CITY *of* BOSTON

URBAN FOREST PLAN

NEIGHBORHOOD STRATEGIES

September 2022

CHARLESTOWN

NEIGHBORHOOD STRATEGIES

Neighborhood tree planting, preservation, and care efforts will serve as critical and exciting early steps in Urban Forest Plan (UFP) implementation.

Implementation at the Neighborhood Scale
Strategies outlined in the UFP provide guidance for a wide range of work that is needed across the city and at the neighborhood level. Expanding the canopy includes planting new trees (whether that's in a street, a park, within a new business district or at an individual's home), protecting existing trees, and caring for all trees. This work is essential in Boston, and is directly connected to the Urban Forest Plan goals and strategies.

Strategy 3 includes a set of maps that identify areas of priority citywide based on the goal of canopy expansion where it is most needed: in historically marginalized communities, neighborhoods with low canopy levels, areas experiencing extreme heat, and environmental justice communities.

The citywide maps provide guidance on where to begin planting efforts (which neighborhoods should be prioritized for early efforts). This chapter provides further guidance and focus for neighborhood-scale implementation efforts.

Neighborhood Maps as Starting Points
A map for every neighborhood has been developed *as a starting point* to begin to decide on where actions are needed first in every neighborhood. These maps provide a wide range of information (where data was available on appropriate scale) that neighborhoods and public agencies can use to begin to take action on plan recommendations. These same neighborhood strategies can be informative for tree planting and protection efforts on private property as well.

HOW CAN WE EXPAND CANOPY?

Tree canopy can be expanded in three primary ways: caring for existing trees to ensure longevity, protecting existing trees from removal, and planting new trees. These are the three approaches that can be considered by public and private property owners to expand canopy in our neighborhoods. The neighborhood strategies outlined in this chapter focus on defining areas for new planting and promote methods for planting the right tree in the right place.

Cover Image: Charlestown

Each neighborhood strategy includes maps and graphs outlining the following:

- **Canopy and Land Use Trends** Canopy is constantly undergoing change, either through planting and cutting of trees or growth over time. Analysis completed as part of the City's 2014-2019 Urban Tree Canopy Assessment conducted by the University of Vermont provided information on the net gain and loss of canopy in each neighborhood and what land use types these changes occurred on. These data are provided to identify trends and inform strategies. For example, a neighborhood with low canopy and limited change may do best with a strong planting strategy while preservation and care for existing canopy (while important in all neighborhoods) may be the most critical action in a neighborhood that has higher levels of canopy and is experiencing canopy loss.

- **Priority Zones** These are zones defined by overlaying tree canopy levels, areas of extreme heat, environmental justice census blocks, and previously redlined districts. These factors were chosen based on feedback from the Community Advisory Board and community open house, as well as input on plan goals and strategies. These priority zones should be looked at not only for direct action through these neighborhood strategies, they should also be considered as critical areas for expansion of canopy as city planning initiatives or private development plans take place.

- **Existing Conditions: Physical and Environmental Opportunities and Constraints**. Consideration of each neighborhood's physical and environmental attributes is important when finding space available for trees. It can also determine who has the greatest ability to take action in each neighborhood. The plan describes both long-term and short-term actions including changes to policy and practice for new projects. At the same time, we must look at existing opportunities to expand canopy. These neighborhood strategies are intended to provide information to guide immediate action as well as near and long-term action.

Maps and text in this section include information on streets (right-of-way locations and widths), open spaces (open space land use), and heat and flooding impacts. These provide initial information on a number of areas, including the identification of where street tree canopy is low and can be expanded, with or without significant roadway alterations, where open spaces may have low levels of canopy and/or where open space is lacking within a low canopy area. It also helps identify who and what types of owners and uses are present and therefore who might have the capacity to expand canopy in the area.
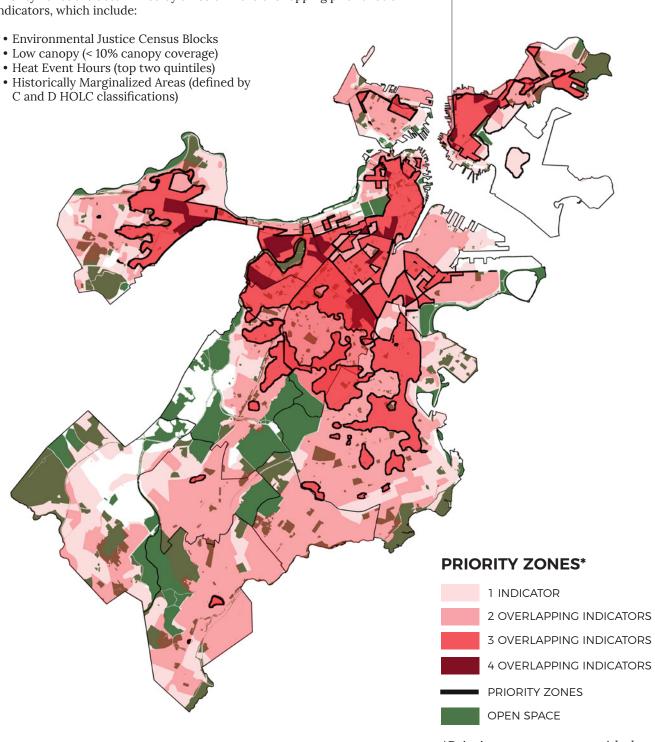
- **Street Tree Species Analysis** This information will be extremely useful in planning street tree planting projects for that neighborhood and ensuring a diverse and resilient street tree population is installed. This analysis provides a snapshot of current conditions.

The species analysis is based on data from the 2021 public street tree inventory and best practices and industry standards. Canopy must be expanded with climate adaptability, biodiversity, resistance to pests, public health and community well-being in mind.

WHAT IS A PRIORITY ZONE?

Priority zones are a way to focus efforts, but should not prevent action in areas not highlighted in this map. Many priority populations, for example, live in areas with relatively high overall canopy, but in which canopy cover is declining.

Priority zones are determined by three or more overlapping prioritization indicators, which include:

- Environmental Justice Census Blocks
- Low canopy (< 10% canopy coverage)
- Heat Event Hours (top two quintiles)
- Historically Marginalized Areas (defined by C and D HOLC classifications)

PRIORITY ZONES*

1 INDICATOR

2 OVERLAPPING INDICATORS

3 OVERLAPPING INDICATORS

4 OVERLAPPING INDICATORS

PRIORITY ZONES

OPEN SPACE

Priority zones are areas with three or more overlapping indicators.

HOW CAN WE BEGIN?

The new Director of Urban Forestry, a position recommended to be filled as a critical action in Strategy 1, is important to have in place at the City before initiating this work. This role is key to developing a structure for City/community partnership planting program.

In short, the right tree must be planted in the right place in order to support the overall health of the urban forest and the community. To support these choices the species analysis section includes a list of the ten most common species by neighborhood, recommendations on species to limit in order to improve diversity and limit vulnerability to pests and disease, and information on trees expected to fare better/worse with climate change. While not exhaustive, these suggestions can help in the selection of the right tree for individual sites and help to reduce overuse of any one species or genus as well as increase biodiversity as the canopy expands. Final species selection for any street tree plantings will be approved by the Boston Parks and Recreation Department. A detailed guide on tree species can be found in the Urban Forest Plan Appendix C: Species Guide.
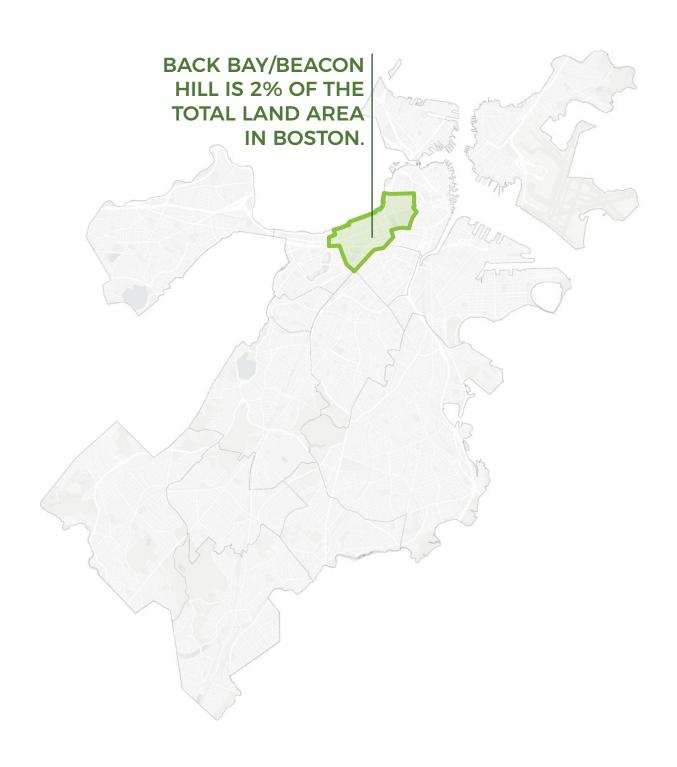
HOW TO USE THIS TOOL

New public planting efforts must be aligned with the goals of equity first and ensuring community involvement in decision making. For this reason, it is important to set up a process for neighborhood planting strategy implementation that follows these tenets. This process is outlined in Strategy 3.

The first step for each neighborhood is to engage with the City to start to define local priorities and needs, and to determine how best to meet those needs together. The neighborhood-level information included in this chapter is intended to be used *as a starting point* for discussions regarding opportunities, challenges, and community goals. It can additionally provide basic guidance to any private landowners interested in expanding canopy on their property and the City of Boston as they begin to take early actions of planting in existing empty tree pits, open spaces, and other public properties. Using these maps, the community and City can start to prioritize where City and private resources should be directed first.

Following this initial coordination, it is recommended (Strategy 3) that a structure for a City/community partnership planting program be created and a toolkit developed for each neighborhood to utilize.
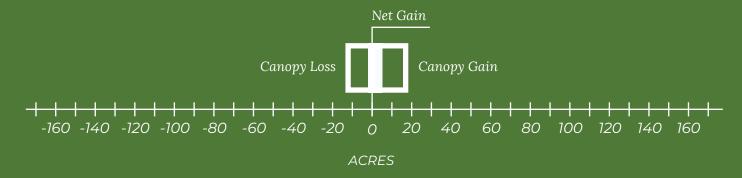
BACK BAY/BEACON HILL

BACK BAY/BEACON HILL IS 2% OF THE TOTAL LAND AREA IN BOSTON.

CANOPY AND LAND USE TRENDS

BACK BAY/BEACON HILL HAS 2% OF BOSTON'S CANOPY.

2%
125 ACRES

BACK BAY/BEACON HILL HAS 21% CANOPY COVERAGE.

21%
125 ACRES

27%
CITYWIDE AVERAGE

BACK BAY/BEACON HILL LOST 13 ACRES AND GAINED 19 ACRES FOR A NET GAIN OF 6 ACRES OF TREE CANOPY FROM 2014-2019. THE GREATEST GAINS WERE WITHIN OPEN SPACES.

Net Gain

Canopy Loss   *Canopy Gain*

-160 -140 -120 -100 -80 -60 -40 -20 0 20 40 60 80 100 120 140 160

ACRES

PRIORITY INDICATORS

PRIORITY ZONES

The following maps highlight factors that play a part in social vulnerability and indicate areas of greatest need for expanding canopy. These were chosen based on feedback from the Community Advisory Board and community open house, plan goals and strategies. All data should be field verified for accuracy. Opportunities are not indicative of recommendations or suggested plantings, but rather a starting place for ongoing conversations and on-the-ground exploration.

Environmental Justice Census Blocks. In Massachusetts, a neighborhood is defined as an Environmental Justice population if one or more of the following four criteria apply:

- the annual median household income is not more than 65% of the statewide annual median household income;
- minorities comprise 40% or more of the population;
- 25% or more of households lack English language proficiency; or
- minorities comprise 25% or more of the population and the annual median household income of the municipality in which the neighborhood is located does not exceed 150% of the statewide annual median household income.

The following map shows areas that meet any one or more of these criteria.

Low Canopy. Using 2019 Tree Canopy Coverage Assessment data, this map identifies census tracts with less than 10% tree canopy coverage.

Heat Event Hours. Using data produced by the City of Boston's Heat Resilience Study, this map identifies areas exposed to the most heat impact (two upper quintiles), as defined by modeled urban heat event hours.
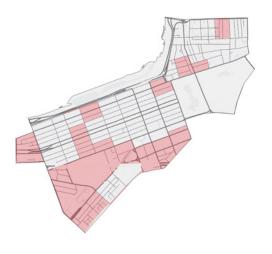
Historic Marginalization This map shows areas that received 'C' or 'D' ratings from the 1938 HOLC 'Residential Security Map'. These areas were subject to housing discrimination, as well as often subject to other practices and policies of disinvestment. Data is provided by the University of Richmond's Mapping Inequality Project.

Priority Zones. Zones of highest priority are determined by overlapping prioritization indicators. Those areas with more than three overlapping indicators are highlighted. This map should serve as a starting place for further analysis and community discussions and these zones should be given particular consideration for action in future planning and development proposals.
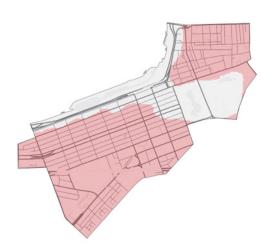
Priority zones should help weight planting canopy expansion focus and attention, but should not be indicative of overall resources and efforts needed. Many priority populations, for example, live in areas with relatively high overall canopy, but in which canopy cover is declining. These areas will need to continue to be monitored and should be prioritized through proactive care, preservation and expansion, as included in Strategies 2, 3 and 4.
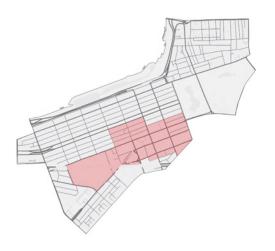
PRIORITY INDICATORS

Environmental Justice Communities

Low Canopy

Heat Event Hours

Historic Marginalization

BACK BAY/BEACON HILL PRIORITY ZONES*

1 INDICATOR

2 OVERLAPPING INDICATORS

3 OVERLAPPING INDICATORS

4 OVERLAPPING INDICATORS

OPEN SPACE

PRIORITY ZONES

Priority zones are areas with three or more overlapping indicators.

2,000 FT.

EXISTING CONDITIONS

Physical and environmental opportunities and constraints will impact a neighborhood's ability to expand the canopy. It can al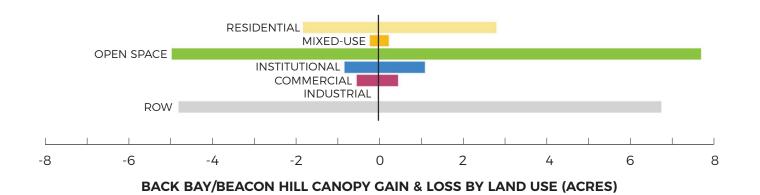so determine who has the greatest ability to take action. When used in coordination with the mapped priority zones, these maps can provide greater understanding of where opportunities to expand planting may be the greatest, by whom, and what types of planting might be best suited to the area (ie. street trees, green buffers or additional plantings in open spaces).
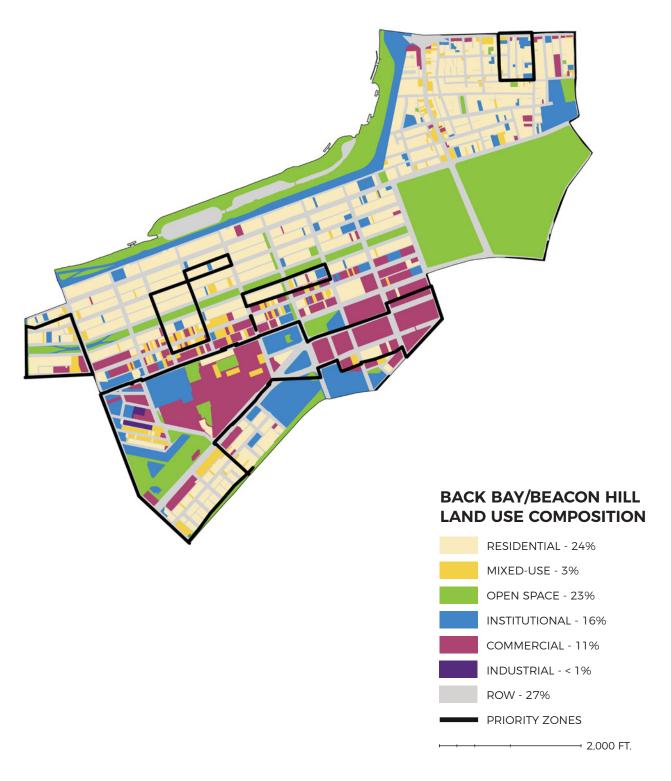
LAND USE

Every neighborhood has a different make-up of private and public land, as well as different key land uses and property owners. The existence of various land uses can affect opportunities for expanding canopy and who in the community has the ability and responsibility to act.

Residential land, which is where most of Boston's canopy lies, requires actions by private owners who often need education on proper planting and care practices. Commercial land use can provide opportunities for tree canopy additions in parking lots and in pedestrian-heavy business districts. Trees in business districts improve the visitor experience and have been shown to drive up sales and activity, creating a positive economic benefit. Industrial lands, on the other hand, can at times be challenging places to plant, but often benefit from vegetated buffers from adjacent neighborhoods to reduce visual impact, noise, and air pollution.

Back Bay/Beacon Hill is predominantly right-of-way (27%), residential (24%) and open space (23%). The priority zones include a combination of residential, institutional and commercial land uses as well as right-of-way. Right-of-way and open space are specifically discussed on the following pages.

BACK BAY/BEACON HILL CANOPY GAIN & LOSS BY LAND USE (ACRES)

BACK BAY/BEACON HILL
LAND USE COMPOSITION

RESIDENTIAL - 24%

MIXED-USE - 3%

OPEN SPACE - 23%

INSTITUTIONAL - 16%

COMMERCIAL - 11%

INDUSTRIAL - < 1%

ROW - 27%

PRIORITY ZONES

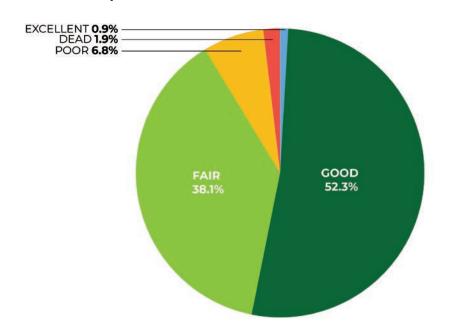2,000 FT.

RIGHT-OF-WAY (ROW)

Right-of-way (ROW) refers to property in Boston that is subject to public use for streets, curbs, planting strips, sidewalks, etc. These lands in Boston represent a set of potential planting sites over which the Parks Department and other City departments already have the jurisdiction to expand canopy.

The map on the following page includes sidewalk width, which is a significant determinant of whether space can be found to plant trees in existing or new tree pits. Tree canopy data can be overlaid with locations of existing street trees and potential planting sites along streets. This can illustrate areas where canopy expansion could occur with little-to-no alterations needed, and where more intensive changes to the street would be needed. Priority Zones are included in this map to indicate any potential planting sites that fall within priority areas.

Areas with sidewalk widths over 8'-6" (inclusive of the curb) meet current standards and could be considered for immediate planting, while sidewalk widths less than 8'-0" (inclusive of the curb) would likely require more significant changes to the street or exceptions to current standards. More significant changes are discussed in Strategy 4.
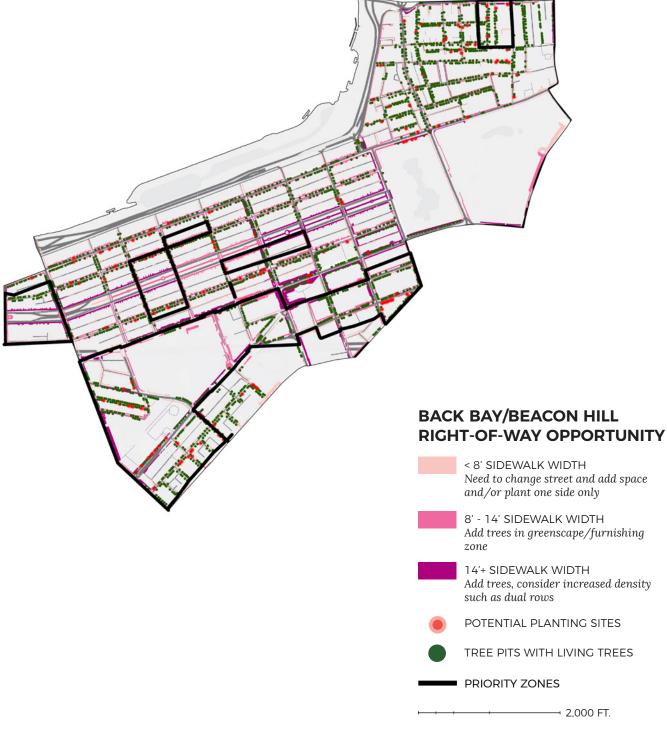
In Back Bay/Beacon Hill, an estimated 143 potential street tree planting sites (including existing tree pits with dead trees) were identified during the inventory in May 2021. These sites should be considered for immediate planting, in particular those falling within the priority zones. Potential planting sites all need to be evaluated on a case-by-case basis in the field for suitability.

BACK BAY/BEACON HILL STREET TREE CONDITION COMPOSITION

EXCELLENT **0.9%**
DEAD **1.9%**
POOR **6.8%**

FAIR
38.1%

GOOD
52.3%

TAKEAWAYS:
Slightly more than half (53.2%) of the street trees in Back Bay/ Beacon Hill are considered in Good or Excellent condition, with the remaining majority in Fair condition, making Back Bay/Beacon Hill trees some of the overall healthiest in the city. Proactive care practices should be focused on improving the condition of those trees in Fair or Poor condition to support development of a healthy canopy in the long term.

BACK BAY/BEACON HILL
RIGHT-OF-WAY OPPORTUNITY

< 8' SIDEWALK WIDTH
Need to change street and add space and/or plant one side only

8' - 14' SIDEWALK WIDTH
Add trees in greenscape/furnishing zone

14'+ SIDEWALK WIDTH
Add trees, consider increased density such as dual rows

POTENTIAL PLANTING SITES

TREE PITS WITH LIVING TREES
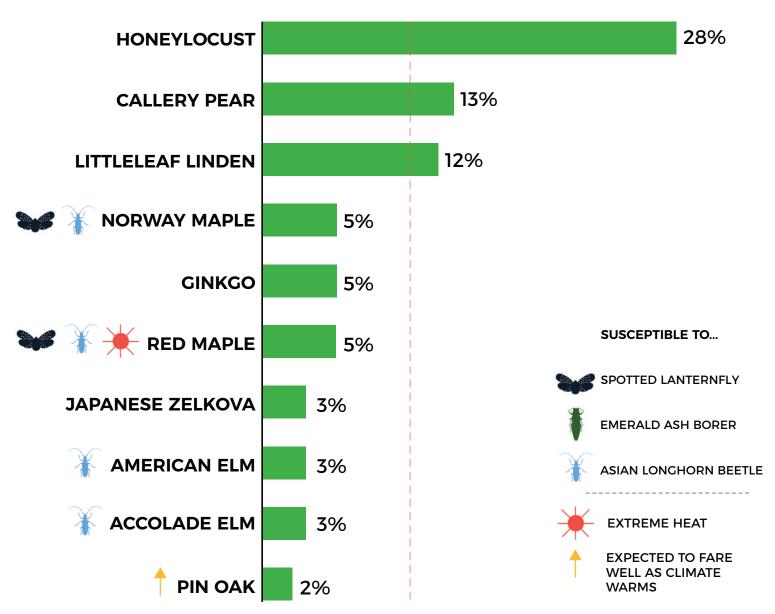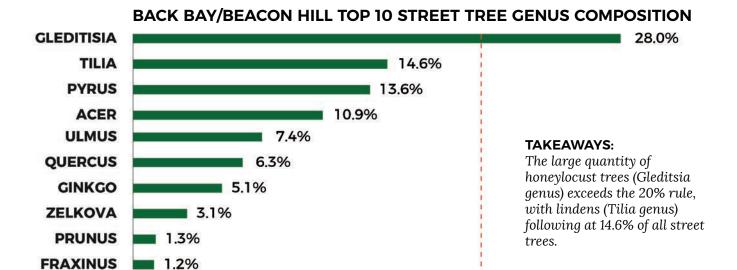
PRIORITY ZONES

2,000 FT.

STREET TREE ANALYSIS

Based on data from the 2021 public street tree inventory the ten most common species in each neighborhood as well as distribution of tree species (genus), age, and overall condition are shown below. Based on best practices and industry standards, recommendations are provided to improve tree diversity in Back Bay/Beacon Hill to

reduce vulnerability to pests and disease as well as ensure long term tree health in the face of future climate change. As a general rule, industry recommendations are to limit any one species to less than 10% of total canopy and any single genus to less than 20%.

BACK BAY/BEACON HILL TOP 10 TREE SPECIES

HONEYLOCUST — 28%

CALLERY PEAR — 13%

LITTLELEAF LINDEN — 12%

NORWAY MAPLE — 5%

GINKGO — 5%

RED MAPLE — 5%

JAPANESE ZELKOVA — 3%

AMERICAN ELM — 3%

ACCOLADE ELM — 3%

PIN OAK — 2%

SUSCEPTIBLE TO...

SPOTTED LANTERNFLY

EMERALD ASH BORER

ASIAN LONGHORN BEETLE

EXTREME HEAT

EXPECTED TO FARE WELL AS CLIMATE WARMS

RECOMMENDED LIMIT: 10%

BACK BAY/BEACON HILL TOP 10 STREET TREE GENUS COMPOSITION

Genus	Percentage
GLEDITISIA	28.0%
TILIA	14.6%
PYRUS	13.6%
ACER	10.9%
ULMUS	7.4%
QUERCUS	6.3%
GINKGO	5.1%
ZELKOVA	3.1%
PRUNUS	1.3%
FRAXINUS	1.2%

TAKEAWAYS:
The large quantity of honeylocust trees (Gleditsia genus) exceeds the 20% rule, with lindens (Tilia genus) following at 14.6% of all street trees.
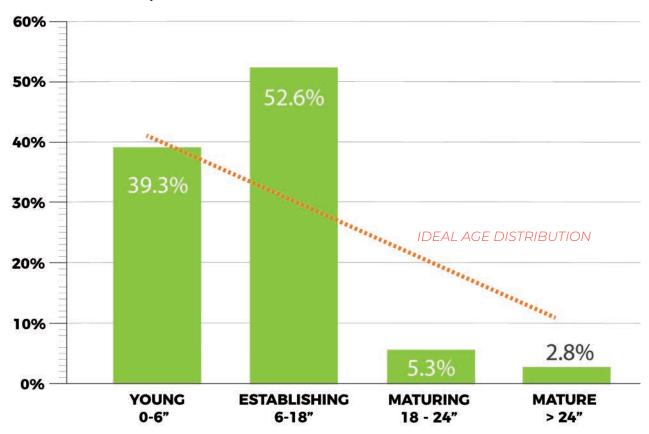
RECOMMENDED LIMIT: 20%

Additional genera identified in Back Bay/Beacon Hill: Aesculus, Amelanchier, Betula, Carpinus, Celtis, Cercidiphyllum, Cercis, Crataegus, Eucommia, Fagus, Gymnocladus, Hydrangea, Juniperus, Koelrueteria, Liquidambar, Liriodendron, Magnolia, Malus, Morus, Nyssa, Ostrya, Platanus, Robinia, Salix, Sophora, Syringa, Taxus, Thuja,

BACK BAY/BEACON HILL STREET TREE AGE COMPOSITION

Age Class	Percentage
YOUNG 0-6"	39.3%
ESTABLISHING 6-18"	52.6%
MATURING 18 - 24"	5.3%
MATURE > 24"	2.8%

IDEAL AGE DISTRIBUTION

TAKEAWAYS:
Back Bay/Beacon Hill has a large number of establishing street trees and few maturing and mature street trees relative to the ideal distribution. Focus should be on proactive care and preservation of existing canopy to improve longevity as well as continuing to maintain young trees at current levels.

OPEN SPACE

Open spaces represent a set of potential planting sites over which the Parks Department and other City departments already have the jurisdiction to expand canopy.
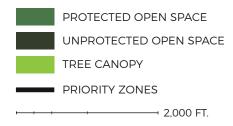
This map shows all open spaces including parks, sports fields, urban wilds, cemeteries and plazas. Tree canopy data is overlaid with open spaces to indicate where these areas may have limited canopy and therefore become sites of opportunity for canopy expansion. The property status as protected or unprotected is indicated in the map in order to identify where canopy within open spaces may or may not be at risk due to future land use change. Note: while cemeteries are unprotected open spaces they are generally not at risk for conversion and could be an opportunity for canopy protection and expansion. Priority Zones are included in this map to indicate any potential open space

planting sites that fall within priority areas Back Bay/BeaconHill includes large, protected public open spaces such as Boston Common, Commonwealth Avenue, and the Charles River Esplanade. In addition to these, a number of smaller open spaces are dispersed throughout the neighborhood.

BOSTON COMMON, BACK BAY/BEACON HILL

**BACK BAY/BEACON HILL
OPEN SPACE OPPORTUNITY**

- PROTECTED OPEN SPACE
- UNPROTECTED OPEN SPACE
- TREE CANOPY
- PRIORITY ZONES

2,000 FT.

ENVIRONMENTAL CONSTRAINTS

Environmental conditions across the neighborhoods in Boston vary widely. There are coastal conditions, hills, streams and other existing environmental factors which impact plant communities, plant life and health. These maps identify some of the key dynamics in each neighborhood, in particular how climate change may impact conditions and chances of survival for plantings.
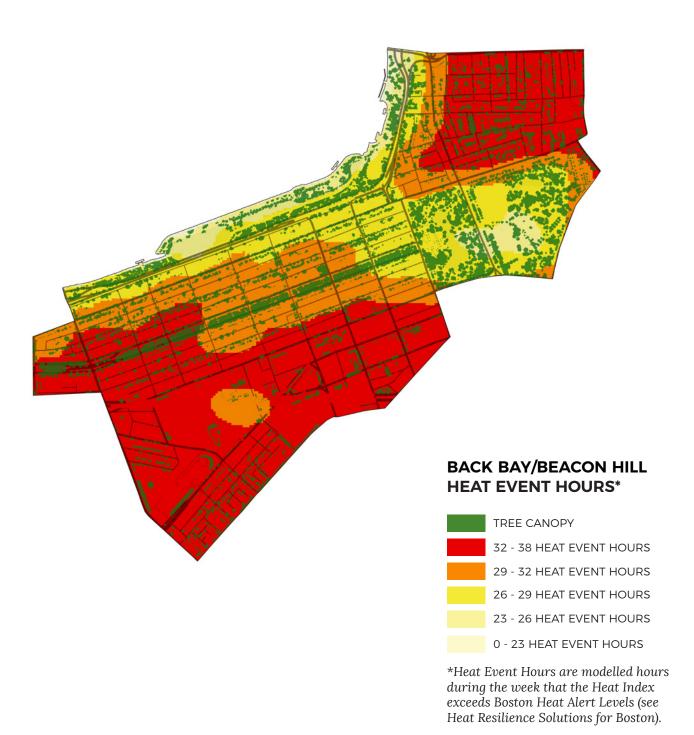
- *Urban Heat*. While trees can help to mitigate urban heat island impacts, heat can have a significant adverse impact on trees as well, especially over the long term. Some trees will fare better in conditions of extreme heat. Planting should aim to consider heat in species selection.

  High heat is a priority indicator, therefore, priority planting zones commonly fall within high heat areas, as they do in Back Bay/Beacon Hill. Despite large amounts of open space with quality canopy, Back Bay/ Beacon Hill experiences high heat levels. This highlights the need to care for trees subject to high heat and to select trees for new planting that will fare well in future heat conditions.

- *Flooding*. With climate change, portions of Boston are expected to see significant flooding either as a result of increased precipitation or Coastal inundation as storms increase and sea levels rise. While not as damaging to trees as salt water coastal flooding, sitting water can eventually harm or kill otherwise healthy trees. Planned infrastructural work aimed at reducing climate risks will play a critical role in mitigating some of this flooding, however, these threats should be

considered in the planting approach. For example, species that are more tolerant of wet conditions should be selected in flood-prone areas and areas intended to collect and hold stormwater. Additionally, coastal protection projects should consider canopy levels and include new plantings and/or protection of existing canopy.

Back Bay/Beacon Hill is anticipated to experience flooding from the Charles River as well as coastal inundation from the Downtown area as sea levels rise and storms increase.

**BACK BAY/BEACON HILL
HEAT EVENT HOURS***

🟩	TREE CANOPY
🟥	32 - 38 HEAT EVENT HOURS
🟧	29 - 32 HEAT EVENT HOURS
🟨	26 - 29 HEAT EVENT HOURS
	23 - 26 HEAT EVENT HOURS
	0 - 23 HEAT EVENT HOURS

Heat Event Hours are modelled hours during the week that the Heat Index exceeds Boston Heat Alert Levels (see Heat Resilience Solutions for Boston).

2,000 FT.