

SECTION 3

**COMMUNITY
SETTING**

SECTION 3.1:

REGIONAL CONTEXT**PHYSICAL LOCATION AND WATERSHED ADDRESS****GEOGRAPHICAL LOCATION**

Boston is in eastern Massachusetts on the coast of the Atlantic Ocean, at the westernmost point of Massachusetts Bay where the Mystic, Charles, and Neponset Rivers meet the sea. Boston is located within two major watersheds, the Boston Harbor Watershed and the Charles River Watershed. The Boston Harbor Watershed includes the Mystic River sub-watershed to the north and the Neponset River sub-watershed to the south and the lowest point of the city is at sea level. The highest point is at Bellevue Hill in West Roxbury which is 325 feet above sea level. The city has 48.4 square miles of land (not including islands) and 41.2 square miles of water. The City of Boston is the county seat of Suffolk County and the capital of the Commonwealth of Massachusetts.

The city is made up of many neighborhoods, but for the purposes of the *Open Space and Recreation Plan*, 16 neighborhoods were used: Allston-Brighton, Back Bay/Beacon Hill, Central Boston, Charlestown, Dorchester, East Boston, Fenway/Longwood, Hyde Park, Jamaica Plain, Mattapan, Mission Hill, Roslindale, Roxbury, South Boston, the South End, and West Roxbury. Many of these neighborhoods were once cities or towns that were annexed (See MAP 1: REGIONAL CONTEXT).

The region as a whole is known as the Boston Basin, the lowlands and Boston Harbor surrounded by a series of hills. These hills, the Blue Hills to the south, the Arlington Heights to the west, and the Middlesex Fells to the north, define the outer rim of this basin. The Shawmut Peninsula, where the City of Boston began, was the center of this basin, and where the major rivers of this basin (the Mystic, Charles, and Neponset) radiated toward, making this a strategic location from which people, goods, and

services could spread. It is also strategic from a military defense point of view, this position deep within Massachusetts Bay surrounded by lands north and south of the water access to the center of the basin (See MAP 2: WATERSHEDS AND WETLANDS).

ADJACENT LAND USES AND RESOURCES SHARED WITH NEIGHBORING COMMUNITIES**COASTLINE NORTH OF BOSTON HARBOR**

The large coastal wetlands area known as the Belle Isle Marsh Reservation, under Massachusetts Department of Conservation and Recreation (DCR) jurisdiction, is located in Winthrop as well as East Boston. Revere owns open space across Belle Isle Inlet from East Boston, and both East Boston and Revere will be affected by the proposed redevelopment of the Suffolk Downs site; there will be planned new open spaces that will be available for public access and use in that redeveloped area.

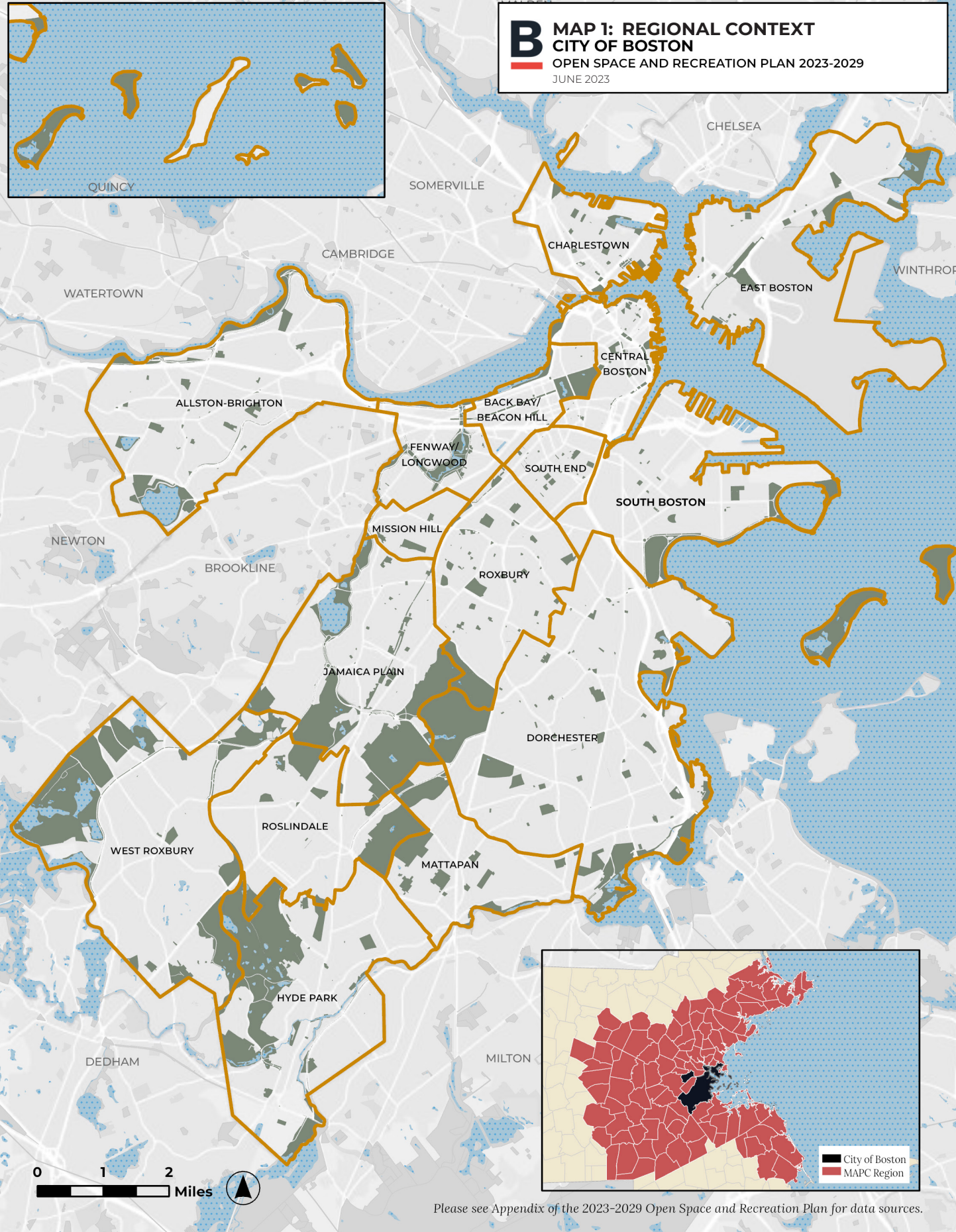
Chelsea Creek is a resource shared by East Boston, Revere, and Chelsea. Another river shared by Chelsea and Boston, here the Charlestown section, is the Mystic River. The Chelsea section of the Mystic includes O'Malley Memorial Park, while in Charlestown, Ryan Playground is on the Mystic.

The Mystic River is also the setting for intense industrial, commercial, and transportation uses on the Everett, Somerville, and Charlestown riverbanks. The major exception is Ryan Playground in Charlestown.

WEST OF BOSTON HARBOR

The Charles River and its tributaries create the natural resource based open space opportunities shared by Boston and nearby towns such as Cambridge, Watertown, Newton, Brookline, Needham, and Dedham. Boston shares with Cambridge, Watertown, and Newton the benefits of the DCR's management of the Charles

B MAP 1: REGIONAL CONTEXT
CITY OF BOSTON
OPEN SPACE AND RECREATION PLAN 2023-2029
JUNE 2023



Please see Appendix of the 2023-2029 Open Space and Recreation Plan for data sources.



River Reservation. Chandler Pond, an inland water body with adjacent city parkland, is downstream of the Newton Commonwealth Course, and part of the Charles River watershed. Another tributary of the Charles that forms the backbone of a major park resource for both Boston and Brookline is the Muddy River, which flows through much of the Emerald Necklace. Newton, Needham, and Dedham share an upstream section of the Charles at the West Roxbury section of the river, which is under management as open spaces by the Boston Parks Department at Millennium Park, by the DCR at Cutler Park Reservation, and by Dedham at Riverdale Park. Not on the Charles River itself, but in the watershed are a series of open spaces along the Boston-Brookline border thanks to parklands, former large estates, or institutional uses that provide a greenbelt.

COASTLINE SOUTH OF BOSTON

The Neponset River, its marshes and its tributary the Mother Brook, form the basis of opportunities for recreation and natural resource conservation for Boston, Milton, Dedham, and Quincy. The Neponset River Reservation straddles much of both the Milton and Boston shorelines. The DCR Pope John Paul II Park, Port Norfolk Park, Tenean Beach, and Victory Road Park are located on the Boston side, and Squantum Point Park is located on the Quincy side. The Mother Brook, a man-made channel, diverts some water from the Charles River to the Neponset, and provides parkland with river access both in Hyde Park and in Dedham.

SOCIO-ECONOMIC CONTEXT

Boston is the largest city in the state, and the largest city in New England. In 2020, Boston had a (2016-2020 American Community Survey) population of 689,326 making it the 29th largest city in the U.S. Boston has a land area of 48.4 square miles making it the second smallest major U.S. city in terms of land area, after San Francisco (Frey 2021). Boston has a population

density of 14,301 persons per square mile, which is greater than Chicago at 12,060 persons per square mile (CMAP 2022).

The city is the anchor of the Boston-Cambridge-Newton, MA-NH Metropolitan Statistical Area (MSA), which is the tenth-largest in the U.S., with a total 2020 Census population of approximately 4,941,632. The Boston-Worcester-Providence Combined Statistical Area is the sixth largest in the U.S. with more than 8.4 million residents. This MSA represents the commuting region of Boston.

With the strong presence of several institutions of higher learning and research hospitals, which attract private investment and businesses, the City of Boston is positioned to maintain its momentum for being a city that attracts capital and people, which thereby generates pressures for development and the need for further open space protection and development to complement this growth. Pricewaterhouse Cooper notes that the Greater Boston metro area has the sixth-largest economy in the country and the twelfth-largest economy in the world (“Largest City Economies” 2009). The 2022 *Global Power City Index* by Japan’s Institute of Urban Strategies ranked Boston as fifth among the U.S. cities listed among the 48 international cities in terms of “their ‘magnetism,’ or their comprehensive power to attract people, capital, and enterprises from around the world (2022). While Boston is among the most economically powerful cities in the world, it also struggles with worsening wealth inequality and declining economic mobility.

The COVID-19 pandemic worsened the tangled inequities of structural racism, income inequality, job stability, access to healthcare, and housing stability.

The Boston’s Economy 2022 report by the BPDA summarizes Boston as follows:

“[Boston has experienced] substantial progress in Boston’s economic recovery from the COVID-19 pandemic. The worst fears from the early months of COVID-19 – that the pandemic would lead to prolonged economic stagnation and a permanent urban exodus – have not come to pass.

Instead, unemployment has fallen rapidly by the standards of prior recessions, residential demand has returned, and developers are betting on Boston’s future as the hub of life science innovation. Still, many parts of the economy are far from full recovery, and questions remain about what to expect going forward.”

The report highlights that recovery is not even for everyone:

“The industries with the largest share of Boston residents continuing to claim unemployment benefits in October 2020 were the industries broadly categorized as in-person and support services – restaurants, hotels, retail stores, entertainment venues and cultural institutions, personal services such as hair salons, and support services such as janitorial work. These industries were hard hit on several levels. They generally require in-person work, often in close physical proximity or with large groups of people. As such, they were initially closed by government mandate and continue to be limited by customer health concerns.”

Additionally, in-person and support service jobs in Boston rely on commuters and visitors whose numbers declined due to the pandemic. Cell phone data suggest that the number of commuters to Boston fell by about half during the pandemic (BPDA, “Economy”, 2022).

And Boston Indicators reports:

“...top earners have experienced a tremendous amount of growth over the last half-century, while people in the middle saw only modest increases and those in the bottom tenth percentile saw hardly any progress at all. As a result, the likelihood that people in Boston can earn more than their parents as working adults has plummeted since the mid-20th century. And Boston’s high-cost housing market is pushing many middle-income residents out of the city,” (“Boston’s Booming” 2018).

These findings are echoed in MAPC’s 2020-2025 Economic Development Strategy where they found stagnant wages and income inequality between the top 1% and bottom 99% of workers is “among the worst in the country” – a gap that continues to grow. Furthermore, vast wealth disparities persist across racial lines with Latinx and Black workers paid less than white workers at “nearly every education level,” (2021).

These disparities and the stresses they perpetuate can lead to displacement. From *Heat Resilience Solutions for Boston*:

“Displacement: Occurs as a result of gentrification where residents move out of their community to another. This outcome is typically involuntary and occurs when residents can no longer afford to live in their neighborhoods/communities. Displacement can also occur if the character of the neighborhood transforms and remaining residents feel a sense of dislocation despite remaining in the neighborhood. Displacement can also occur to local businesses for similar reasons,” (qtd. Environment Department 2022).

Beyond the mission of supplying access to well-maintained and programmed parks, what role does the park system play in stabilizing communities and combating structural inequities? And, given the rapidly changing situation, will the work of today lead to a park system that equitably serves Boston’s residents ten years from now?

The City of Boston is increasingly taking steps, both large and small, to address entrenched inequities and protect against displacement. As one piece of their mission, the Office of Economic and Opportunity and Inclusion aims to root out systemic barriers that have created deep economic inequities.

In 2022, the Parks Department launched the Open Space Acquisition Program to implement open space expansion that will address needs across the city.

During the Covid-19 pandemic, residents relied more heavily than ever on the availability of public open space to relieve the mental and physical burdens of the lockdown and social distancing. Parks provided safe spaces to gather, a place to escape the confines of home, and take in the healing effects that nature has to offer. People who lived within close walking distance to large public open spaces benefits from this proximity during the pandemic. Yet this benefit is not equitably shared across the city. Open Space Acquisition Funds will aid park system expansion so that all residents, regardless of where they live, have access to permanent and public parkland. However, building out a robust program of park system expansion in Boston, a city where land values are high and still rising, will require steady investment to build a fund capable of sustained work within this landscape.

Complementary to this effort to expand parkland is a need to implement anti-displacement strategies that help stabilize communities alongside open space investments. These strategies extend across multiple City departments and initiatives, focusing on protecting renters, homeowners, and small businesses.

For more information:

- [boston.gov/departments/housing](https://www.boston.gov/departments/housing)
- [boston.gov/government/cabinets/economic-opportunity-and-inclusion](https://www.boston.gov/government/cabinets/economic-opportunity-and-inclusion)

REGIONAL WATERSHED PLANNING

Regional watershed planning efforts include those of the Boston Harbor Watershed and its Mystic River and Neponset River sub-watersheds, and the Charles River Watershed. The Mystic River Watershed Association (MRWA) reports that the Resilient Mystic Collaborative Communities received nearly \$13 million in grants from the FY 23 *Consolidated Appropriations Act* signed by President Biden. Those monies are proposed for flooding, heat,

and carbon neutrality projects throughout the Mystic River watershed. Bringing this work to the site scale, the MRWA has initiated a planning effort to create a more resilient Little Mystic Channel through a combination of paths and open space. The Charles River Conservancy in partnership with DCR launched a floating wetland in the Charles River to “demonstrate the importance (and absence) of shoreline vegetation; [r]esearch the impact on local zooplankton populations and quantify the scale at which water quality could be affected and improved; [and] engage the public on the river’s health,” (“Floating Wetlands” n.d.). The Neponset River Watershed Association continues its advocacy efforts to clean up a portion of the Neponset River and re-establishing fish runs for herring and shad which has gained momentum through the EPA’s designation on March 14, 2022 of the Lower Neponset River as a Superfund site. This designation brings federal resources to conduct “an extensive study of the contamination and potentially responsible parties, opportunities for public input, possible implementation of initial cleanup actions in certain areas, and eventual implementation of comprehensive cleanup efforts,” (“EPA Designates” 2022).

Also thinking regionally but acting locally are the municipalities of Cambridge, Somerville, Brookline, and Boston. Each city has completed an urban forest plan within the last few years and have served as mutual resources in forestry planning and pest response.

Parks Friends Groups, groups like the Esplanade Association, and large land trusts such as the Trustees of Reservations and MassAudubon, all continue to provide vital stewardship of the natural resources within parks and, ultimately, the watershed itself.

OPEN SPACE RESOURCES OF REGIONAL SIGNIFICANCE

Resources of regional significance located in Boston include the parks of the Emerald Necklace, the Charles River Reservation, the Neponset River Reservation, the Stony Brook Reservation, the Belle Isle Marsh Reservation, the Dorchester Shores and Old Harbor Reservations, the Arnold Arboretum, two municipal golf courses, active and historic cemeteries, greenways, parkways, the Harborwalk, urban coastal beaches, the Boston Harbor Islands, Forest Hills Cemetery, and Soldiers Field. The Blue Hills Reservation is immediately adjacent to Boston, and also has regional significance.

Some of the most extensive and significant regional scale open spaces in the Boston metropolitan area are found in Boston's communities, and these resources are available to users beyond the City's boundaries. Many of the neighboring communities that are smaller in population lack the significant open space resources that can be found in Boston. It can be presumed that adjacent communities meet at least some recreational needs by making use of the facilities located in Boston.

Being the center of a large metropolitan region, and a major tourist destination, generates significant impacts on Boston's open space resources of regional significance. See Sections 5 and 7 for further discussion of these spaces.

SHARED PROTECTION STRATEGIES

Watershed and river planning has offered the best examples of shared protection efforts. It appears that waterfront land uses may offer the greatest disparity between adjacent municipalities, and the greatest opportunities for regional planning. There is also opportunity for shared protection strategies between the State, the

City of Boston, and other municipalities for regional scale or shared open space, beyond the awareness of protection needs of rare species.

A review of municipal open space plans indicates that a goal of some neighboring communities is to form coalitions, communications, and connections with neighbors on open space initiatives. There are opportunities for Boston and adjacent municipalities to work together with MAPC and the Commonwealth on waterfront and riverfront planning, linear parks, green infrastructure, alternative transportation, social equity, and climate change on a regional level and between adjacent municipalities. The opportunity exists for the City of Boston to be partners with its neighbors over shared resources and environmental issues that exist beyond the boundaries of the city.

SECTION 3.2

HISTORY**INTRODUCTION**

We will cover Boston's history and archeology from the perspective of how it has shaped our land uses, especially those pertinent to our environmental and recreational pursuits.

HISTORY OF SETTLEMENT AND DEVELOPMENT IN BOSTON**PREHISTORIC ERA (12,000 – 400 BP)**

Boston's human history began approximately 12,000 years ago. The first Native People were hunters following migrating herds of large game like mastodon or caribou. These nomadic people settled on the ring of hills overlooking low-lying areas with rivers and wetlands where animals gathered.

The landscape and environment that the Native People encountered would have been far different than today. The one mile thick glaciers that once covered the area were retreating but still retained vast quantities of water, causing a sea level nearly 250 feet lower than today. Boston's shoreline would have extended nearly 10 miles east of its current location due to the lower sea level. The cold environment and lack of soil due to glacial erosion resulted in a tundra with low shrubs, mosses, and few trees. There is little evidence of human settlement from this early period due to seasonal movement, the tendency to locate within estuaries, the use of organic building materials, the consequent human development that may have eradicated these sites, and changes in land forms and sea level rise.

The Archaic Period (10,000-3,000 BP) saw an increase in the native population, now using many areas of Boston. The development of forests and major rivers allowed Native People to begin establishing seasonal camp sites at the location of resources such as wild berries,

hunting areas, and stone outcrops that could provide the material for tools. The Woodland Period (3,000-400 BP) saw the stabilization of the overall climate and the formalization of settlements in villages at river confluences and outlets in Boston.

There were two major factors that occurred in Boston's environmental history 3,000 years ago. The first was the flooding of Boston Harbor. Up to this point, the Harbor was a hilly plain similar to Jamaica Plain and Roxbury today. Rising sea levels quickly transformed the area into a shallow harbor filled with islands. The shellfish in the harbor came to provide a reliable food source.

The second major development 3,000 years ago was the adoption of pottery and agriculture, which helped to transition the Native population from nomadic hunters to life in more formally established villages in places like Charlestown, downtown Boston, and the Lower Mills area of Dorchester. These villages contained the populations of Native People who were encountered by Europeans when they first began exploring and settling what would become Boston in the early 1600s.

CONTACT PERIOD (1500-1620 AD)

The *Historic and Archaeological Resources of the Boston Area* notes there likely developed a seasonal migration pattern, where in the spring and fall the native populations settled along the Neponset and Mystic River estuaries, and the nearby Harbor Islands, while during the summer and winter, they would likely have dispersed to smaller sites along upland tributaries and ponds (beyond the limits of present Boston) for greater protection from storms and the opportunity for ice fishing and hunting (MHC 1982).

The Native American settlement along the coast probably increased during the Contact Period because the presence of Europeans provided opportunity for trade, yet also reduced their population through infectious diseases brought by the European traders.

The primary transportation system during the Contact Period was a complex network of trails that followed the natural contours of the landscape, changed elevation at an easy grade, and favored the sunny rather than shady slope. The trail network provided alternative routes for crossing the landscape. Examples of native trails include Shawmut Avenue in Boston proper and Mishawam Street in Charlestown.

Fords were located where trails crossed rivers, usually at the first fall line such as the Charles River at Watertown Square and the Neponset River at Lower Mills. Archaeological evidence on the Harbor Islands indicates that water transport was used.

PLANTATION PERIOD (1620-1675 AD)

This period is defined by the establishment of permanent English settlement along the coast, and expansion inland along major tidal rivers. The initial European settlements of coastal trading posts and plantations clustered with the native population around the Mystic, Neponset, and Charles River estuaries.

This period is also characterized by the virtual removal of the native population from the Boston area. By the end of the 1600s, the remnants of the native population had retreated to upland sites such as the Blue Hills, or moved west and north of Boston.

There were two types of settlement patterns in this era – the planned town and the organic village. Charlestown is the only planned town within Boston, characterized by a regular street grid and formal market squares (Harvard Square in Cambridge is another local example). Partial attempts at formal street plans were made in Boston.

The most common type of settlement pattern was the organic village which was usually located at the intersection of existing native trails, and centered on a meetinghouse and burying ground, perhaps with a tavern and common ground. Early examples developed in Dorchester and Roxbury.

By the mid-1600s, most towns consisted of a small meeting house center with individual farms set in a grid of divided fields. Boston itself had developed in a more intense pattern by this time, with an urban density with separate residential and commercial districts.

The colonists used the native trail system to get around difficult terrain, and improved ford sites by building bridges. Planned towns such as Charlestown had street grids. Rangeways – long, straight roads that ignored changes in topography – were added to the trail network.

COLONIAL PERIOD (1675-1775 AD)

Boston emerged, during the Colonial Period, to become one of the most important port cities on the Atlantic coast in the New World. Boston and Charlestown had key port facilities, and the Charles River continued to grow as the regional focus.

Settlement followed a pattern of infill and consolidation of the previously developed areas. Colonial settlement in Boston focused on many of the areas previously occupied by native villages including Charlestown, downtown Boston, and Savin Hill in Dorchester. Roxbury, Jamaica Plain, and areas along the Mystic River became fashionable for country estates in the early 1700s. Several of the Harbor Islands were used for grazing, fishing, and institutional purposes.

Boston proper had an increase in population and commercial activity that led to distinct social and economic districts. Three and four story brick building along Corn Hill (Washington) Street were the civic and commercial heart of the city. The area from Town Cove to the North End and Fort Hill was a district of wharves and shipyards, much of it built on filled land.

The water transport system grew, particularly to Portsmouth, Salem, and Plymouth. It was often easier to get to a local destination by boat than by road, and a large number of wharfs were built for passenger and freight use. The same corridors of enhanced native trails connected Boston to adjacent areas, and development

focused along these routes. Many of these routes terminated in Roxbury, as Boston proper remained isolated on a peninsula. Roxbury controlled the access to Boston proper.

FEDERAL PERIOD (1775-1830)

Boston saw a dramatic increase in population and prominence during the Federal Period, establishing itself as a major source of goods and supplies including ships, lumber, cod, and other material goods while also being a major port for immigrant arrival.

This period marked the beginning of the most extensive landscape transformation in Boston that rapidly expanded its land mass. By this time Boston reached the physical limits of its shoreline. The core city began to develop more density. It also expanded outward and absorbed adjacent communities. Toll bridges on causeways, turnpikes, and omnibus service (horse drawn carriage) encouraged residential development beyond the urban core. Another solution was to expand the land mass, a process which began as hills were excavated and used to fill the surrounding tidal marshes and waters.

The newly filled land was platted in planned grids. Large speculative grids were also laid out in South Boston and Roxbury. Residential and industrial uses were often mixed. An institutional area of hospitals, prisons, almshouses, and naval facilities developed on the fringes of waterfront and filled land, between the central core city and the outlying residential areas of Roxbury and South Boston.

EARLY INDUSTRIAL PERIOD (1830-1870)

The industrial revolution in Boston was fueled by the Stony Brook and Muddy Rivers as well as by a thriving sea port and large population of immigrants, making it one of the biggest producers of goods in the world.

Boston's central core increased in density with greater height and proximity of buildings, and differentiation of a central business and commercial district and high-density residential areas. Residential development in the central core of

the city included high density rowhouses built in planned street grids around London-style residential parks. This pattern was realized in parts of the South End, Charlestown, and East Boston.

The settlement beyond the central core was defined by innovations in transportation including steam ferry, suburban commuter rail service, and horse-drawn street railways.

Important events in landscape and urban planning include an emerging green belt of landscaped cemeteries and municipal properties such as reservoirs. These were accessible by street railway and provided important areas for recreational and social activity for people in the inner city and outer suburban areas.

LATE INDUSTRIAL PERIOD (1870-1915)

Development in this period was influenced by electrical-powered technology. The electrification of the street railway system and the opening of the subway and elevated lines generated development away from the core, now known as "streetcar suburbs" (Warner 1978). Larger buildings with elevator shafts were built in the urban core of Boston, increasing density.

During this era, secondary commercial areas developed at Kenmore Square on the end of downtown, and in Fields Corner, Uphams Corner, Dudley Station and Jamaica Plain along major transit routes. These nodes served the immediate residential population of an expanding city.

In reaction to the rapid urbanization of the early and late industrial periods, both a comprehensive system of parks and parkways within the City of Boston (1875) and a comprehensive metropolitan park system (1892) were created and provided open spaces and recreation areas amidst dense urban and suburban development. Parkways were new then transportation corridors connecting parks that stimulated residential and commercial development in the areas beyond the park boundaries.

EARLY MODERN PERIOD (1915-1940)

This era was defined by two World Wars and the Great Depression. The population in the core of Boston decreased for the first time in history. Railroad and waterfront facilities began to become obsolete as highways and new fuel storage facilities replaced coal yards and older wharves and warehouses. Military docks, shipyards, and facilities expanded and overwhelmed the communities of Charlestown and South Boston. Industrial activity began to decline in the Boston core.

The widespread use of automobiles and commercial air service had an influence on the development of Boston, where construction of Boston Municipal Airport (now Logan Airport) (1923), the Sumner Tunnel (1934), and the regional highway system (1931-1936) meant that people were no longer restricted to recreational facilities served by trolley or train lines, and that land from existing parks and potential open spaces were used to support this new infrastructure. On the other hand, greater mobility allowed people to enjoy ponds, woods, and other scenic or historic areas that were on the periphery of the city.

A series of parkways was developed by the Metropolitan District Commission. These were scenic routes that connected the suburban residential areas to the urban core. These included the West Roxbury Parkway, Neponset River Parkway (now Truman Parkway), Brook Farm Parkway (now Veterans of Foreign Wars Parkway), and Morrissey Boulevard.

URBAN RENEWAL

Boston was in decline in the mid-1900s, as factories became old and obsolete, and businesses moved out of the region for cheaper labor elsewhere, and population was not replaced as people moved to the suburbs or elsewhere. The city was in need of infrastructure improvements, as well as economic infusion. The Boston Planning and Development Agency (BPDA) was established in 1957 and responded to this disinvestment by undertaking urban renewal

projects. One project significant for its open space was the creation of Government Center which included City Hall Plaza.

GEOGRAPHIC EXPANSION

The city of Boston has grown to 40 times its original size from its original 783 acres at the time of settlement in 1630. Boston was originally about 1.2 square miles, and currently has a land area of 48.4 square miles. It is the second smallest major US city in terms of area, and that land mass was hard earned through the filling of wetlands and annexation of neighboring municipalities.

ORIGINAL LAND MASS

In 1630, the 783-acre Shawmut peninsula was surrounded by the Boston Harbor and the tidal land of the Back Bay, part of the Charles River estuary. To the south, a narrow isthmus which was 120 feet wide at high tide supported the single road (now Washington Street) that connected the peninsula to Roxbury on the mainland.

The peninsula originally had five hills – Copp’s Hill (in the North End); Fort Hill (in the Financial District); and the Trimount (meaning triple mountain) which actually consisted of the three hills of Mt. Vernon, Beacon Hill and Pemberton Hill.

LAND MAKING

The first land making in Boston began with the “wharfing out” from the mainland. The area between the wharves was then often filled in, creating more land.

Except for the wharves that were built, there was little change in the topography and landform of Boston until 1775. Then the landscape was radically transformed over a period of 100 years to accommodate and encourage growth. Expanding onto the mainland was not considered first because of the maritime economy. The solution was to fill the tidal flats.

A second motivation for filling the tidal flats was to deal with sewage. For several hundred years

animal, human, commercial and industrial waste was disposed of by piping it to the tidal flats where it was washed away. However, mill dams that were built in multiple places enabled industry to thrive but prevented the tides from flushing the flats. Sewage and trash built up and created a noxious condition. Much of the new land was created by filling in the sewage- and trash-filled tidal areas with earth from Boston's original hills.

From 1857 to 1894, the Back Bay was filled in behind the Boston & Roxbury Mill Dam. This added about 700 acres and nearly doubled the size of the original peninsula. This area became the Back Bay neighborhood.

Charlestown and the Fenway area were filled in a short while later. The end of the 1800s included fill projects in East Boston, Marine Park, and Columbus Park (now Moakley Park) to the south.

The area which would become Logan Airport began to be filled in 1922.

Land making in relation open space in Boston is discussed in the history of Boston parks sections below.

ANNEXATION

The city has also grown significantly through annexation of adjacent towns over the years. Boston annexed South Boston in 1804, East Boston in 1836, Roxbury in 1868, Dorchester including Mattapan and a portion of South Boston in 1870, Roslindale in 1873, Brighton including Allston in 1874, West Roxbury including present day Jamaica Plain and Roslindale in 1874, Charlestown in 1874, and Hyde Park in 1912.

EFFECT OF LOCATION AND THE ECONOMY ON OPEN SPACE

Boston has changed over the centuries from an area of Native American encampment, to a coastal colonial outpost, to a major metropolis of global significance. The provision and protection of open space has changed along with the economy, politics, and the population's needs.

The harbors, shoreline, tidal flats, lakes, ponds, marshes, and riverbanks have provided food and water, enabled transportation, encouraged trade, and influenced development throughout the history of Boston. The landscape of steep hills and small valleys with ponds, streams, and rivers was amenable to early agriculture. The early economy and survival was strongly supported by fishing and seafaring. Settlement followed the rivers inland.

This setting made possible a seaborne commerce that flourished with protected deep-water harbors. Early manufacturing utilized the water power of streams, rivers and tides. The terrain provided space for farmland, then suburban estates, and then streetcar suburbs as the population increased throughout the 19th century.

Demand for development in Boston resulted in many of the original landscape features being altered or obliterated through the centuries. Hills were used to fill wetlands; streams were culvertized; and the shoreline was extended.

The Great Migration of colonists began a continual influx of newcomers that peaked during the Industrial Revolution. In the mid-1800s, Boston was a densely populated city with a seafaring- and industrial-based economy that relied on its tidal flats for domestic and commercial waste elimination. Immigrants lived in heavily populated neighborhoods where parks, playgrounds, and other public open spaces became important to populations with limited resources and time for recreation.

The industrial uses along the harborfront and along the Charles and Neponset Rivers and other waterways helped to build a city and create a strong economy, but left behind significant pollution. Costly cleanup efforts have begun to alleviate these problems, thus enabling such areas to be used more extensively for water-based recreation.

Seaport commerce defined the economy of Boston for centuries, and shaped its landscape with wharves and human made land. But

seaborne commerce declined (but has not disappeared) and freight and passenger traffic at Logan Airport increased. This led to runways and aviation facilities that spread across islands, tidal lands, and a city park (Wood Island Park designed by Frederick Law Olmsted, Sr.), to the bitterness of many East Boston residents.

Railroad tracks were converted to the Massachusetts Turnpike, enabling the flow of workers into the city, but with accompanying noise and air pollution, and the loss of land.

After World War II, the population declined as many families left the city, either to other parts of the country, or for the suburbs, trading apartment blocks and triple-deckers for single-family homes separated by private yards and linked by wide, tree-lined streets. The population decline had a significant adverse impact on several neighborhoods in Boston.

A rise in abandoned buildings and vacant lots resulted, affecting the property tax-based municipal budget and local private investment. Pressure grew to reduce labor-intensive municipal functions such as park maintenance. City parks deteriorated during the 1960s and 1970s with the loss of constituents and reduced maintenance. In the 1980s, the passage of Proposition 2½ capped the rate at which local property taxes could rise, further limiting municipal revenues and services, especially those related to park functioning.

In the mid-1980s, open space activists formed a coalition to strengthen their voice in City Hall. With local philanthropists, they put together an effort to focus on the critical deterioration of municipal and metropolitan parks.

Based on that effort, *The Greening of Boston* report (The Boston Foundation 1987) stimulated the City to develop an open space plan in 1987 that outlined a program to rehabilitate the park system. The strong economy in the 1980s allowed the City to enjoy large increases in property taxes, which funded the multi-million dollar capital rehabilitation campaign.

As important as the rehabilitation of the parks was the recognition at the policy level that beautiful, safe, clean, and functional parks were needed to revitalize neighborhoods and stimulate private re-investment. Parks were seen as a key quality of life factor by which individuals and businesses assessed the value and stability of a neighborhood and the potential for return on investment in it.

Boston's population and demand for development continues to grow. High density and small geographic size put developable parcels at a premium, and tax existing infrastructure systems such as open space. New and expanding residential buildings, office towers, and university campuses compete with parks, playgrounds, and other open space for land. Achieving a balance of development, grey infrastructure, and green infrastructure so that the city becomes an integrated whole remains a critical focus for policy and practice in the future.

HISTORY OF OPEN SPACE IN BOSTON

City of Boston Parks

Boston's park system includes the oldest public open space in the nation, Boston Common, established in 1634. The Public Garden was the next significant addition, developed more than 200 years later in 1838.

The park movement in the U.S. began in the mid-1800s in response to urbanization and the sanitary reform movement (which believed that disease was caused by bad odors, dirt, and dampness). Sanitarians sought to eliminate places that were overcrowded, dark, damp, and contained organic waste by introducing sunlight, fresh air, dry land, and pure water – parks were seen as one desirable solution. Parks were for the public and were a place where city residents could escape to a country setting.

The Office of the Superintendent of Public Grounds was established by ordinance on February 28, 1870. The Superintendent had charge of all public grounds – Boston Common, the Public Garden, and residential squares and small parks created before 1975.

In 1875, Boston's voters approved an act that set up a Board of Park Commissioners to establish and run public parks. In 1876, the Commissioners recommended a comprehensive system of seven parks in the inner city and four in outlying areas which would be connected by parkways. By 1881, the City appropriated the funds for the parks.

In 1878 the Commissioners hired Frederick Law Olmsted, Sr., America's first and then most prominent landscape architect, to design and supervise the development of a comprehensive park system. Olmsted proposed to create a network of parks linked by parkways. The resulting park system is now known as the Emerald Necklace which then included the Charles River embankment, the Back Bay Fens, the Riverway, Leverett Park (now Olmsted Park), Jamaica Pond Park, the Arnold Arboretum, West Roxbury Park (now Franklin Park), and Marine Park. The parkways to connect these parks included the Arborway, Fenway, Jamaicaway, and Riverway.

The Park Commissioners also proposed to locate a park in each section of the city. Some parts of the city did not have enough remaining open land, so in those sections the parks were placed on the shore where land had to be filled in. Parks in this original system that required filling included Charlesbank in the West End, Marine Park in South Boston, and Wood Island Park in East Boston.

In the early 20th century, Boston created many playgrounds, mostly in parts of the city without squares or other public grounds, as the playground movement sought to improve the lives of the poor urban children through organized activities in smaller spaces closer to home. Some of these playgrounds were also on the shore and required landfilling, such as Charlestown Playground (now Ryan Playground).

The Park Department continued until 1913, when the Public Grounds, Bath, and Music Departments were merged with it to become the Park and Recreation Department. In 1920, the Cemetery Department was merged with the Park Department.

Land continued to be made in the 20th century to create public parks. The narrow Esplanade was filled along the Charles River as part of the Charles River Dam construction. Playgrounds and beaches were created by filling such as McConnell Park, Tenean Beach, Moakley Park, Carson Beach, Noyes Playground, and Constitution Beach. Storrow Drive was created in 1950 on part of the Esplanade; to compensate for the parkland that was taken, some filling was done along the river, creating a series of connected islands.

By 1950, most of Boston's parks and playgrounds were in place. As described previously, after World War II the budget for parks declined, and was then cut by more than half with the passing of Proposition 2½ in 1982, resulting in a period of severe deterioration for the City's park system.

By the mid-1980s, along with increased interest in urban living and improved economic conditions, citizen outcry brought attention to the poor condition of the parks. As a result, in 1987 the Mayor and the City Council approved \$75 million for a program to rebuild City parks and playgrounds.

In the early 21st century, the Central Artery/Tunnel Project (the "Big Dig") removed the elevated Central Artery through downtown and created a new highway tunnel. This project created a total of 300 acres of new and restored open space, including 45 parks and major plazas, among them the Rose Kennedy Greenway in downtown Boston managed by the Rose Kennedy Greenway Conservancy, and the Bremen Street Park in East Boston managed by MassPort. Material from the Big Dig tunnel excavation was used to cap landfills as part of creating Millennium Park in West Roxbury and the park land at Spectacle Island.

Metropolitan Park System

Boston was the first American city to create a metropolitan park system and the first to undertake regional planning (Penna & Wright 2009). The Metropolitan Park System was established in 1893 and Frederick Law Olmsted's concept of

networked parks was applied to the metropolitan region. The metropolitan parks and parkways were the first regional effort to protect environmentally significant areas and provide a physical framework for suburban growth.

The leading advocates of this effort were Charles Eliot, a landscape architect who had worked with Olmsted, and Sylvester Baxter, a social reformer. These men believed that a metropolitan government was needed to carry out major public works projects and provide the planning that would create a rational spatial and infrastructure framework for development.

Eliot and Baxter advocated for the creation of the Metropolitan Park Commission to develop a plan for a regional parks system to fulfill this vision. In 1892, the Metropolitan Parks Commission (MPC) was formed to provide for regional open space needs of Boston and its metropolitan area, and given eminent domain powers.

The Commission issued the 1893 *Report of the Metropolitan Park Commissioners*, which was the country's first regional plan, and was a blueprint for preserving Greater Boston's natural areas. The plan focused on the forests on the edge of the city, in the Middlesex Fells, the Blue Hills, and Stony Brook, and on riverbanks along the Charles, Mystic, and Neponset Rivers, and called for reservations to protect and manage them. A third focus was oceanfront beaches and many were preserved in outlying towns such as Revere. Eliot further proposed that the Harbor Islands be preserved as parkland. Finally, the plan proposed parkways between the city and the reservations.

The plan for the Metropolitan Parks system was soon implemented. By 1900, the Metropolitan Park Commission had acquired 9,177 acres of reservations, 13 miles of oceanfront, 56 miles of riverbanks, and had built seven parkways.

The State created the Metropolitan District Commission (MDC) in 1919, subsuming the MPC. In the 1920s, the MDC converted the parkways to four lane motorways. By the 1930s, these regional

parks were evolving from beautification and preservation of nature to providing opportunity for recreation. The MDC added recreational facilities to its park system, including ball fields, golf courses, tennis courts, swimming facilities, and a ski run at the Blue Hills Reservation.

The Metropolitan District Commission had water and sewer responsibilities as well as the park development and management responsibilities held by its predecessor agency, the Metropolitan Parks Commission. The MDC's water and sewer responsibilities were eventually re-allocated to the Massachusetts Water Resource Authority (MWRA) in 1985. Without this burden, the MDC was able to reinvest more effort to its parks mission. In 2003, the MDC merged with the Massachusetts Department of Environmental Management (DEM) to form a new agency, the Massachusetts Department of Conservation and Recreation (DCR), putting non-metropolitan Boston and metropolitan Boston parks under one agency.

As a result, the Boston Harbor Islands State Park, part of the assemblage of 34 islands ranging in size from less than 1 acre to 274 acres that total about 1,600 acres at high tide and 3,100 acres at low tide, and among the few DEM holdings in Boston, came under the purview of the DCR. In turn, that state park is a part of the Boston Harbor Islands National Recreation Area, an administrative unit under the National Park Service (a U.S. Department of the Interior agency), that extends 11 miles seaward from downtown Boston.

SECTION 3.3

POPULATION CHARACTERISTICS

POPULATION

For Boston overall, the trend has been toward increasing total population: 4.8% for the period between 2000 and 2010, and 11.6% between 2010 and 2020. Given the 2.6% increase in the 1990 to 2000 period, we can see an accelerating rate of population increase.

American Community Survey data (see following tables) indicate that a majority of Boston’s neighborhoods experienced 10% or more population growth from 2010 to 2020, with the high at 28.5% in Hyde Park and the low at 11.8% in Dorchester. Among the six neighborhoods with less than 10% population growth in the 2010-2020 period are three that had shown significant drops in population growth rate previously in the 2000-2010 period: Fenway/Longwood, Mission Hill, and Allston-Brighton. While all three neighborhoods are highly developed and may be close to the limit of full build-out, another factor, more temporary, may be at play here: the late winter 2020 outbreak of the Covid-19 pandemic. All three neighborhoods are heavily affected by student residents, and given the initial response by the universities and colleges to turn to online classes meant that many students may have left their Boston residences for temporary quarters elsewhere, and did not respond to the Census form on April 1, 2020 from their usual student location in these neighborhoods.

The *Massachusetts Statewide Comprehensive Outdoor Recreation Plan 2017* (“2017 SCORP”) (EOEEA 2017) notes that Massachusetts had 6,811,779 residents in 2016. It is the third most densely populated state in the country at 871 persons per square mile. Only Rhode Island and New Jersey are more densely populated.

Boston’s population density rose from 21.3 persons per acre in 2010 to 23.8 in 2020, a 2.5 persons per acre increase versus the 1.0 persons per acre increase in the 2000 to 2010 period.

This shows a significant acceleration of the population density increase trend. This density trend indicates that the need for more open space should be addressed, as more people will put greater pressure on existing spaces.

Note: Unless otherwise noted, 2020 figures are based on the 2016-2020 American Community Survey. 2030 population projects were developed by the BPDA Research Division. 1990, 2000, and 2010 figures are derived from the Census.

Boston’s Population				
1990	2000	2010	2020	2030 projected
574,283	589,141	617,594	689,326	740,000

Neighborhood Population				
	2010	2020	2010-2020 change	2010-2020 % change
Allston-Brighton	74,997	74,620	-377	-0.5%
Back Bay/Beacon Hill	27,111	27,158	47	0.2%
Central Boston	31,821	35,983	4,162	13.1%
Charlestown	16,439	20,504	4,065	24.7%
Dorchester	14,235	127,680	13,445	11.8%
East Boston	40,508	47,804	7,296	18.0%
Fenway/Longwood	37,581	39,126	1,545	4.1%
Harbor Islands	535	434	-101	-18.9%
Hyde Park	30,637	39,359	8,722	28.5%
Jamaica Plain	37,468	43,309	5,841	15.6%
Mattapan	22,600	26,854	4,254	18.8%
Mission Hill	16,305	16,380	75	0.5%
Roslindale	8,680	32,707	4,027	14.0%
Roxbury	48,454	52,856	4,402	9.1%
South Boston	5,200	41,217	6,017	17.1%
South End	24,577	29,298	4,721	19.2%
West Roxbury	30,446	34,037	3,591	11.8%
BOSTON	617,594	689,326	71,732	11.6%

Population Density (persons per acre)					
	Acres with airport	Acres without airport	2010 density*	2020 density*	2010-2020 Population Density Change (persons / acre)*
Allston-Brighton	2,839	2,839	26.4	26.3	-0.1
Back Bay/ Beacon Hill	599	599	45.3	45.3	0.1
Central Boston	833	833	38.2	43.2	5.0
Charlestown	872	872	18.9	23.5	4.7
Dorchester	4,913	4,913	23.3	26.0	2.7
East Boston	3,012	1,509	26.8	31.7	4.8
Fenway/ Longwood	749	749	50.2	52.2	2.1
Hyde Park	2,927	2,927	10.5	13.4	3.0
Jamaica Plain	2,603	2,603	14.4	16.6	2.2
Mattapan	1,352	1,352	16.7	19.9	3.1
Mission Hill	351	351	46.5	46.7	0.2
Roslindale	1,678	1,678	17.1	19.5	2.4
Roxbury	1,701	1,701	28.5	31.1	2.6
South Boston	2,062	2,062	17.1	20.0	2.9
South End	472	472	52.1	62.1	10.0
West Roxbury	3,516	3,516	8.7	9.7	1.0
BOSTON	30,479	28,976	21.3	23.8	2.5

* Population density based on acres without Airport

Age*		
	2020	Percent of population
19 and under	139,893	20.3%
20-34	238,796	34.6%
35-64	159,499	23.1%
55-64	69,854	10.1%
65+	81,284	11.8%
BOSTON	689,326	100.0%

*While data was aggregated based on these age groups, we recognize that the needs of residents 85 and over are different than the 65-75 age group.

Teens			
	2020	Percent of 10-17 pop	Percent of total City pop
10-14	28,909	62.5%	4.2%
15-17	17,323	37.5%	2.5%
BOSTON	46,232	100.0%	6.7%

Race and Ethnicity		
	2020	Percent population
White Alone	359,219	52.1%
Black or African American Alone	166,796	24.2%
Native American and Alaska Native Alone	2,127	0.3%
Asian/Pacific Islander Alone	68,069	9.9%
Some Other Race Alone	43,173	6.3%
Two or More Races	49,942	7.2%
BOSTON	689,326	100.0%

Hispanic or Latino		
	2020	Percent population
Hispanic or Latino	134,703	19.5%
Not Hispanic or Latino	554,623	80.5%
BOSTON	689,326	100.0%

Disability		
	2020	Percent population
Identifies as having a disability	80,836	11.7%

Housing Tenure		
	2020	Percent of units
Total Housing Units Occupied	273,188	91.5%
Owner Occupied Units	96,502	35.3%
Renter Occupied Units	176,686	64.7%

Family Income		
	2020 Families	Share of families
\$0 to \$24,999	20,807	16.0%
\$25,000 to \$49,999	20,198	15.5%
\$50,000 to \$74,999	15,542	12.0%
\$75,000 to \$99,999	13,765	10.6%
\$100,000 to \$149,999	21,904	16.8%
\$150,000 or greater	37,836	29.1%
BOSTON	130,052	100.0%
Median income	\$89,270	

Poverty Status by Age*		
	2020 residents in poverty	Poverty rate
0-4	7,336	22.2%
5-17	19,258	26.2%
18-24	23,004	34.5%
25-34	19,928	12.0%
35-64	30,904	13.6%
65+	15,672	19.8%
BOSTON	116,102	18.0%

*Poverty rates based on population for whom poverty status is determined which comes to 646,429 people.

Industry		
	2020	Percent of employed population
Management, business, science, and arts	200,933	52.3%
Service	73,164	19.0%
Sales and office	70,946	18.5%
Natural resources, construction, and maintenance	14,596	3.8%
Production, transportation, and material moving	24,601	6.4%
Civilian employed population 16 years and over	384,240	55.7% of city population

Means of Commuting		
	2020	Percent Total Workers
Total car, truck, or van*	162,688	43.3%
Drove alone	141,079	37.5%
Carpooled	21,609	5.7%
Public transport	115,561	30.7%
Bus or trolley bus	45,045	12.0%
Streetcar or trolley car	2,360	0.6%
Subway or elevated	63,456	16.9%
Railroad	4,297	1.1%
Ferryboat	403	0.1%
Taxi	2,292	0.6%
Motorcycle	249	0.1%
Bicycle	8,202	2.2%
Walked	54,979	14.6%
Other means	4,377	1.2%
Worked at home	27,564	7.3%
TOTAL WORKERS	375,912	100.0%

Vehicles per household (share of neighborhood households)						
	No vehicle	1	2	3	4	5 or more
Allston-Brighton	34.8%	39.3%	19.4%	4.7%	1.4%	0.4%
Back Bay/Beacon Hill	50.2%	40.9%	7.7%	1.0%	0.1%	0.1%
Central Boston	53.9%	37.5%	7.8%	0.6%	0.1%	0.0%
Charlestown	22.0%	55.0%	21.0%	1.7%	0.0%	0.4%
Dorchester	28.1%	42.3%	22.5%	5.7%	1.1%	0.4%
East Boston	37.8%	40.7%	18.1%	2.6%	0.6%	0.2%
Fenway/Longwood	59.8%	34.4%	5.0%	0.7%	0.0%	0.0%
Hyde Park	16.2%	37.3%	31.8%	11.6%	2.3%	0.7%
Jamaica Plain	25.6%	48.8%	20.2%	4.4%	0.7%	0.2%
Mattapan	27.1%	42.7%	21.3%	6.2%	1.7%	0.9%
Mission Hill	57.2%	37.7%	3.4%	1.6%	0.1%	0.0%
Roslindale	13.9%	46.5%	30.8%	5.9%	2.6%	0.4%
Roxbury	44.0%	40.0%	12.0%	3.4%	0.6%	0.0%
South Boston	28.7%	47.5%	20.4%	2.7%	0.7%	0.1%
South End	35.5%	49.4%	13.7%	1.2%	0.2%	0.0%
West Roxbury	10.6%	42.9%	35.8%	8.3%	2.1%	0.3%
BOSTON	33.5%	42.5%	18.8%	4.1%	<1%	<1%

INDUSTRIES, OCCUPATIONS, EMPLOYERS, AND EMPLOYMENT TRENDS

The *Largest Employers in the City of Boston* report provides an overview of the largest private sector employers, defined as having 500 employees or more. The analysis revealed that there are 121 private sector companies in Boston with more than 500 employees. These companies account for 196,446 jobs. Massachusetts General Hospital, Brigham and Women's Hospital, and Boston University together provide more than 35,000 jobs (BRA 2013).

Boston's largest employers are now mainly providers of Health Care and Social Assistance, Finance and Insurance, and Professional and Technical Services. These three sectors, in 2021, account for 303,423 jobs, representing 47% of all employment. Thanks to the pandemic shut-down, employment in nearly all the industrial sectors dipped in 2020 and then generally made a substantial recovery in 2021. The two sectors with the least amount of bounce back are Accommodations and Food Services, and Arts, Entertainment, and Recreation, which are the most vulnerable to the pandemic's lingering effects due to their being considered discretionary activities (BPDA, "Boston's Economy", 2022).

However, not all business is big business in Boston. *Boston's Neighborhood Business Patterns* states that the majority of firms in Boston are small employers with almost half of the establishments having 1-4 workers. There are 8,800 immigrant-owned small businesses in Boston that generate almost \$3.7 billion in annual sales and employ 18,500 people (BRA 2014).

The *Student Housing Trends 2018-2019 Academic Year* report notes that the city is the location of 35 public and private colleges and universities. There are more than 137,000 students enrolled in Boston's institutions of higher learning. The concentration of students ranks at the top in the nation and the world (DND n.d.).

Currently, nearly 70% of people living in Boston 25 and older have had some college or attained an Associates, Bachelors, or Masters degree (BPDA, "In Context", 2022). The combination of the large number of colleges and universities and skilled jobs results in a highly educated workforce and a population that is relatively younger than other cities.

The city is home to a number of technology companies and is a hub for biotechnology. In 2021, Boston institutions received \$2.4 billion from the National Institutes of Health, which was the second highest funding to any city in the U.S., just behind New York City (BPDA, "In Context", 2022).

Tourism forms a large part of the local economy. The October 2022 report *Revive and Reimagine: A Strategy to Revitalize Boston's Downtown* cites that downtown, historically the focus of Boston's tourism industry has seen a downturn in economic of about 20-40% below pre-pandemic levels in hard hit industries (e.g., accommodation, retail, restaurants, tourism) (City of Boston, "Revive", 2022). Boston has made an effort to broaden and reframe what tourism in Boston looks like, particularly where it takes place. Former Mayor Kim Janey launched the All Inclusive Boston campaign in 2021 alongside the B-Local program as part of an equitable recovery initiative.

"The All Inclusive Boston campaign has played a key role in keeping our tourism industry and small businesses afloat during this difficult time," said Mayor Kim Janey. "It is important that we continue this campaign to encourage our visitors to explore parts of our City that they may not have been to before and to continue to support our businesses and workers in this time of renewal."

B-Local is a free mobile app that supports small businesses by incentivizing residents and visitors to shop locally, driving Boston's economic activity. By integrating this app with the All Inclusive Boston campaign, the hope is to increase visibility and support Boston's vibrant small business community (City of Boston, "B-Local", 2021).

Lastly, Boston is a state capital and county seat, and the home of federal, state, county and municipal agencies, law offices, and other government services, which are another major component of the city's economy.

ENVIRONMENTAL JUSTICE

The Executive Office of Environmental Affairs (EOEA) enacted an Environmental Justice Policy in 2002. EOEEA notes that Environmental Justice (EJ) is based on the principle that all people have a right to be protected from environmental pollution, and to live in and enjoy a clean and healthful environment. Environmental justice is the equal protection and meaningful involvement of all people with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies and the equitable distribution of environmental benefits.

EOEEA established an Environmental Justice Policy to address the disproportionate share of environmental burdens generally experienced by lower-income people and communities of color who, at the same time, often lack environmental assets in their neighborhoods. The policy is designed to help ensure protection from environmental pollution as well as promote community involvement in planning and environmental decision-making to maintain and/or enhance the environmental quality of their neighborhoods.

Environmental Justice neighborhoods are those areas that EOEEA has determined to be most at risk of being unaware of, or unable to participate in, environmental decision-making or to gain access to environmental resources.

As of 2023 the criteria for defining an environmental justice community is:

- The annual median household income is 65% or less of the statewide annual median household income
- Minorities make up 40% or more of the population
- 25% or more of households identify as speaking English less than "very well"
- Minorities make up 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

Boston meets the criteria for being defined overall as an environmental justice community. The total population of Boston that fell within an Environmental Justice Block Group was 544,030 or 79% of the population (MassGIS, “Environmental Justice”, 2022). All of Boston’s neighborhoods contain at least one or more census block groups that meet the criteria (See MAPS 3+4 ENVIRONMENTAL JUSTICE POPULATIONS).

The *MetroCommon 2050* report released by MAPC addresses equitable access to open space. The report calls for land use decisions that “ensure that all residents of the region have access to adequate quality open spaces regardless of age, income, race/ethnicity, or ability,” (MAPC 2021). It recommends a number of actions municipalities can take to become more environmentally just. For example:

- Add sizable protected parkland alongside development efforts, particularly in areas that may lack access
- Protect environmental benefits of parks such as canopy coverage by developing tree protection plans
- Improve coordination between transportation and open space planning entities to encourage safe non-car access

The 2015 *Shape of the City* report by the Boston Indicators project notes “[i]n Greater Boston, the highest concentration of environmental hazards are located in cities and towns with higher poverty rates and larger concentrations of children, such as ... Boston with 121 per square mile[.]” i.e., that communities of color and low-income neighborhoods in Boston shoulder a disproportionate share of environmental and environmental health burdens (“Upward Mobile City” 2015). A 2002 Northeastern University study documented cumulative exposures to 17 different types of environmentally hazardous sites and facilities, and found nine in Boston neighborhoods, particularly in communities of color (Faber and Krieg 2002). As a result, Boston was ranked among the 20 most environmentally overburdened communities in Massachusetts.

SECTION 3.4:

GROWTH AND DEVELOPMENT PATTERNS

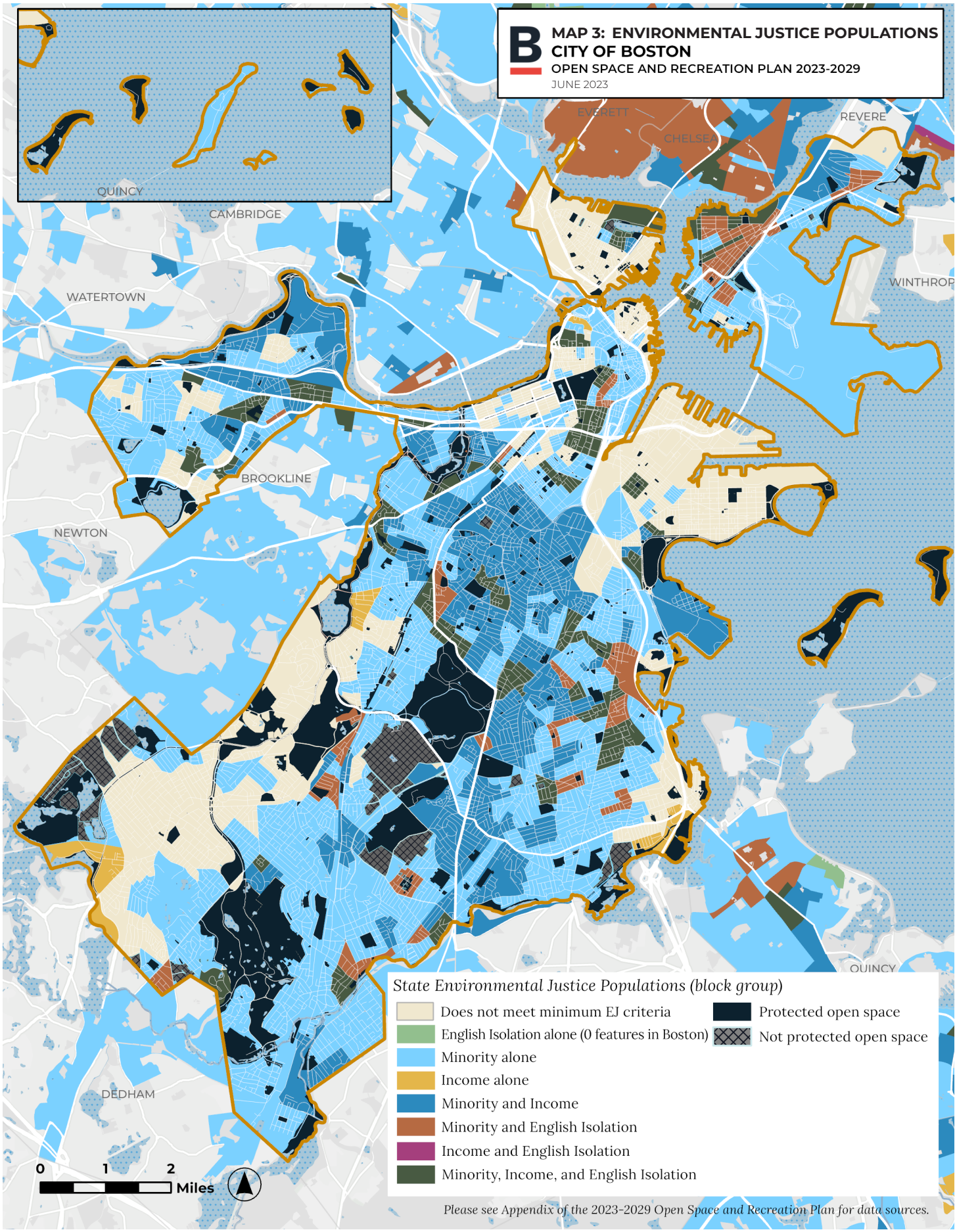
INTRODUCTION

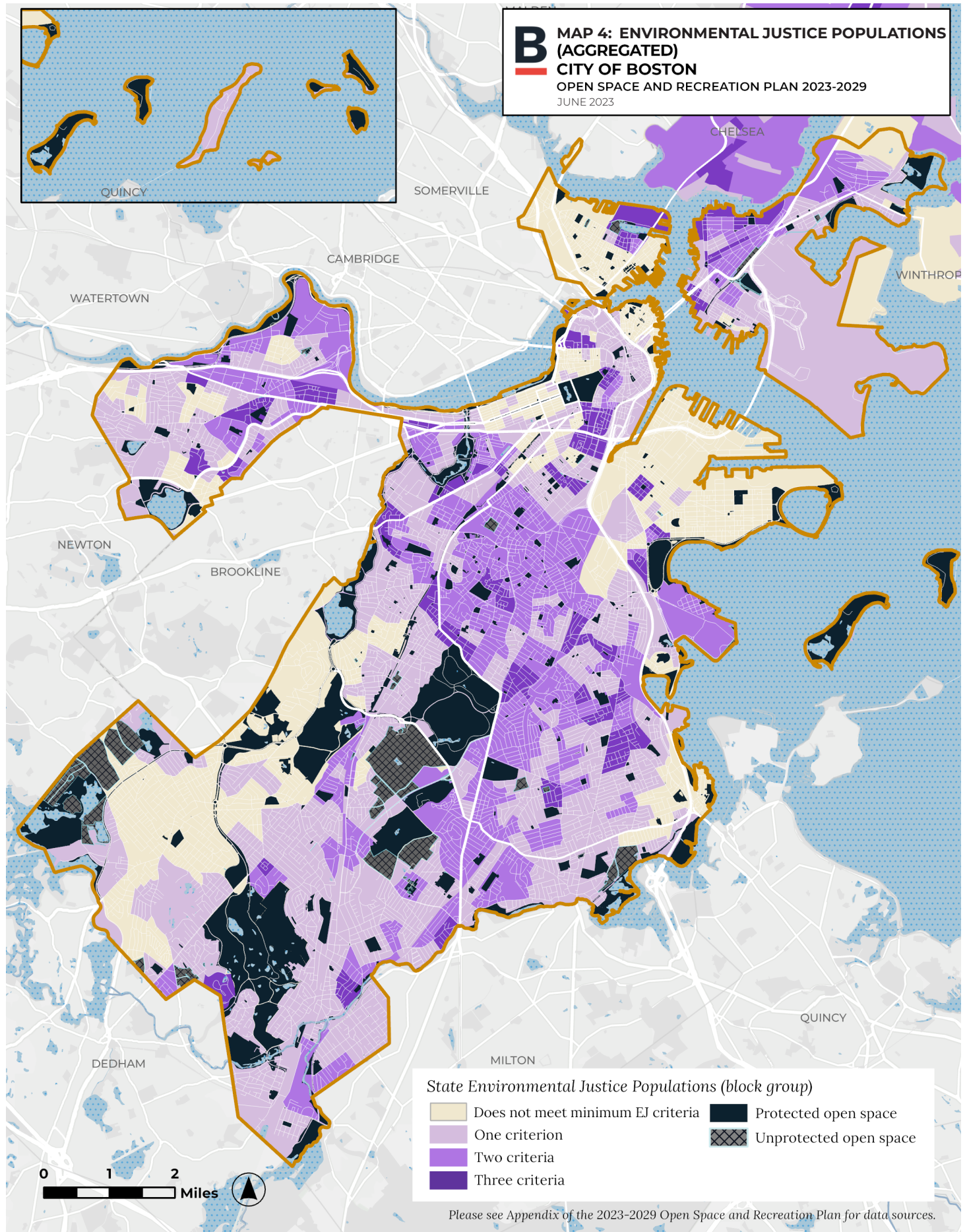
Boston’s historical growth and development has been discussed in Section 3.2, History. To briefly summarize Boston’s development and growth, Boston’s location on the Atlantic coast at the confluence of several rivers gave it great advantages that were used to make it a maritime port of international significance. When the industrial revolution occurred, its location near rivers allowed for transportation and power sources, and its port gave it worldwide market reach. The development of educational and cultural institutions from its beginnings gave it further advantages that continue to be exercised in the knowledge- and information-based economy. Thanks to this knowledge base, industries such as cutting-edge health care, advanced technologies, and advanced financial services are a robust part of the city’s current growth. Its historical resources have provided the basis for a strong tourism economic sector, and its leadership role in the development of public open spaces, as well as strong support for the arts and culture, has helped make Boston a highly desirable place to live and work. Those assets help attract strong talent to Boston’s knowledge- and information-based economy, as does the public transportation system and the varied housing stock, from high rise apartment towers to triple-deckers and stately Victorian homes.

OPEN SPACE: CHARACTER AND CHANGE

Boston’s open space has been a function of its growth and a definer of its growth. In the early 19th century, the small squares were assets to attract dense residential development. When in the later 19th century, rapid development greatly reduced informal access to open space in the countryside, and its density led to the call for a

B MAP 3: ENVIRONMENTAL JUSTICE POPULATIONS
 CITY OF BOSTON
 OPEN SPACE AND RECREATION PLAN 2023-2029
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park system that would be pastoral landscape-oriented, as exemplified by the Olmsted-designed Emerald Necklace parks. This gave the public a more formalized access to green landscapes that would also define and attract development. However, it proved difficult to provide large landscape-oriented parks throughout the city. That combined with the new recreation movement that saw physical activity as one means to counteract the ills of poverty in dense urban settings led to the movement to create smaller parks more oriented to sports and games, where the spaces were dedicated to them.

As development continued in the 20th century, with building technology allowing for tall buildings for residential and commercial purposes, the additional population and ensuing congestion again sought relief in the movement for on-site open space, either plazas for commercial buildings or parks with passive and/or active recreation elements in residential buildings or building complexes. Toward the latter part of the 20th century and into the early 21st century, there is more of a movement toward more intensive programming of parks, not just for physical activity, but also for entertainment, arts, and cultural events. This movement sees open space as an interactive realm, where society is limited to intimate encounters, as in the pastoral landscape park, but well integrated into the landscape/cityscape.

Of course, like many forms of technology, all these forms of open space have come to occupy their own niche, just as hard copy books are still published in the digital age, and radio and television have not been superseded by internet streaming services. The Emerald Necklace parks, probably among Boston's most defining physical elements, has taken on a historical character, yet is amenable to carefully wrought changes that fit into its own defining elements, such as the golf clubhouse in Franklin Park that blends into the landscape.

With preventive-oriented health care the focus of cost-cutting policy makers, active recreation

will not fade as an important subject of park design, but will experience change as new immigrants bring new pursuits to the fields and courts, or whole new sports and games are created, or existing ones modified thanks to new technology.

Of course, demographic, socio-economic, and land use changes will affect open space needs and designs. As it has throughout Boston's history, open space will reflect and be part of the wider currents of its development and growth, helping to define community character and meet community needs.

CURRENT LAND USE AND DEVELOPMENT TRENDS

The Metropolitan Planning Council (MAPC) classifies Boston as a Metropolitan Core Community. These communities have a historic, high-density, urban character, with a range of housing from traditional triple-deckers and row houses to large multifamily buildings. New growth occurs mostly through redevelopment, infill, or conversion from industrial uses to residential or mixed uses. Minority, immigrant, and low-income populations comprise a large share of the population (MAPC 2008).

FUTURE TRENDS

Population and Housing Demand Projections for Metro Boston provides projections for Metro Boston through 2040 to help municipalities form policies to ensure that the region continues to grow. The report states that the aging and retirement of the Baby Boomers will have implications for the region, and the economic future depends on attracting more young workers from other places. The report states that 435,000 new housing units - mostly multifamily, and mostly in urban areas -- will be needed by the year 2040 to accommodate these young workers and the growing senior population. This implies that all types of publicly accessible open space, active, passive, and natural resource-based, will be needed to accommodate this increase in

population. This will be especially so given that most of these new units will be of a multifamily, urban nature, where onsite open space, if any, will be limited (MAPC 2014).

The report offers two possible scenarios – “Status Quo” and “Stronger Region.” The Status Quo scenario is based on the continuation of existing rates of birth, death, migration, and housing occupancy. The Stronger Region scenario explores how changing trends could result in higher population growth, greater housing demand, and substantially larger workforce. The key findings are below:

- **Population:** The Status Quo Scenario assumes a population growth of 6.6% over thirty years. The Stronger Region projects a 12.6% growth in population.
- **Workforce:** More than a million of the workers in the region will retire by the year 2030. Young people will need to be retained and attracted from other places in order to fill those jobs. The Status Quo scenario notes that the current weak in-migration of younger workers will result in 0.4% growth in the labor force. The Stronger Region scenario projects that more young people will be attracted from outside the region and then retained, adding 175,000 new workers to the labor force and growing it by 7%.
- **Housing:** Under the Status Quo scenario, the need for more housing will require 305,000 new housing units by 2040. Under the Stronger Region scenario, there will be a need for 435,000 new units.
- **Households:** There will be a need to provide housing for a growing number of households of declining size due to single person households (especially seniors), divorced households, and fewer children. An increasing percentage of senior-headed households will choose to downsize from single family homes to apartments and condominiums. The sale of single family homes by the aging Baby Boomer generation will provide an adequate supply for younger families. With smaller households, public open spaces will serve as community gathering spaces where social isolation can be reduced.

- **Housing Preferences:** Attracting more young people to the region with the kinds of housing they prefer could result in a “Stronger Region” scenario with a total population increase of 12.6%. This report confirms the need for significant new supplies of rental and owner multi-family housing to attract young people. The Status Quo scenario requires 48% of units to be multi-family in urban communities. The Stronger Region scenario requires 62% of the units to be multi-family in urban communities.

The report says that many signs point to the resurgence of inner core urban communities. An increasingly diverse population attracted by job proximity, transit access, community vibrancy, and cultural assets is likely to drive continued population growth in inner urban areas. More than half of housing demand will be in urban communities under either scenario – as much as 56% in the Stronger Region scenario.

- **Children:** The number of children in the region peaked in 2000 and is likely to decline over the coming decades. The population aged 5 to 14 is projected to fall another 8% to 9% by 2020 and is not likely to fully rebound, even under the Stronger Region scenario.
- **Economy:** MAPC’s economic development strategy report includes trends in the Boston Metropolitan Regional Economy. It notes that in the colonial era, the region focused on international trade and building global connections. The economic security that resulted allowed governance that supported growth and universities that ensured an educated population. As manufacturing increased, there was greater investment in education, cultural institutions and physical development that enhanced the quality of life. The region is now undergoing an economic transition with core strengths in education, healthcare and finance that form the basis of an innovation and knowledge economy. To support this transition will demand further investments in education for economic/

workforce development, and in cultural institutions and recreational venues and opportunities (including open space) that will attract an educated, skilled workforce to an area with a high quality of life.

- **Climate Change:** The *Boston Indicators Project* notes that the city is among the most vulnerable in the US to climate change and rising seas. Models that showed an ice-free status in the Arctic by 2050 are being revised to project open seas in a decade. Projections are for a 7-foot rise in sea level in a century. The report states that the Northeast coast is at a disproportionate risk compared to the nation and world. Among Boston's approaches to address this issue includes the provision and use of open space to accommodate temporary periods of inundation and to provide barriers for coastal flood protection.

CURRENT INFRASTRUCTURE

Boston's land use is compact, mixed-use, pedestrian-oriented, and well served by transit. Land is at a premium and development competes with open space. The infrastructure systems necessary to support a dense city include multi-modal transportation, electrical services, gas lines, water and waste systems, and recreational and ecological open space. Achieving a balance of infrastructure systems that allow for growth and maintain a superior quality of life requires the careful development and application of public policy.

In 2013, the Boston Transportation Department (BTD) published *Boston Complete Streets* which provides specific policy and design guidance for street design. And in 2017, *GoBoston 2030* was published, serving as Boston's comprehensive transportation plan. Together, these design and planning efforts have given rise to a number of programs and policies that improve and expand multimodal transportation, including bus, pedestrian and bike infrastructure described in the following sections.

WATER TRANSPORTATION

Natural water bodies provided the earliest means of transport in Boston. The sea and the harbor (including the Mystic River and Chelsea Creek) continue to be important avenues of international commerce, although Boston's share of this trade has fallen behind other port cities such as New York and Montreal. Today cruise liners calling in Boston are a bigger business than container ships. Harbor channel maintenance dredging under the direction of the US Army Corps of Engineers was completed in 2008. The next project is a channel deepening project that will enable larger container cargo ships to enter the Port of Boston.

In recent years the water ferry system for passenger transport has been revived and expanded. In a region defined by its access to water, ferry service will become an alternative to clogged highways and packed transit trains as population and development densities increase.

STREETS, ROADS, AND HIGHWAYS

Native People had a hierarchy of paths throughout the region that responded to topography, landforms, sun, and shade. The European settlers first adopted these paths and eventually augmented them, before then imposing straight line "rangeway" roads. Boston's colonial-era streets have grown into an 800-mile network that varies from narrow cobblestone alleys on Beacon Hill dating back several centuries to the massive and congested Massachusetts Turnpike Extension (I-90) and John F. Fitzgerald Expressway (I-93). The more significant highways that serve the city include Interstates 90 and 93, Massachusetts Routes 1A, 2, 3, 3A, 9, 28, 30, 99, and 203, and U.S. Routes 1 and 20.

As the ownership of privately-owned vehicles increases, traffic adversely impacts the quality of life in the city. The conflict between personal choices and public good remains ongoing, from residential neighborhoods where merchants and residents call for more parking, to the heavily-used Interstate Highway System that cuts through and surrounds Boston. Traffic delays

and air, water, and noise pollution are constant reminders of the impacts of an auto-dependent transportation system.

Some reductions in auto ownership and use may be coming, as some residents take advantage of car sharing systems like ZipCar, or bike sharing systems like Bluebikes, for personal mobility. Boston has instituted *maximum* parking ratio guidelines that set maximum parking spaces allowed for new developments over 50,000 square feet. Ratios are site-specific and are intended to guide parking that better reflects the area the developments are in. Proximity to the following sites lower parking ratios: subway stations, bike share, car share, key bus routes, commuter rail, grocery stores, and walkable amenities.

Although parking minimums currently remain in Boston Zoning Code, in an effort to lower barriers to affordable housing development, Mayor Michelle Wu signed an amendment in December 2021 to waive off-street parking minimums for affordable housing developments.

Decreasing the required amount of on-site parking will reduce emissions, create more walkable neighborhoods, and could potentially free up land for other uses, including open space.

BRIDGES AND TUNNELS

In many instances, colonial-era ferries and then bridges were developed at the fording places of the Native Peoples. The bridges and tunnels that now serve the city include the Callahan, Sumner, and Ted Williams Tunnels crossing Boston Harbor to East Boston, the Thomas P. “Tip” O’Neill, Jr. Tunnel (I-93) under downtown Boston, the Tobin Bridge (U.S. Route 1) crossing the Mystic River, and the Leonard P. Zakim Bunker Hill Memorial Bridge (also I-93) crossing the Charles River.

The Thomas P. “Tip” O’Neill, Jr. Tunnel is located below the Rose F. Kennedy Greenway in downtown Boston. It was built as part of Central Artery/Tunnel Project (aka “The Big Dig” or the CA/T Project), which removed the deteriorating elevated Central Artery. This project created a

total of 300 acres of open space, including 45 parks and plazas in downtown Boston, Charlestown, East Boston, and South Boston.

MASS TRANSIT

Railroads were first built in Boston during the 1830s. The tracks required flat land so wetlands were often filled to serve that purpose. This technology thereupon made possible the extensive filling in of tidal flats, wetlands, and other lowlands by transporting fill, thereby creating new land for neighborhoods, roads, and railroads.

Boston residents were served by horse drawn buses in colonial times. By the late 1800s, streetcar suburbs grew along trolley lines in Roxbury, Brighton, Dorchester, and other areas around Boston.

Boston developed the first subway system in the country. The MBTA is the largest transit system in the commonwealth and one of the largest in the country as measured by ridership (subway, bus, ferry, Commuter Rail). It serves nearly 200 cities and towns with a daily ridership of approximately 1 million passengers. The MBTA maintains 171 bus routes, 4 rapid transit bus routes, 5 local subway lines, 13 commuter rail lines, 3 ferry routes, and a flexible paratransit service. The Green Line Extension to Medford and Union Square opened in 2022 and the Green Line Extension Community Path opened in 2023. The path supports walking, running, and cycling and completes the connection between the Charles River, Minuteman, Alewife, and Mystic River paths.

Mass transit allows for better public access to public open spaces throughout the city, whether local or regional scale open spaces. However, access to mass transit varies across the city. GoBoston 2030 found that (BTD 2017):

“Some of the most expensive housing in the city is located within walking distance of the highest paying job centers. With the exception of those living in subsidized affordable housing, most low income Bostonians move to areas where housing costs are lower, but they are then burdened

by much higher transportation costs. New job centers are emerging, but they are not as well-served by the existing transit network as the historic financial and government centers downtown.”

In March 2022, the City of Boston launched a pilot fare-free program for key connector bus Routes 23, 28, and 29 to relieve some of this transportation cost burden. Over half of riders on Routes 23, 28, and 29 are classified as low-income, according to MBTA’s most recent system-wide survey. The free fares will lessen riders’ financial burden at a time when economic vulnerability is at a historic high.

Commuting through high-traffic or congested areas by bus can be particularly challenging. To improve bus trip time and reliability, the City of Boston, in partnership with the MBTA, has installed miles of dedicated bus lanes, including several center running bus lanes. By having dedicated bus lanes in the center of the street, conflicts with traffic and parked vehicles are removed.

PEDESTRIANS AND BICYCLES

The City of Boston has a number of plans and programs to improve and expand multimodal transportation, including pedestrian and bike infrastructure. Below are just a few:

- Bluebikes is a public bicycle sharing system with stations throughout Boston and adjacent towns. This builds on the past decade’s extensive laying out of bicycle lanes on city streets and arterial routes, and the installation of bicycle parking stands throughout the city.
- Age-Friendly Benches is a program where residents can request the installation of benches in the public right-of-way. Long stretches of sidewalk without opportunities to rest can pose mobility challenges for individuals with disabilities and older adults. These benches are specifically designed with armrests, raised seats and backs, and are temperature-resistant. The program prioritizes installation near libraries, senior and community centers, and Main Street Districts that are walkable and close to public transit.

- The City of Boston’s Vision Zero directs resources to strategies that eliminate fatal and serious traffic crashes. In support of Vision Zero, Mayor Michelle Wu announced the Safety Surge program in May 2023. This program will dedicate additional resources to making roads safer for pedestrians, cyclists, and drivers.

There are also supporting investments at the state level. MassDOT’s *Capital Investment Plan for FY2023-FY2027* notes that \$118 million will be provided to increase the number of connections from Beacon Street to the Esplanade and restore usable open space along the Charles River (2027).

Expanding safe, multimodal, and age-friendly pedestrian and cycling infrastructure is key to expanding access to the park system. It is recommended that park renovations be paired with transportation improvements like safe and accessible pedestrian crossings at key entrances to ensure that pedestrian infrastructure outside the park as well as inside the park are working together.

Please visit the Boston Transportation Department and Age Friendly web pages for more information: boston.gov/transportation and boston.gov/age-friendly.

WATER SUPPLY INFRASTRUCTURE

The water supply infrastructure for Boston is the responsibility of both the Massachusetts Water Resources Authority (MWRA) and the Boston Water and Sewer Commission (BWSC).

Water services had a modest beginning in colonial Boston, as early settlers relied on water from cisterns and underground wells, but the quality was poor and the supply inadequate. The first attempt to provide an alternative came when the Aqueduct Corporation began delivering water from Jamaica Pond through wooden pipes in 1796 (MWRA 2015).

Through the 1800s, Boston sought water supply sources further away from the city: 1848, from Lake Cochituate via the Cochituate Aqueduct and the Brookline Reservoir; 1870, the Chestnut Hill Reservoir, with the construction of

reservoirs on the Sudbury River to feed the Chestnut Hill Reservoir through the Sudbury Aqueduct soon following. A regional approach, the Metropolitan Water District, was formed in 1895 and by 1908 the Wachusett Dam, Reservoir, and Aqueduct were completed.

By the early 1900s, the Boston metropolitan area required additional water supplies and a more comprehensive plan to ensure its delivery. The Metropolitan District Commission (MDC) Water Supply Division was created in 1926 as the agency responsible for building these new facilities, among them Quabbin Reservoir, the Quabbin Aqueduct, and the Hultman Aqueduct.

Today, the MWRA supplies water to Boston and 60 other communities, where 2.5 million people are served in 890,000 households. Some 230 million gallons daily come from the Quabbin Reservoir which is 65 miles west of Boston, and the Wachusett Reservoir which is 35 miles west of the city. The water is conveyed via aqueducts from the two reservoirs to the Weston and Norumbega reservoirs.

The MWRA water reaches Boston after passing through treatment plants, storage tanks, and aqueducts. The BWSC owns and operates a system for the distribution of drinking water within Boston. The BWSC purchases water (disinfected and fluoridated) from the MWRA, and is the MWRA's largest single customer for both water and sewer services.

The BWSC's water supply distribution system consists of approximately 1,096 miles of pipe, 13,074 hydrants, and 16,885 valves. The system serves approximately 88,000 accounts through four major service networks (BWSC 2015).

The most significant assets of the water supply system which exist in Boston and that have a relationship to the open space system are the Chestnut Hill Reservoir, where no water contact is allowed, but a path on the perimeter of the water body allows for walking and running, and the Bellevue Hill storage tank that helps maintain water pressure in the system for the southwestern section of the Boston area, and is

located within the Bellevue Hill Reservation under the control of DCR. Paths are located within this reservation.

SEWER INFRASTRUCTURE

The BWSC owns and operates a system for the collection and transport of wastewater and storm drainage. The sewer system consists of conduits ranging in size from six-inch clay lateral sewers to 20-foot by 15.5-foot concrete culverts. The 1,450-mile system has 600 linear miles of sanitary sewers, 550 miles of storm drains, and 300 miles of combined sewers. Other facilities include eight pumping stations, two gatehouses, 40 permitted combined sewer overflow outlets, 185 regulators, and 200 tide gates.

In 1985, legislation transferred the possession, control, and operation of the MDC Water and Sewerage Divisions to the newly created Massachusetts Water Resources Authority (BWSC 2015). Today, all wastewater collected by BWSC facilities is conveyed to the MWRA's Deer Island Treatment Plant for treatment. The MWRA has created a 44-acre park around the plant which is located within Boston, thus offering a harbor island experience accessible by land from Winthrop (MWRA 2015).

The Deer Island Treatment Plant is part of the federal court-ordered cleanup of Boston Harbor. The court ordered the MWRA to build the wastewater and sludge facilities as well as improved combined sewer overflow facilities, all on a court-set schedule.

These sewer renovations and the wastewater and sludge treatment made up the largest public works project to be built in New England up to that time and had a final cost estimated at up to \$6.1 billion. This undertaking included a 9-mile effluent tunnel to carry treated water hundreds of feet below Boston Harbor and into Massachusetts Bay.

This vast undertaking was driven by the 2.5 million people (almost half of the state's population) and the 5,500 businesses and industries that send their waste to Boston Harbor. It was also driven by the high value of the Boston

waterfront, where commercial, residential, and recreational interests have been positively affected by the cleanup of the harbor waters. The harbor beaches in Boston have come back as a recreational destination thanks to this cleanup of the effluent flowing into the harbor waters.

STORMWATER BEST MANAGEMENT PRACTICES

The *Stormwater Best Management Practices: Guidance Document* calls for green stormwater infrastructure (GSI) that uses stormwater runoff management practices to mimic the natural hydrologic cycle. Site planning includes reducing impervious areas, fitting the proposed improvements to the site terrain, preserving and using the natural drainage systems, and replicating pre-development hydrology (BWSC 2013).

The Commission has implemented demonstration projects at Audubon Circle (Beacon Street/Park Drive area), Central Square in East Boston, and Cambridge Street at City Hall Plaza. Ongoing efforts to expand the use of GSI include right-of-way projects and park projects with increased stormwater retention and infiltration.

FUTURE DEVELOPMENT

Boston's long term development is largely a function of the economy, the local land use controls, and the amount of remaining, buildable land. There is a need to provide open space in a balanced manner to augment the build-out in these neighborhoods as discussed in Section 7.

LOCAL LAND USE CONTROLS: PLANNING

The City's comprehensive plan, *Imagine Boston 2030*, knits together and establishes a context for the individual neighborhood plans.

LOCAL LAND USE CONTROLS: ZONING

The City of Boston prescribes land use through citywide districts and special districts zoning. Specific to this plan, the zoning designations include Open Space Districts and Conservation Protection Subdistricts (see MAP 5: ZONING OF OPEN SPACE). The City's Zoning Code has

several articles that relate to open space that are summarized in Section 5. These include the following:

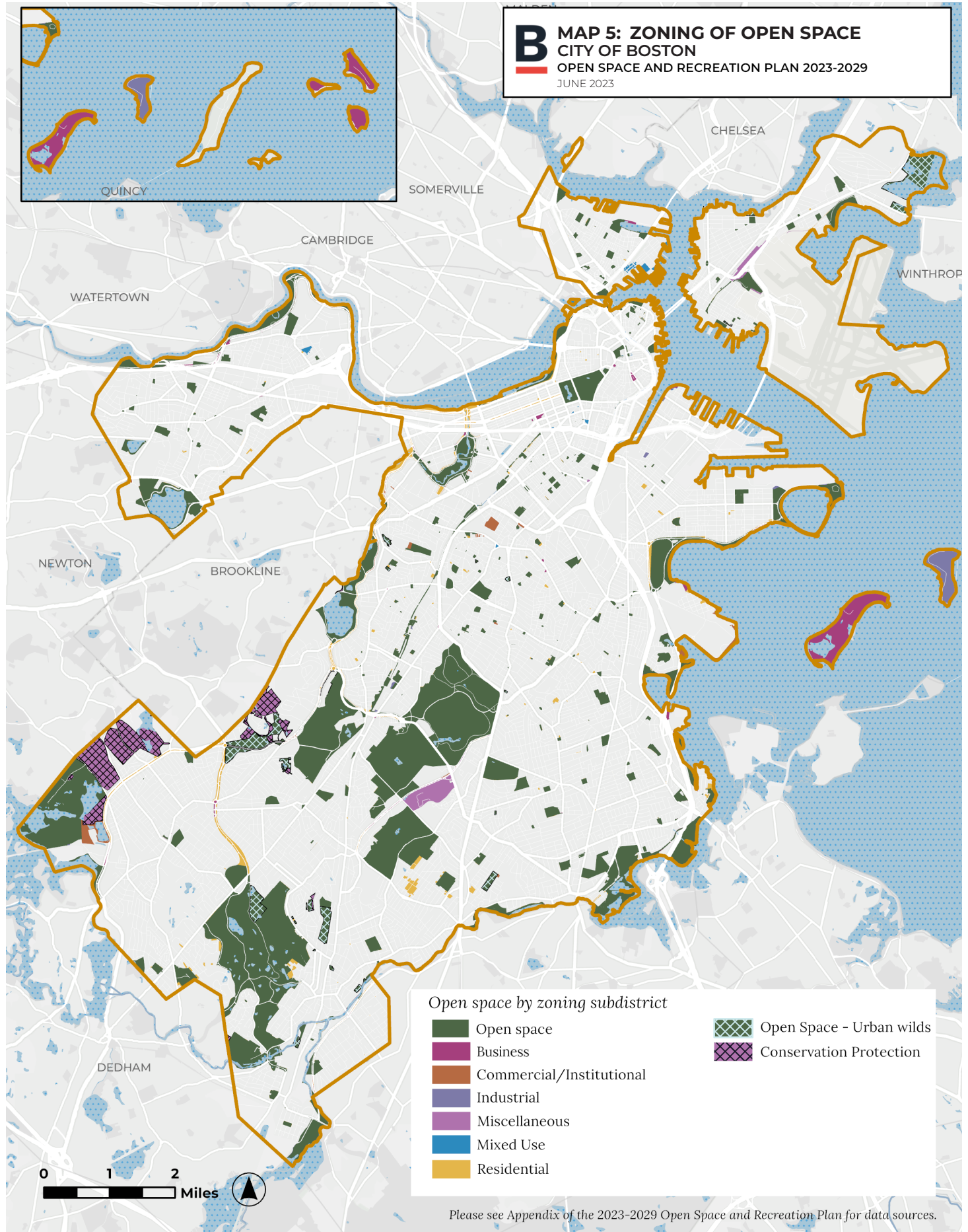
- Article 29 Greenbelt Protection Overlay District
- Article 33 Open Space Subdistricts
- Article 49A Greenway Overlay District
- Article 56 Conservation Protection Subdistrict
- Article 89 Urban Agriculture

Open space zoning is designated for lands in public ownership that are currently used for open space purposes. Open space zoning prohibits or limits to varying degrees the development of open space. The type of open space typically governs what degree of development can be allowed. The protection of open space through zoning has limitations as a project that does not meet zoning requirements may seek a variance.

Private property owners may have their property zoned for open space if they so desire. Residential zoning prescribes areas to be provided for open space on-site, as in Article 17, Open Space Requirement for Residences. New residential uses may be required to provide a minimum usable open space per dwelling unit on the project site. This requirement may be met by balconies or on the roofs. Required front, side, and rear yards are included in computing the usable open space.

Meeting the minimum usable open space per dwelling unit zoning requirement onsite has become a challenge in densely developing neighborhoods like South Boston where developers are maximizing the development on a site and seeking variances by which to do so, including seeking relief from the minimum onsite open space requirements. This puts pressure on existing parkland in already dense neighborhoods with limited park resources.

Article 80 Development Review: The Article 80 process is intended to protect and enhance the public realm and to mitigate the impacts of development projects on their surroundings and



on City resources. One of the specific goals of Article 80 is “to encourage new buildings and public spaces that are designed to enhance and preserve Boston’s system of parks, squares, walkways, and active shopping streets.”

However, the Article 80 review criteria do not specifically address a project’s potential impact to the park system.

Planned Development Areas: The BPDA may approve a Planned Development Area (PDA), a special feature of Article 80, for a project that codifies the development potential of a particular parcel through an extensive public process, review, and negotiation. The end result is that the required provision of open space on a site may be changed during this approval.

Institutional Master Plans: The BPDA may also approve an Institutional Master Plan (IMP) under Article 80 that determines how a school or hospital will grow over a decade. There are no requirements for open space in this process. Open space may be provided in the IMP, but a later amendment, or a future IMP, may utilize that open space. The institution may eliminate the open space within its holdings, and instead look to the City’s already oversubscribed public open spaces to serve its own users.

LOCAL LAND USE CONTROLS: PARKS AND RECREATION COMMISSION REVIEW

The Boston Parks and Recreation Department reviews development projects for the impacts to open space through the Section 7.4-11 (the 100’ rule) and Article 80.

Municipal Code Section 7.4-11 Permission for Construction near Parks or Parkways: The City’s Municipal Code requires that the Parks and Recreation Commission must approve in writing construction or alteration of all buildings and structures within 100 feet of a public park or parkway. This review process is conducted either administratively or through the monthly public hearings of the Parks and Recreation Commission.

INFRASTRUCTURE IMPROVEMENTS

The assets of a region that support an innovation/knowledge-based economy include its residents, its public and civic institutions, and its physical and virtual infrastructure that allows people to live in the region and businesses to thrive. The provision of an infrastructure of open space can be considered part of this vision.

The MAPC’s economic development strategy report (MAPC undated) notes that Boston overall has good infrastructure systems that have contributed to general economic success. The future challenges include the maintenance, modernization, and expansion of these systems due to the age of the systems, changing demographics, development, and lack of funding sources. Of particular note are needs related to transit systems, stormwater infrastructure, and energy infrastructure. The need to provide equitable distribution of infrastructure investments is critical, because it will determine where growth occurs and who benefits from it.

Development decisions in the future will be influenced by the preferences of the baby boomers and the millennials. These two groups have trended towards a distinct preference for urban environments, with living and working environments that require less automobile dependence for access to a wide array of entertainment, services, and innovative economic opportunities. From an infrastructure perspective, this creates a need for more urban investments, particularly with regard to transit which enables higher density environments, and stormwater management which helps to mitigate the adverse environmental impacts of development.

The transit systems of Boston require significant investments to support improvements and expansion. Transit in this region must offer higher quality and greater efficiency. It must also be expanded to support greater density and enhance connectivity.

Stormwater management is also an issue of increased concern because the need to manage flooding and water quality in urban and suburban areas has necessitated the development of practices that create additional costs for municipalities and developers.

IMPACTS OF GROWTH

The regional 2012 to 2013 *Annual Update, Comprehensive Economic Development Strategy* report states a goal to promote economic development policies and practices driven by Smart Growth Principles. It notes that regional development patterns of the past have ceased to be in the long term self-interest of future generations (MAPC n.d.).

Smart growth will focus a larger share of regional growth in central cities, urbanized areas, near transportation nodes, and in communities already served by adequate infrastructure. The intent is to encourage density in some places in order to save open land in other places. This is a goal, however, that can have a negative impact on the provision of parks within Boston, since as density increases, open space needs and pressures on open space both increase. This goal therefore needs further development to limit adverse impacts on Boston residents.

The MAPC encourages policies to promote the redevelopment of brownfields and regulate the development of greenfields in order to enable compact growth, protect natural landscapes, and focus economic growth.

The MAPC has a goal to develop the region's Green Economy. It supports the development and implementation of local and regional, state, and interstate plans that foster development projects, land and water conservation, transportation, and housing that have a regional benefit. The *MetroCommon 2050* report includes goals to protect natural landscapes and conserve natural resources (MAPC, 2021).

The MAPC has projected that there will be a need for 435,000 more housing units created in

the region by 2040 in order to accommodate and encourage growth. This growth will be primarily in multi-family housing, as lifestyles change to accommodate younger workers and aging baby boomers. This added density in housing units that are typically without private open space will thus need to be served by public open space. There is already a heavy demand put on open space resources in Boston and the Metropolitan Boston Region, a highly urbanized and densely populated area (MAPC 2014).