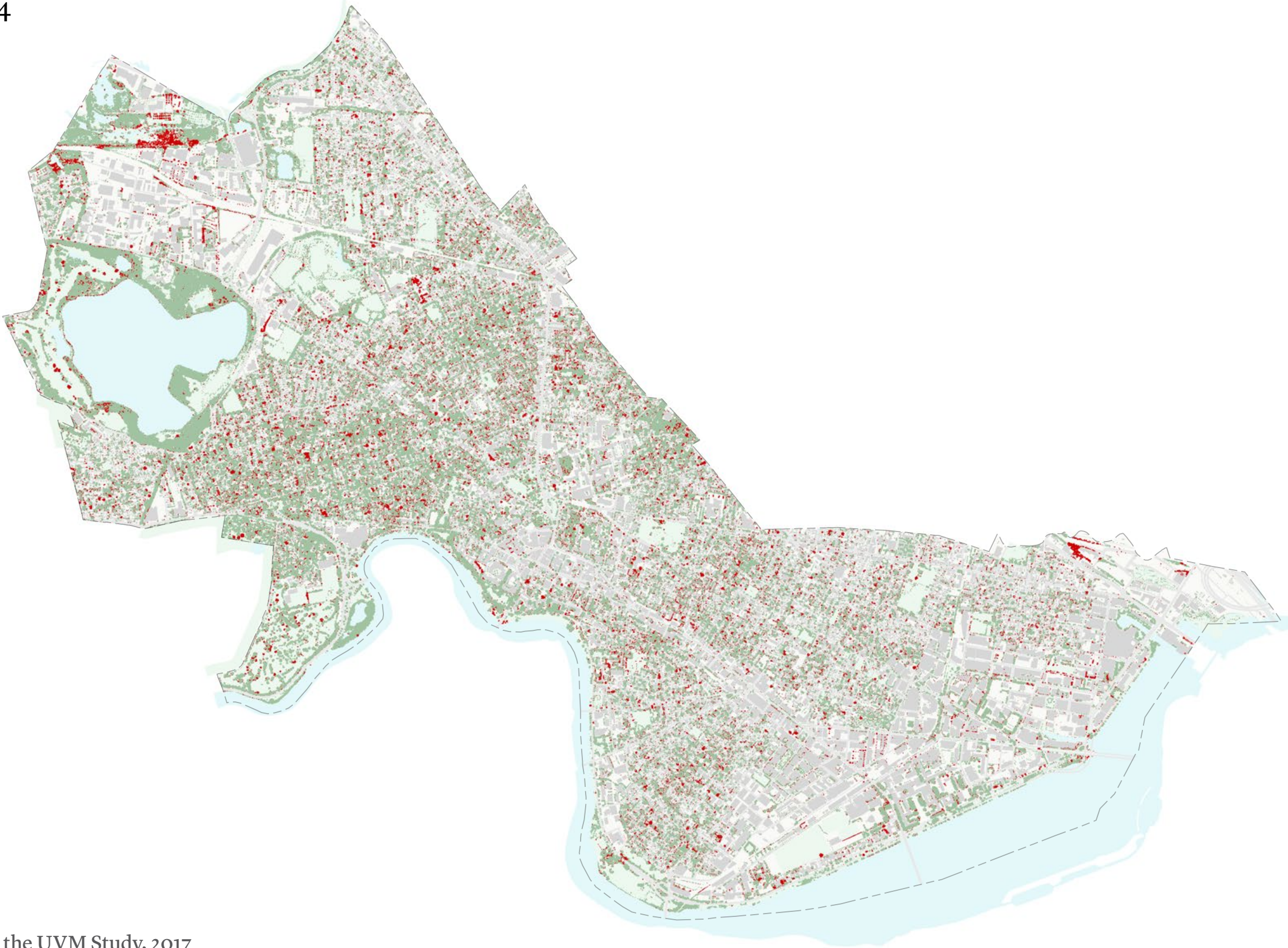
A TREND OF CANOPY LOSS

Change Between 2009-2014

2009 30.8% COVER
2014 28.3% COVER

GAIN 2.5% (101 ACRES)
LOSS 4.9% (200 ACRES)
NET - 99 ACRES

0.48% AVERAGE LOSS
OF PERCENT CANOPY COVER
PER YEAR



DRAFT

- Area of Canopy Loss
- 2014 Canopy Cover
- Open Areas

Source: Prepared by RH Team from the UVM Study, 2017

A TREND OF CANOPY LOSS

Change Between 2014-2018

2014 28.3% COVER
2018 25.3% COVER
(1,027 ACRES)

GAIN 5% (206 ACRES)
LOSS 8.1% (330 ACRES)
NET - 124 ACRES

0.76% AVERAGE LOSS
OF PERCENT CANOPY COVER
PER YEAR



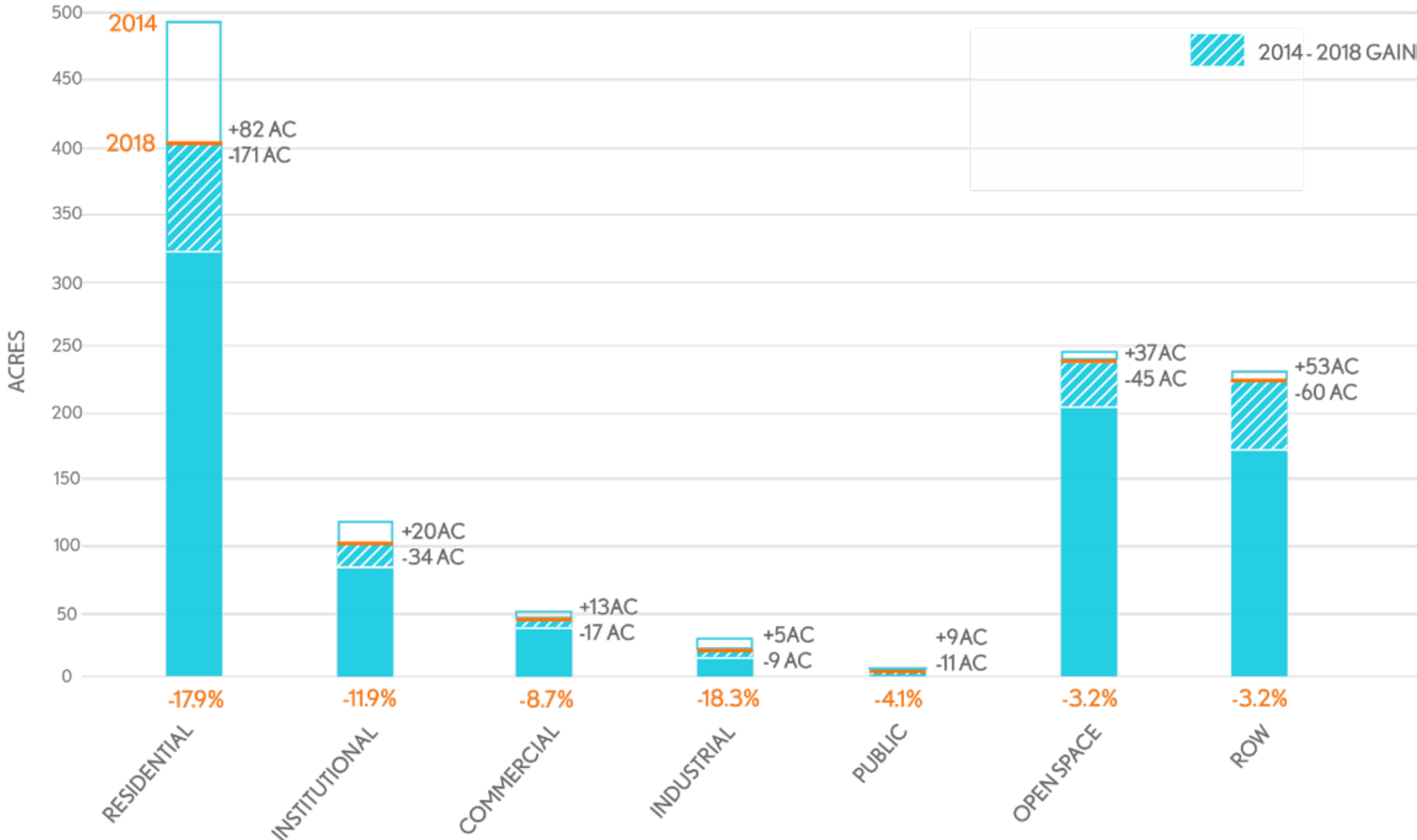
DRAFT

- Area of Canopy Loss
- 2018 Canopy Cover
- Open Areas

Source: Prepared by RH Team from the 2018 AES classification data.

WHERE ARE THE LOSSES HAPPENING?

Canopy change by land use



DRAFT

Source: Prepared by RH Team from the 2018 AES classification data and City GIS data.

Today, **3 species** make up over **30%**
of the Cambridge forest.

Catastrophic loss of those 3 species would
result in **17% remaining** total canopy cover.

WHAT IS THE MAKEUP OF THE CURRENT CAMBRIDGE FOREST?



● Other	36.4%
● Norway Maple	12.5%
● Pin Oak	11 %
● Honey locust	9.2%
● Red Maple	6.8%
● Red Oak	6%
● Littleleaf Linden	4.2%
● Callery Pear	3.9%
● London Planetree	3.6%
● Ash	3.4%
● Crabapple	2.5%

DRAFT

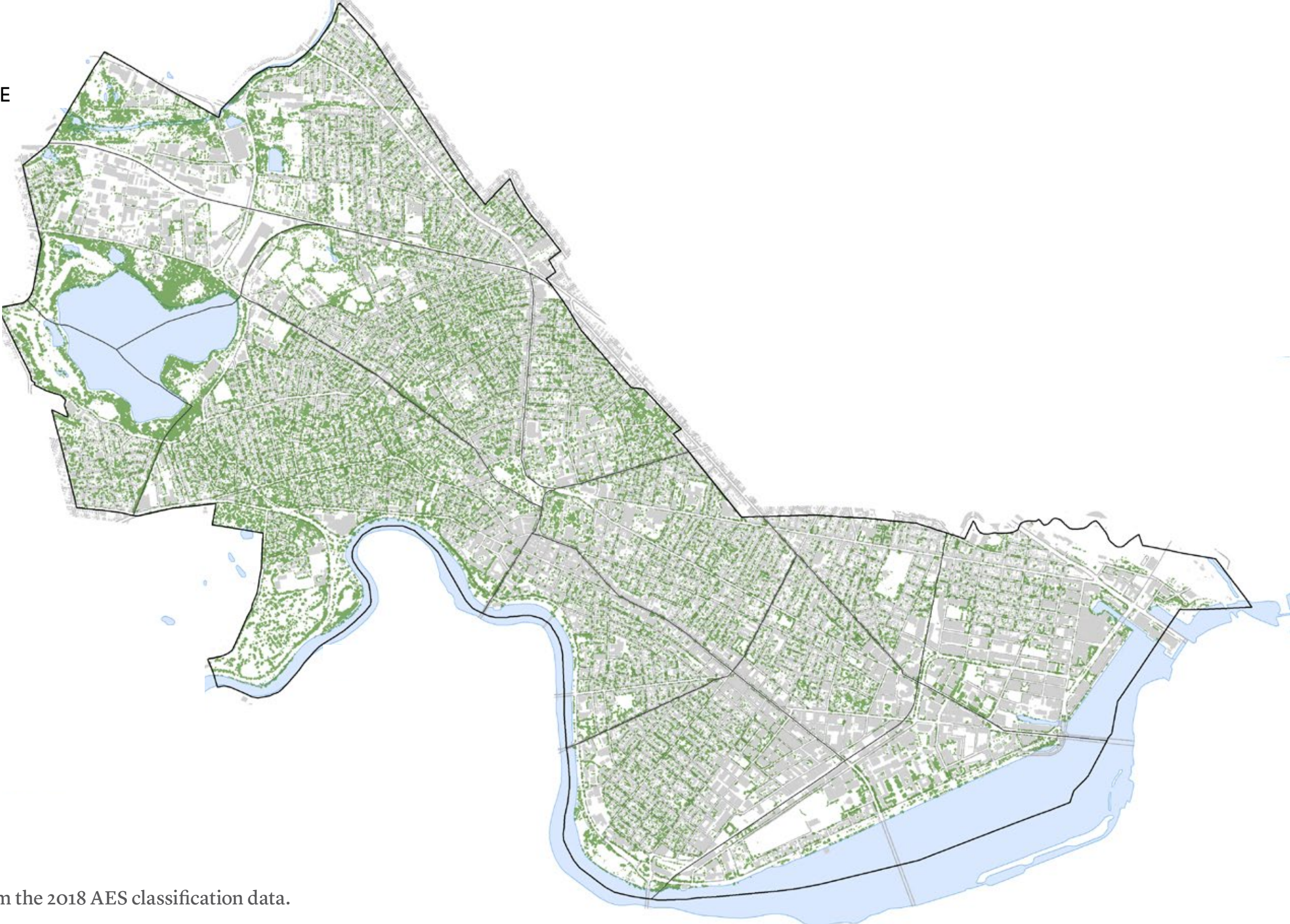
Source: Prepared by RH Team according to the 2018 AES classification data.

More vulnerable populations tend to live in areas of Cambridge with **less canopy** cover.

Density, urban form, and land use tend to limit opportunities for tree planting in these neighborhoods.

WHERE IS CANOPY COVER TODAY?

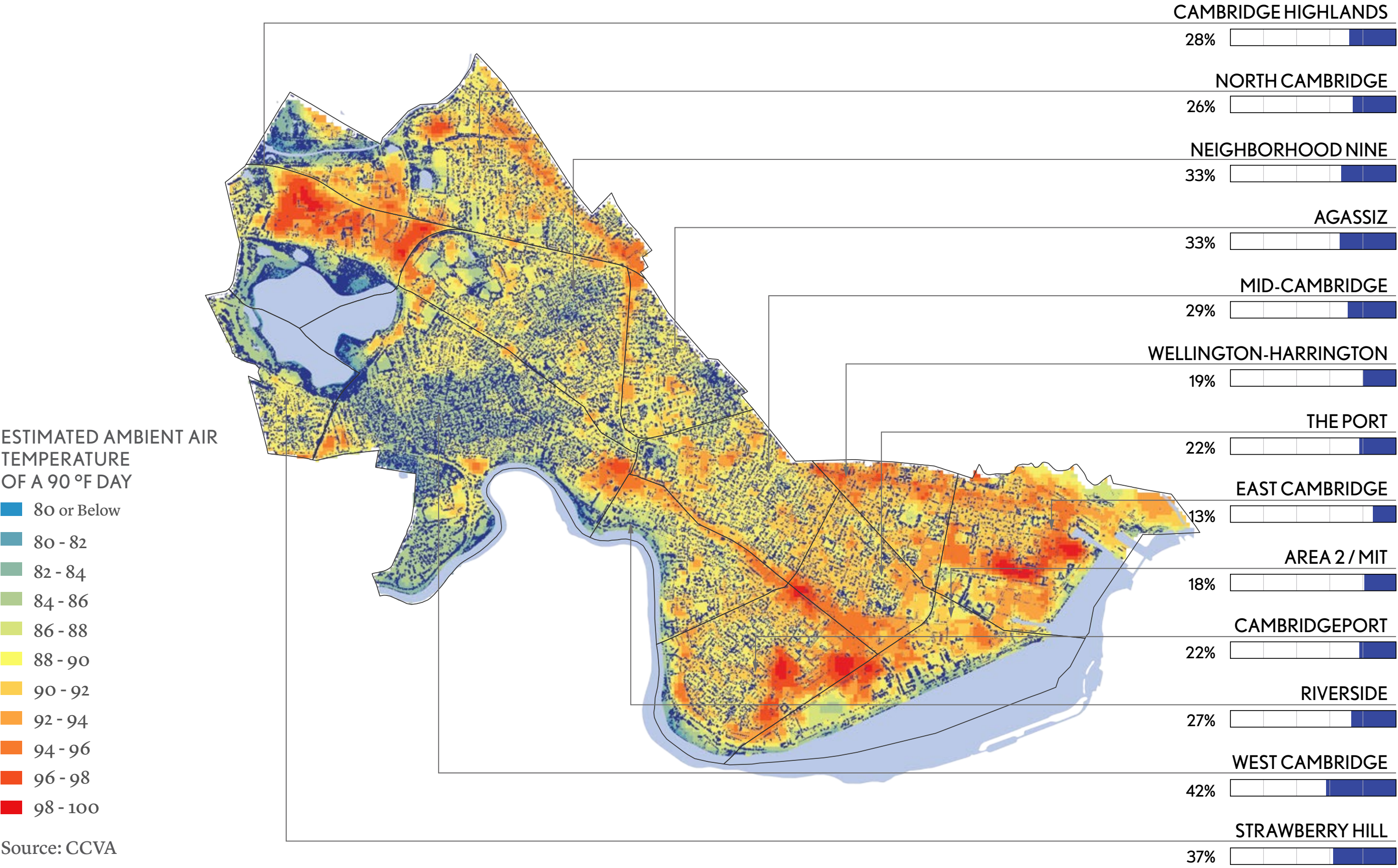
CAMBRIDGE CANOPY COVERAGE
25.3% OF CITY LAND AREA



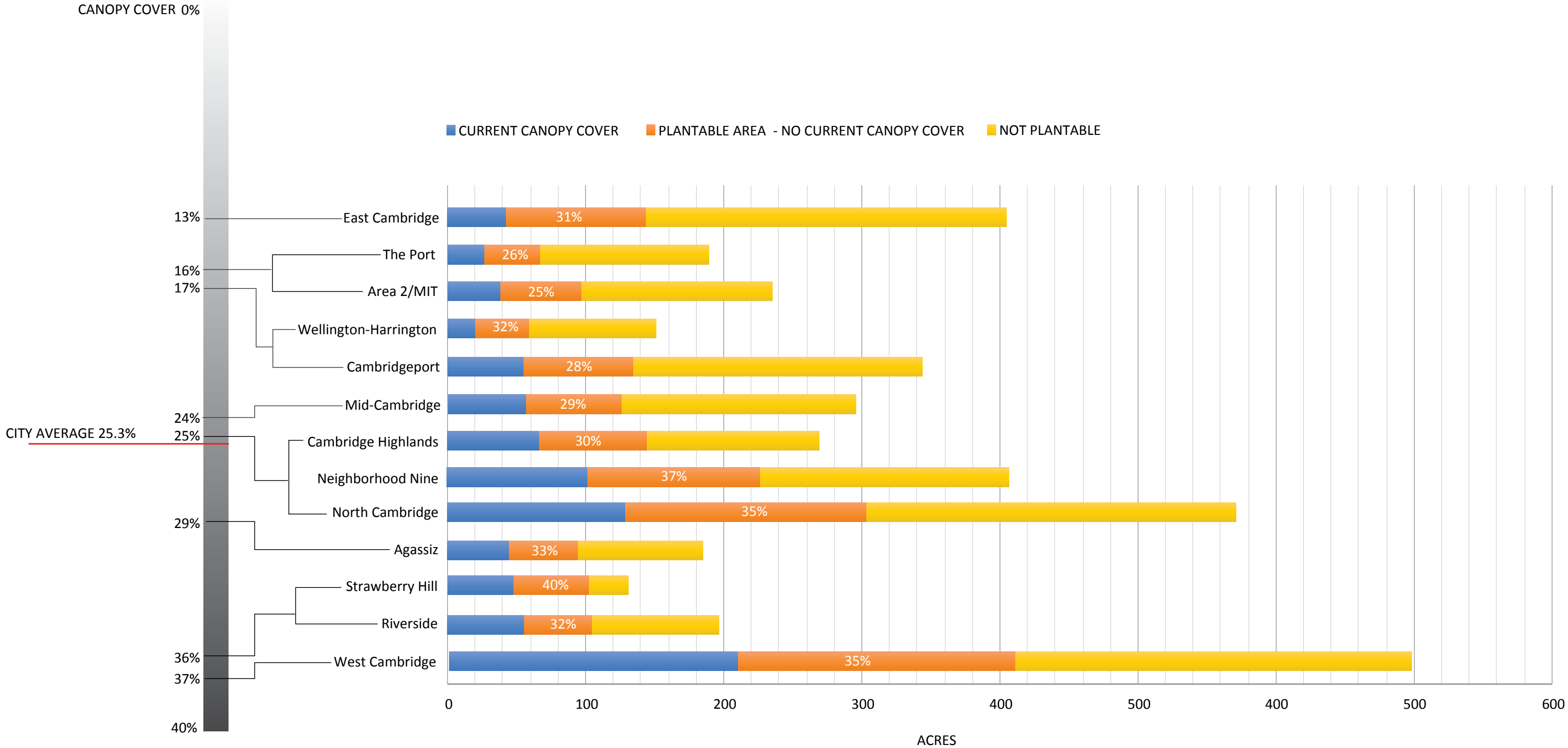
DRAFT

Source: Prepared by RH Team from the 2018 AES classification data.

URBAN HEAT ISLANDS ALIGN WITH LACK OF CANOPY



CANOPY COVER AND PLANTABLE AREA BY NEIGHBORHOOD



DRAFT

Source: Prepared by RH Team from the 2018 AES classification data.

Lack of shade, resulting in **heat island** effect, is often aligned with primary pedestrian corridors and commercial centers (squares).

As summer temperatures rise, developing connective corridors of shade (**cool corridors**) will be increasingly important.

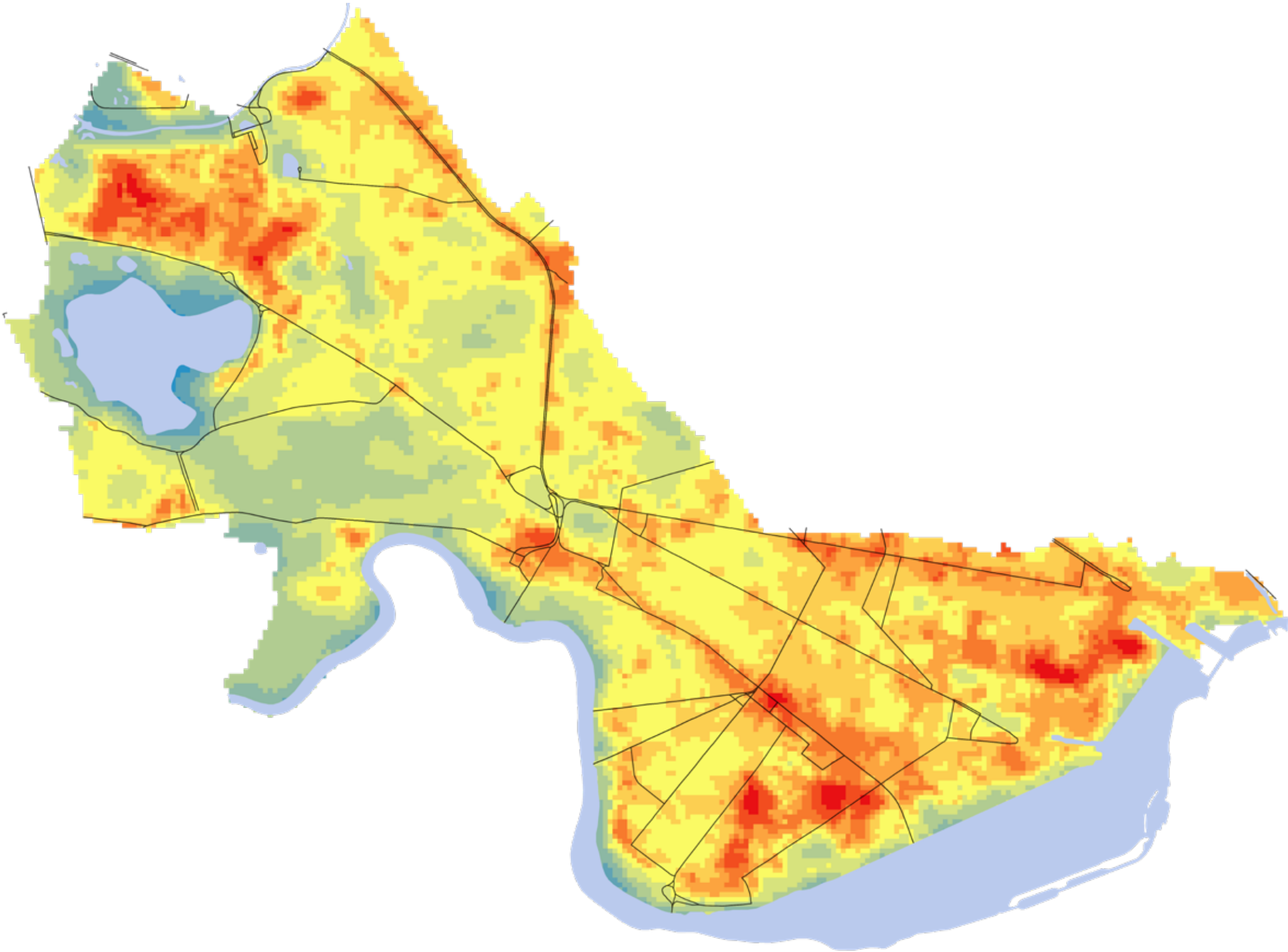
CRITICAL URBAN CORRIDORS LACK SHADE

Heat island + bus routes (cool corridors)

ESTIMATED AMBIENT AIR TEMPERATURE OF A 90 °F DAY

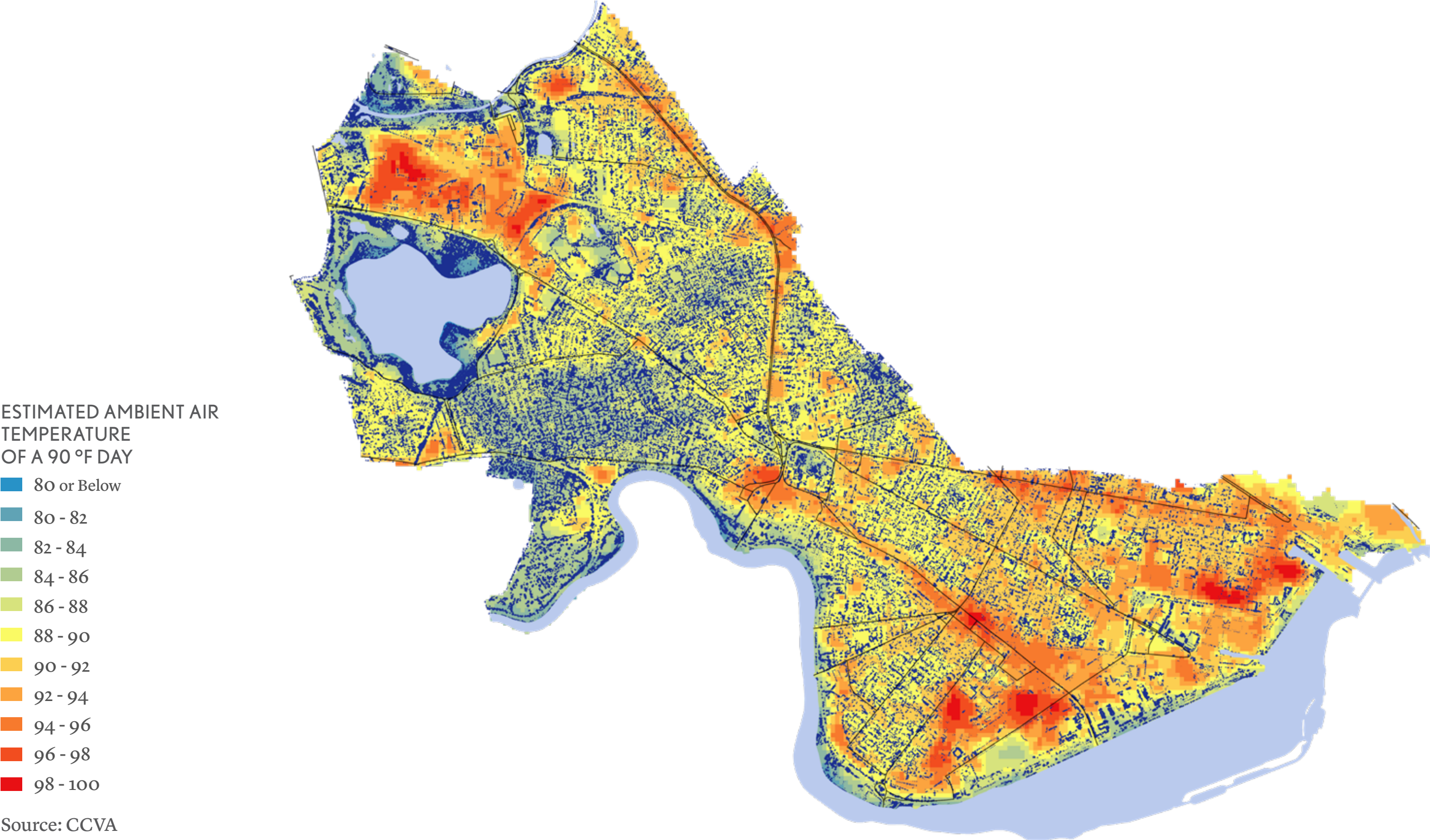
- 80 or Below
- 80 - 82
- 82 - 84
- 84 - 86
- 86 - 88
- 88 - 90
- 90 - 92
- 92 - 94
- 94 - 96
- 96 - 98
- 98 - 100

Source: CCVA



CRITICAL URBAN CORRIDORS LACK SHADE

Heat island + bus routes (cool corridors)



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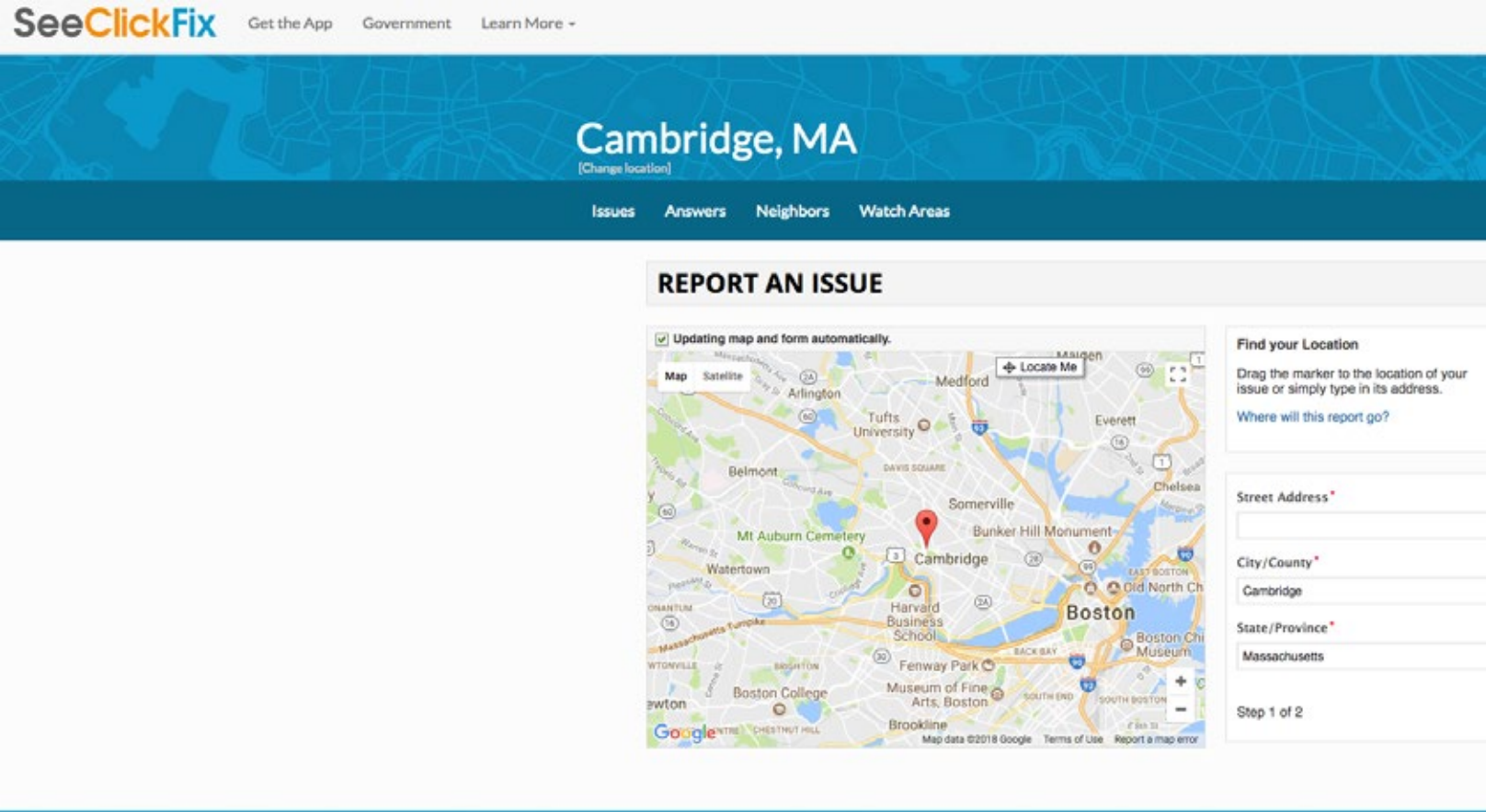
Cambridge has a strong and growing department

- Forestry Budget: \$18 per capita in 2016 and \$19.75 per capita 2017. (Compare with \$7.30 average per capita spending for other Tree Cities in MA)
- Today the average municipal expenditure on tree planting in U.S. is \$5.83 per capita (Nature Conservancy report)
- 6 out of 8 forestry staff are certified arborists
- Forestry division growing
- Cartegraph, new Tree tracking system

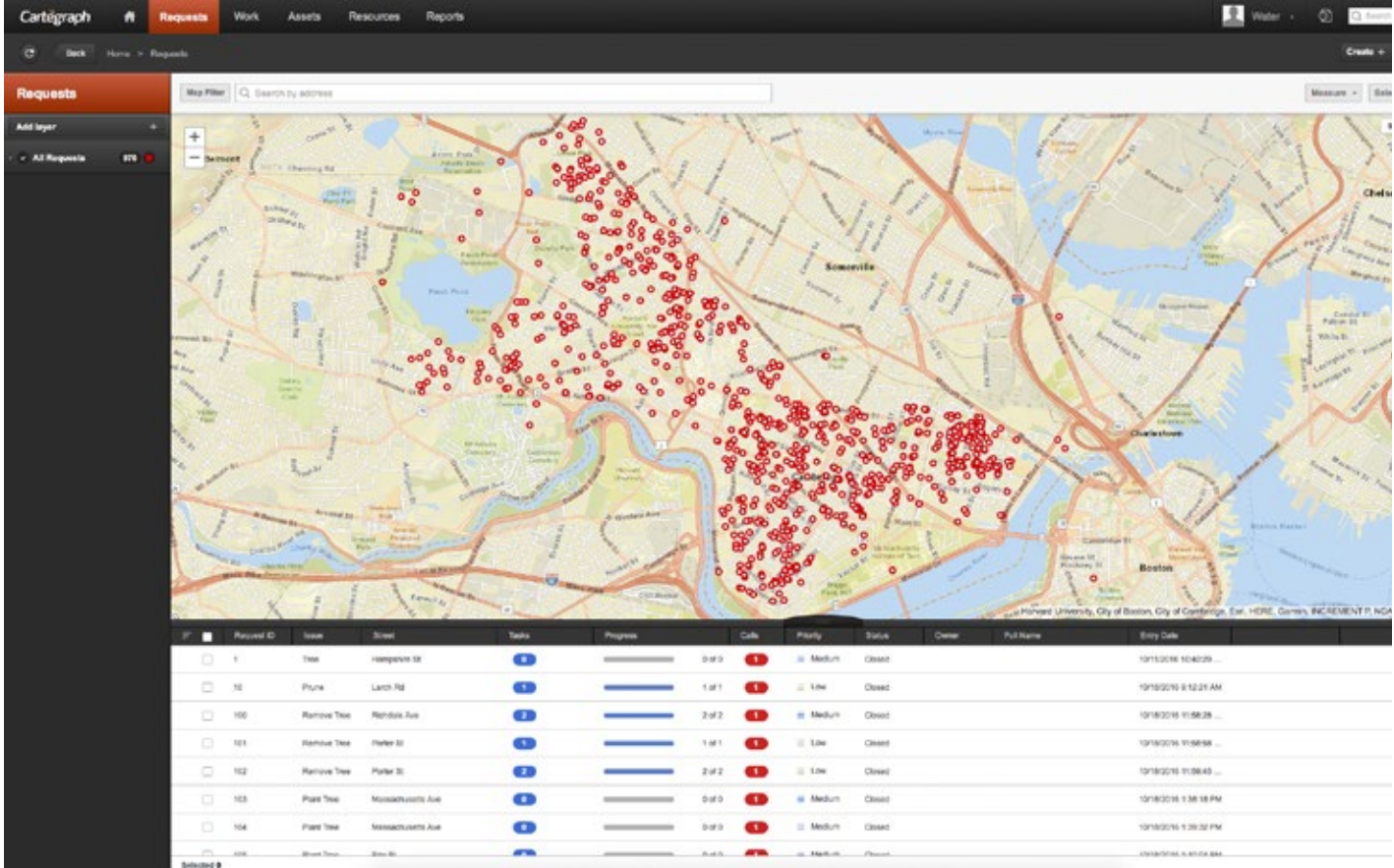


ABOVE GROUND | TREE REMOVALS

Canopy issues are currently identified and tracked electronically



SEE -CLICK-FIX



CARTEGRAPH

SOILS MANAGEMENT IS AS IMPORTANT AS CANOPY MANAGEMENT



Tree soils section / axonometric view

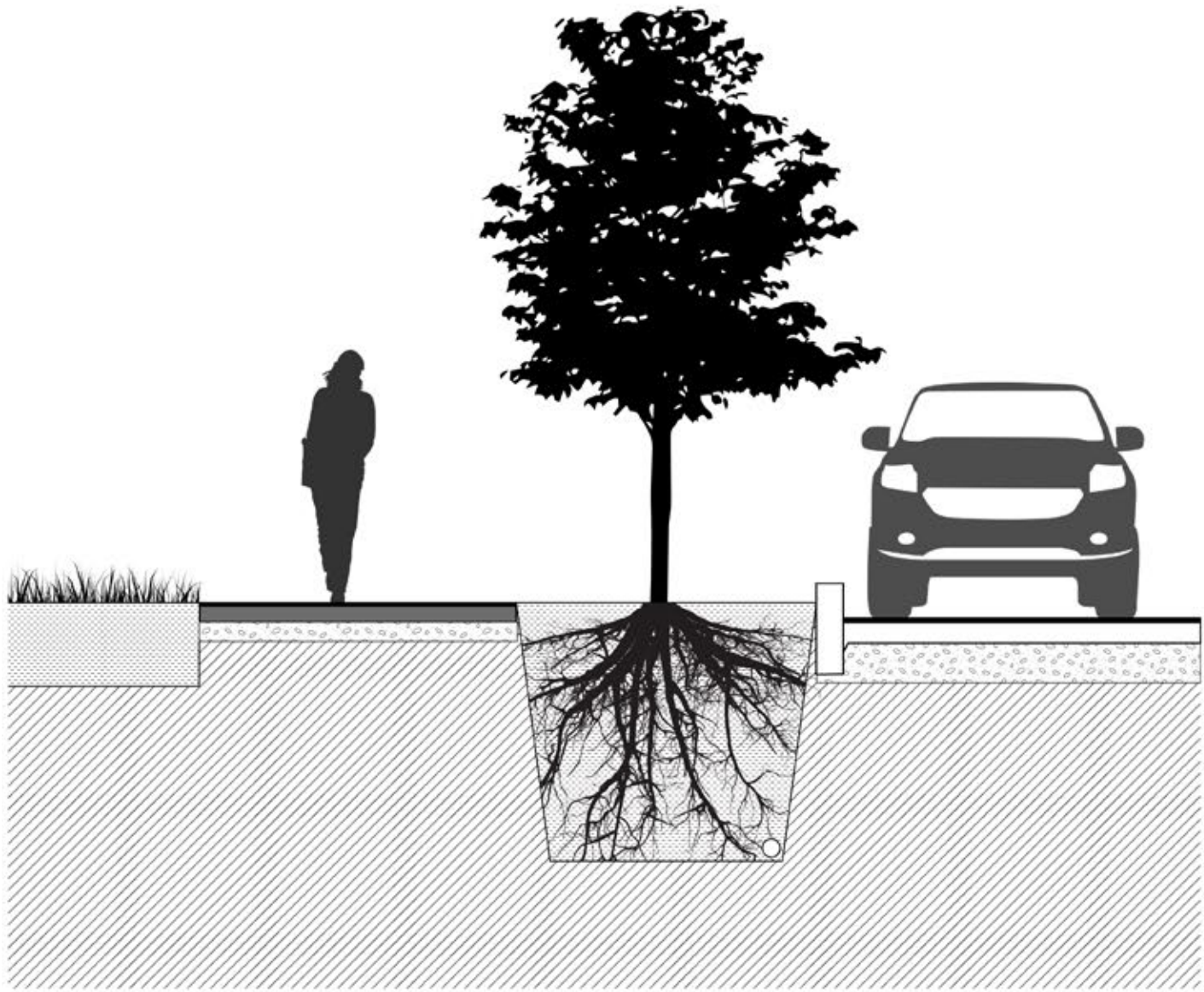


Soil sample analysis

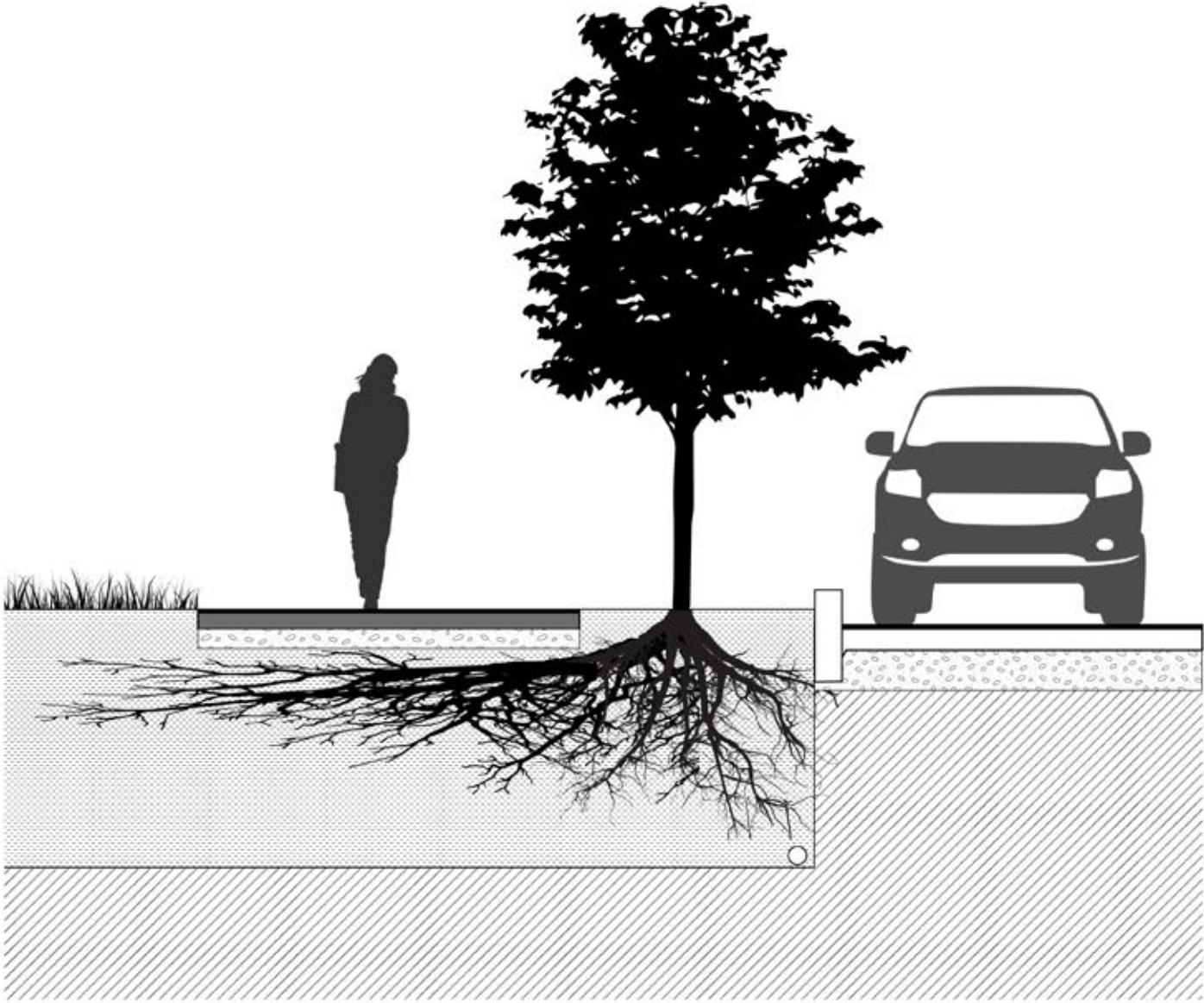
PLANTING DETAILS IMPACT LONG TERM SURVIVAL OF STREET TREES

Strategies maximize soil volumes

Ideal volume: 1250 cu ft per tree



TREES CONFINED IN PITS



TREWAYS WITH STRUCTURAL SOIL UNDER SIDEWALKS

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M.G.L. Chapter 87: Shade Trees

- Applies to trees within the public right of way or within 20 feet of the public way with Tree Warden & Owner's consent
- Establishes powers for tree wardens
- Removal of healthy public shade trees requires advertised public hearing
- Trees that pose immediate hazards do not require a hearing to be removed



City Tree Removal Policy

City Tree Protection Ordinance

- Tree Replacement Fund
- Enforcement

City Zoning Articles 5 & 19

- Tree Study
- Tree Protection Plan

City Zoning Article 20 (Overlay Districts)

- Parkway Overlay
- Prospect Street Overlay



<https://www.urbanforestprofessionals.com/wp-content/uploads/UrbanForestPro-68.jpg>

Committee on Public Planting

- Advises City Council, City Manager, Public Works Commissioner, and other department heads on public planting issues

Tree Ambassador/Water by bike

- Paid summer position inspect, weed, and water young street trees via bicycle and cargo trailer

EXISTING CITY PROGRAMS & ENGAGEMENT STRATEGIES

Planting Requests

- If a tree was removed from an existing well and you would like a replacement there is no expense to you
- If you'd like to have a tree planted where no tree well currently exists, the City will inspect the area and determine if it is suitable

Back of Sidewalk Program

- If a tree cannot be planted within the public right of way, the City will plant trees along the back of the sidewalk (up to 20 feet from the public way) on private property of interested, eligible owners

Adopt-a-Tree Program

- Residents commit to water and tending a tree near a specific address (home, school, business, etc.)

Commemorative Tree Program

- For cost of \$200 you can receive purchase a tree in remembrance of a loved one or important event



BEST PRACTICES RESEARCH

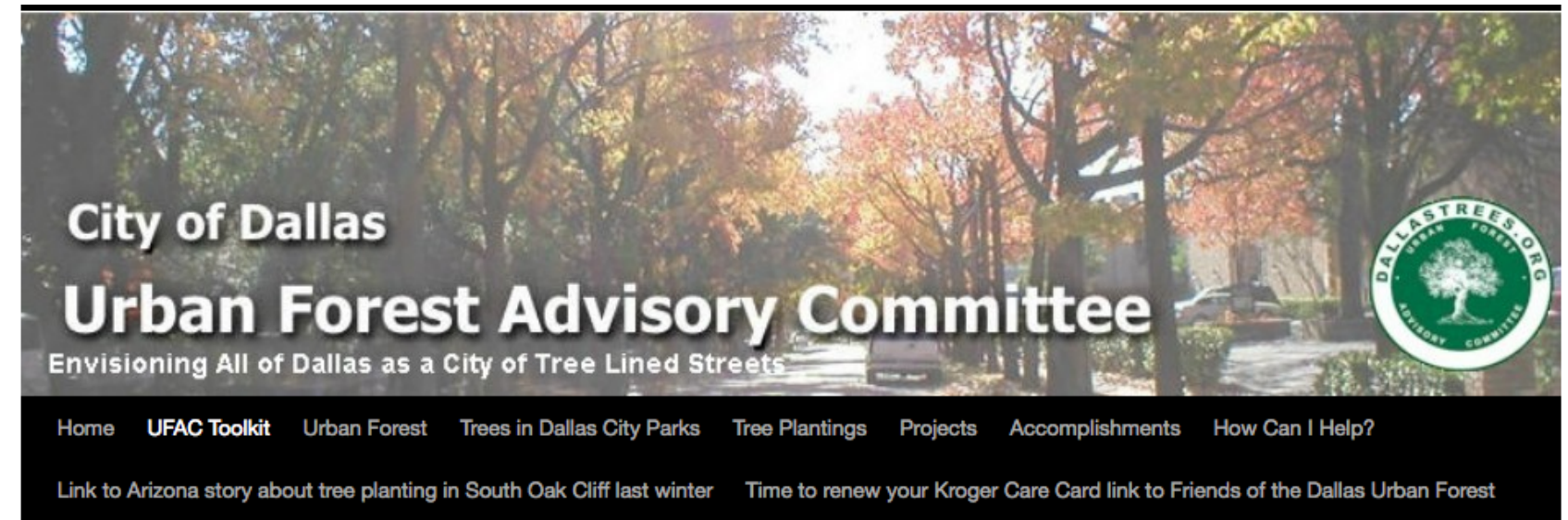
Seattle, WA

Atlanta, GA

Nashville, TN

Arlington, VA

Dallas, TX



UFAC Toolkit

UFAC has prepared a [Toolkit](#) to assist neighborhood associations and groups interested in organizing tree planting events that qualify for free trees that may be provided through the City of Dallas MOWmentum and for the Reforestation Fund. Trees from these programs are targeted for planting in City of Dallas street medians and in the “parkway”, which in most neighborhoods is the strip of grassy area between the sidewalk and the street.

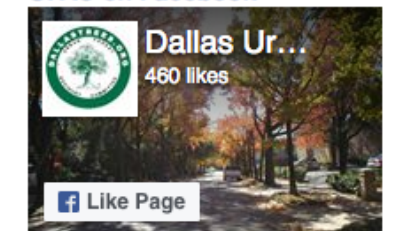
[TOOLKIT](#)

In the [Toolkit](#) Table 3.1 List of Sample Forms, Letters, and Checklist consists of examples of Forms/Letters/Checklist to assist Neighborhoods to organize a tree planting project, identify volunteers and supporters, obtain and plant trees, and follow-up after the tree-planting event. These sample documents are go-by's and can be altered for your specific Neighborhood Tree Planting Project needs. Below are links to editable versions of the examples shown in the [Toolkit](#) that you can download and modify.

Coming Events

- June 19, 2018
 - [UFAC Meeting](#) at 6:00 pm

UFAC on Facebook



Helpful Links

1. [Dallas City Arborist](#)
2. [TAMU Tree Guide](#)
3. [UFAC Tree Guide](#)
4. [MOWmentum Program](#)
5. [UFAC Bulletin](#)
6. [UFAC BOLETIN INFORMATIVO](#)
7. [Planting & caring for trees in your yard](#)
8. [Plantación y cuidado de los árboles de su jardín](#)
9. [Alliance for Community Trees](#)
10. [Turtle Creek Park Study](#)
11. [Texas Forest Service](#)

Feasibility Survey/Study

- Why are things working or not working
- Insights about what will be well-suited for Cambridge
- Narrowing the world of possibilities – not supporting a particular policy or proposal



<https://nexusofchange.wordpress.com/2012/04/08/occupy-atlanta-surveys-public-opinion-for-better-society/>

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www.cambridgema.gov/ufmp