

# Trends in Brockton

Land Use Technical Report

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## ***Notices***

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## TABLE OF CONTENTS

<b>1. Introduction .....</b>	<b>3</b>
<b>2. Commercial Land Use .....</b>	<b>13</b>
<b>3. Industrial Land Use .....</b>	<b>23</b>
<b>4. Residential Land Use.....</b>	<b>33</b>
<b>5. Civic &amp; Institutional Land Use.....</b>	<b>49</b>
<b>6. Other Land Attributes.....</b>	<b>58</b>



# **1. INTRODUCTION – LAND USE IN BROCKTON**

## **A. INTRODUCTION**

The City of Brockton is located in southeastern Massachusetts in northern Plymouth County. It is bordered by Easton on the west; Stoughton, Avon, and Holbrook on the north; Abington, Whitman, and East Bridgewater on the east; and West Bridgewater on the south. Brockton serves as one of the two county seats along with the Town of Plymouth and is the only city in the county. Brockton is centrally located, only twenty miles south of Boston and thirty miles northeast of Providence, Rhode Island. According to the 2010 U.S. Census, Brockton has a population of 93,810, making it the seventh most populated city in Massachusetts and the fourteenth most populated city in New England.

This land use report is one of five trends reports that have been developed for the City. The four other reports deal with Population Trends, Economic Trends, Transportation and Infrastructure Trends, and Housing Trends. This report analyzes a variety of parcel data and identifies where commercial, industrial, residential, civic and institutional land uses are located. Through an analysis of its current land use, Brockton can plan for the efficient use of one its most valued resources.

The report is divided into six (6) subject sections:

1. Introduction - Land Use in Brockton
2. Commercial Land Use
3. Industrial Land Use
4. Residential Land Use
5. Civic & Institutional Land Use
6. Other Land Attributes

## **B. DATA AND METHODOLOGY**

This study is a quantitative analysis of existing land use patterns in Brockton. The primary source of parcel-specific data was provided by MassGIS Level 3 Assessors' Parcel Mapping data set, which contains property (land lot) boundaries and database information from each community's assessor's office, which were supplied to MassGIS by various vendors. For the purposes of comparison, land use patterns were also analyzed in the communities of Lynn, New Bedford, Randolph, Taunton, and Weymouth. The parcel information for each of the communities is current as of: Weymouth, 2011; Brockton, New Bedford, Randolph, and Taunton 2012; and Lynn, 2013. Additional data sources used in the preparation of this report include the MassGIS Protected and Recreation Open Space Data Set, the 2010 U.S. Census and the Massachusetts Department of Revenue.

## **C. HISTORY OF LAND USE & POPULATION IN BROCKTON**

The City of Brockton can trace its roots to the arrival of the Pilgrims in Plymouth in 1620. After settling Plymouth in 1620, the settlers looked to expand their territory and moved northward and incorporated Duxbury in 1637. When the township of Marshfield became a separate and distinct community from Duxbury upon its incorporation in 1640, Duxbury petitioned the Old Colony Court in Plymouth for additional land as compensation for the loss of land they had sustained when Marshfield separated. In 1645 the court granted the Town of Duxbury the lands around Satucket, which is the land consisting of what is now Brockton, Bridgewater, East Bridgewater, West Bridgewater and sections of other

surrounding towns. On March 23, 1649, acting on behalf of the town of Duxbury, the settlers led by Captain Miles Standish, Samuel Nash and Constant Southworth met with the Massasoit, the leader of the local Wampanoag Tribe at what is now known as Sachem's Rock in East Bridgewater. In exchange for a tract of land that extended seven miles in all four directions from Sachem's Rock, the settlers exchanged seven coats, nine hatchets, eight hoes, 20 knives, four moose skins, and 10 1/2 yards of cotton. The newly acquired land was renamed Bridgewater and remained a part of Duxbury until 1656 when Bridgewater was incorporated into its own distinct community.

The first settlers came to the newly acquired area of Bridgewater in 1650, when they settled in the area of present-day West Bridgewater. The last section of Bridgewater that was settled was the area of what is present-day Brockton. Zaccheus Packard is said to have been the city's first permanent white settler, who built a home on the northwest corner of Copeland Street and Samuel Avenue in 1697.<sup>1</sup> The economy of the first settlers was primarily agricultural with some industry, including sawmills, grist mills, and iron forges. The settlement's first iron forge was erected by Packard and others in 1722 and was located either on Torrey Street at the Easton town line or at the junction of Salisbury Brook and Belmont Street. The first transportation routes in the area were native trails that were gradually improved, with the area around Main Street serving as the primary north/south path from Braintree to Bridgewater. During the early 18<sup>th</sup> century there was considerable population growth throughout Bridgewater, which resulted in the division of the larger community into several parishes in the early 18th century. In 1716, Bridgewater was separated into the North (now Brockton, East and West Bridgewater) and South (Bridgewater) Parishes. Five years later, the North Parish was separated into the West (Brockton, West Bridgewater) and the East (East Bridgewater) Parishes. A final separation took place in 1738 when present-day Brockton was established as the North Parish.<sup>2</sup>

The North Parish grew to 520 residents by 1750 and to 833 residents by 1764. As the Parish increased its population over the years, its system of transportation routes also grew and by the mid-18th century the formation of the Parish created radial roads to a meeting house center along north/south Main Street axis. Large field division grids apparently laid out from Main Street axis with east division highways as East Ashland, Court (in part), Quincy, North Quincy Streets and west division highways as Oak-Battles, Prospect-Pleasant, Belmont (in part), West Streets, including realignment of Main Street over the Salisbury River. Other period highways appeared to include, East, and West Chestnut Streets.<sup>3</sup> It is along these highways or roadways that the North Parishes' residential and commercial activity grew, particularly in the areas bounded by Main Street from Belmont to Pleasant; Crescent, School and Grove Streets. A farming settlement at the "West Shares" (Brockton Heights) at the intersection of the Taunton and South Boston Turnpike and Pleasant Street also served as commercial node for a short period during the early 19th century. Additionally, a small commercial node in the northern portion of the town near present day Montello provided nucleus for small residential settlement. The Cary Hill area in northeastern portion of town was also a settlement node.<sup>4</sup>

During the 18<sup>th</sup> century the North Parish experienced the highest growth in population among all of the Parishes in Bridgewater with industrial operations in the form of mills and forges that were established in the first half of the 18<sup>th</sup> century. These industrial operations served as the foundation for the extensive commercial/industrial development the community would experience in the 19<sup>th</sup> century.<sup>5</sup>

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<sup>1</sup> *MHC Reconnaissance Survey Town Report: Brockton, Massachusetts Historical Commission, 1981*

<sup>2</sup> *MHC Reconnaissance Survey Town Report: West Bridgewater, Massachusetts Historical Commission, 1981*

<sup>3</sup> *MHC Reconnaissance Survey Town Report: Brockton, Massachusetts Historical Commission, 1981*

<sup>4</sup> *Ibid.*

<sup>5</sup> *Ibid.*



The area's reputation as a shoe and boot manufacturing center can be traced to 1811, when Micah Faxon began making shoes in town and transporting them to the markets in Boston. Acknowledging Faxon's success, other local entrepreneurs began to manufacture shoes and boots, first in small backyard shops and then on a larger scale in small factories.<sup>6</sup> The continued growth of the North Parish allowed it to formally incorporate as its own community, and it did in 1821, when it became the Town of North Bridgewater.

North Bridgewater's industrial expansion was greatly enhanced when the Fall River Railroad came through the town in 1846 and created a station in the heart of the downtown (the current location of the Brockton MBTA Commuter Rail Station). This gave industries in Brockton better access to raw materials as well to additional markets. Two additional events furthered guaranteed Brockton's prominence as an industrial center, particularly as a shoe and boot manufacturing center. One was the invention of the McKay Sewing Machine in 1858 and the second was the demand for boots and shoes brought about by the Civil War.<sup>7</sup> By 1865 Brockton began to cement its reputation as a shoe and boot manufacturing center as the value of shoes and boots it produced was \$1,466,900, (\$22,000,000 in 2014 dollars using the Consumer Price Index) which was double the valuation of its shoe and boot output just ten year prior.<sup>8</sup> As North Bridgewater became an industrial center, its population continued to increase, from 1,953 in 1830 to 6,854 in 1860, and consisted of four villages, of which the Centre Village was the largest. Second in importance was Campello, which in addition to shoes, also manufactured cabinet furniture and musical instruments. The other two villages were Sprague's Factory Village, located three-quarters of a mile east of



**Figure 1-1: Former Geo. Knight & Co. Building - Now Station Lofts**

Bridgewater Village, located along the Boston to Taunton Turnpike (now Pearl Street).<sup>9</sup> By this time, many of the main roadways we know today in Brockton had already been established and were the site of most residential structures in the city. In addition to the aforementioned Battles, Belmont, Court, East Ashland, Main, North Quincy, Oak, Quincy, Pearl, Pleasant, Prospect, West and West Chestnut Streets, the following main roadways were also present - Ash, Cary, East, Grove, Mill, Pine, Plain, Spring, South, and Summer Streets.

The period after the Civil War saw thousands of workers pour into the city and by 1880 the city's population more than doubled, from 6,584 in 1860 to 13,608 in 1880. The city's industrial development

<sup>6</sup> *Images of America: Brockton* by James E. Benson, 2010

<sup>7</sup> *Brockton History, Architecture, Preservation: Office of the City Planner & Brockton Historical Commission, 1977*

<sup>8</sup> *MHC Reconnaissance Survey Town Report: Brockton, Massachusetts Historical Commission, 1981*

<sup>9</sup> *Ibid.*

continued to be concentrated along the railroad right-of-way in the downtown area. During the latter half of the nineteenth century the Town of North Bridgewater, which was growing at a frenetic pace due its blossoming shoe industry, was ready to assume a new identity and in 1874 the town of North Bridgewater changed its name to Brockton and in 1881 incorporated as a city. As a city, Brockton continued to experience dramatic growth, as the latter half of the 19<sup>th</sup> century saw the city receive telephone service, the beginnings of municipal water and sewage systems, the transition of horsecar routes to trolley lines, the expansion of streetcar service to the wider region, the abolishment of all railroad grade crossings and the construction of commercial blocks along Main Street, including Franklin Block, Goldthwaite Block, Howard Block, and Lyman Block, all of which stand to this day.<sup>10</sup>

Brockton continued its dramatic growth into the 20<sup>th</sup> century and by 1900 the City more than doubled its 1880 population and was now home to more than 40,000 people. During this period working class housing extended along trolley lines creating "streetcar suburbs" of duplexes and triple deckers south of Belmont Street on the west side of Main Street, in both the Campello and Montello neighborhoods, the area east of the city center between Center and Pine Streets and the area east of Montello Street from Court Street north.<sup>11</sup> In addition to a burgeoning population, Brockton was home to dozens of shoe manufacturers, including the nationally known W.L. Douglas Shoe Company and George E. Keith Company. These two companies were the largest in the city, and their large factory complexes served as bookends to the city, with the W.L. Douglas Shoe Company located in the Montello section of the city and the George E. Keith Company located in the Campello section of the city. By 1910, the value of shoes manufactured in the city was estimated to be \$20,263,200, with the industry employing approximately 12,183 workers.<sup>12</sup> These numbers only climbed as a result of World War I, as Brockton's shoe industry was flush with military contracts. The year following World War I however would serve as the pinnacle of the shoe industry in Brockton, as the 1920 Census noted that the city was home to 66,254 people and 39 shoe and boot manufacturers who produced \$82,538,072 worth of footwear.<sup>13</sup> This period of rapid growth and construction was also accompanied by increasing concern about the quality of growth in Brockton. Reformers concerned with the loss of open areas urged the integration of landscaping into development plans. Pressure from such groups combined with nationwide trends resulted in the enactment of the city's first zoning ordinance in 1920. This first zoning ordinance focused on the segregation of land uses into four distinct zoning districts (residential, business, industrial and unrestricted) and included basic dimensional standards for building height, as well as front, side and rear setbacks.

During the 1920s Brockton's status as a leading shoe manufacturer began to diminish due to a variety of factors, mainly technological improvements in the manufacturing of shoes as well as the availability of cheaper, unorganized labor outside of New England. The Great Depression only further diminished Brockton's status as a leading shoe manufacturer. Despite the slowing economy, the number of homes in Brockton continued to grow, which were built on the outer edges of established neighborhoods and along outlying roadways, including East Ashland, North Cary, West Chestnut, Linwood and Rockland Streets.<sup>14</sup> Also occurring in the 1920s was the creation of D.W. Field Park. Brockton industrialist Daniel Waldo Field donated 756 acres of open space in the northwest corner of the city to Brockton in 1925 on the premise that the land remains a park to be enjoyed by all.

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<sup>10</sup> *Ibid.*

<sup>11</sup> *Ibid.*

<sup>12</sup> *Ibid.*

<sup>13</sup> *Ibid.*

<sup>14</sup> *Ibid.*

At the onset of World War II Brockton's population stood at 62,343, which was lower than it was in 1920. The loss in population can most likely be attributed to the Great Depression and changes in the shoe industry. However, World War II provided Brockton's shoe industry with one last boon, as many shoe manufacturers in the city once again received military contracts (as they did during World War I) to provide footwear for the troops. This boon however was short-lived and after the war, the industry once again continued to decline, as shoe manufacturers continued to move their operations to locations with cheaper labor, including to locations overseas. Further technological innovations that required less human capital also played a role in the city's decline as a shoe manufacturing hub.

The 1950s saw Brockton's shoe industry continue to decline, however its population rose dramatically, from 62,860 in 1950 to 72,813 in 1960. This rise in population can largely be attributed to the construction of the Interstate Highway System and the rise of a more auto-centric society, with Routes 24 and 128 playing a major role in linking southeastern Massachusetts to the metropolitan Boston area. Brockton's location

along Route 24, its availability of low cost undeveloped land on the fringes of the city, its access to municipal water and sewer combined with the national trend toward single-family housing made Brockton an ideal target for new growth. Much of this new growth occurred in northeast section of the city, where thousands of affordable Campanelli ranch style homes were built. During this period of explosive residential growth, the shoe industry however continued to fade, and by 1964 there were only ten shoe factories in Brockton, employing just 2,000 workers.<sup>15</sup> The loss of jobs in the many downtown factories, as well as the discontinuation of passenger train service in 1959 began to take its toll on the downtown, which was further hampered by the opening of the Westgate Mall in 1963 and the relocation of Brockton High School to a new sprawling campus on the city's west side in 1970. This migration of commerce and industry from the downtown was just the beginning of a larger national trend of businesses relocating from downtown centers to areas on or adjacent to highways and high-traffic areas which could accommodate large amounts of parking. This trend continued throughout the 1970s and 1980s and by 1990 Brockton's shoe industry was almost non-existent and its downtown was a severely depressed commercial area that was filled with empty and decaying factories. Despite these trends, Brockton's population continued to increase, buoyed by the construction of a number of public housing complexes as well as a number of large high-density condominium and apartment complexes in the northwest quadrant of the city, and by 1990 Brockton's population stood at 92,788.

The 1990s and the 2000s saw the beginning of a rebirth in the downtown, beginning with the reintroduction of passenger train service as part of the MBTAs Old Colony Line in 1997. Shortly after train service was reintroduced, the Brockton Area Transit (BAT) Authority constructed an Intermodal Centre across the street from the Brockton MBTA Commuter Rail Station, which gave residents easy



**Figure 1-2: Sunset at D.W. Field Park**

<sup>15</sup> "Once known as 'Shoe City', Brockton loses its last factory" The Enterprise, March 2, 2009 by Elaine Allegrini

access to mass transit. Downtown Brockton's rebirth was further enhanced by the redevelopment of a number of former factory buildings into modern apartments. Immigration has also helped reinvigorate Brockton, as its foreign-born population rose from 17,344 in 2000 to 22,300 in 2010.

Although Brockton has little open space remaining in which to develop, the redevelopment of its downtown area holds great promise. Recently completed major redevelopment projects include the \$100 million redevelopment of the old Brockton Enterprise block, now called Enterprise Center. This effort resulted in the creation of 113 new apartments, 52,000 square feet of commercial/office space, and 5,500 square feet of artist and retail exhibition space. Another



Figure 1-3: Enterprise Center

major recent redevelopment project was the renovation of the long vacant Star Market building at the corner of Pleasant Street and Warren Avenue. The newly renovated building now consists of a 30,000 square foot family-owned supermarket and a 12,900 square foot adult outpatient clinic. The city is hopeful that these and other investments will generate additional investment in Brockton.

#### D. CITY-WIDE LAND USE

##### **1. Brockton's land use was greatly influenced by its topography as well as by the establishment of the railroad and its status as a shoe and boot manufacturing center.**

Brockton's topography has greatly influenced its pattern of development. Most of its topography consists of gently rolling moraine lands ranging from approximately 240 feet to 70 feet above mean sea level, which results in a soft landscape offering few opportunities for long, varied views and as a result, minor changes in elevation have often assumed a greater importance than normal. The highest elevations in the city are located in the northern parts of city, specifically Oak Street near Route 24 and along North Quincy Street near Hovendon Avenue. Conversely, the lowest elevations in the city are in the southern part of the city, specifically where the Salisbury Plain River flows into West Bridgewater. A glacial-outwash trough dissects the City along its central north/south axis and played an early role in molding Brockton's urban form; the Downtown area developed within the shallow glacial valley, running parallel to Trout Brook and the Salisbury Plain River.<sup>16</sup> Besides being influenced by its topography, Brockton was also greatly influenced by the establishment of the Fall River Railroad through the center of the city in 1846, which was pivotal in the city's rise as a leading shoe and boot manufacturing center.

Prior to the establishment of the railroad, Brockton was largely an agricultural community with some small-scale industry, mainly in the form of saw and grist mills, iron forges and what were the beginnings of the nascent shoe industry. The establishment of the railroad gave the shoe industry better access to

<sup>16</sup> City of Brockton: Open Space and Recreation Plan, 2007: Nover-Armstrong Associates, Inc.

raw materials and newer markets and only intensified as a result of the Civil War, when it was claimed that half of the Union Army wore boots that were made in Brockton.

Following the Civil War, Brockton's shoe industry continued to grow as a number of new factories were built along the railroad, with the most dominant areas being the Downtown, Campello and Montello areas. As the shoe industry expanded within the city, so did too the amount of housing and commerce in these areas that was needed to accommodate the factories many workers. This land use pattern of industry, commerce, and housing all emanating from the railroad, or the industrial spine of the city, was a land use pattern that the city would follow until the end of World War II.

Following World War II, land use patterns in Brockton began to change beginning with the construction of Route 24, which gave Brockton easier access to the metropolitan Boston area. This new access to the larger metropolitan area coupled with an abundance of low-cost undeveloped land on the city's periphery and its access to municipal services (namely water and sewer service) made the city a prime target for single-family housing, which the nation was clamoring for following the war. At the same time the numerous factories that dotted Brockton's landscape began to shutter in search of cheaper labor and materials. These events saw Brockton's traditional neighborhoods (Downtown, Campello, and Montello) loose much of their industry and commerce to areas located on the city's periphery, specifically to areas along major travel routes that were more accommodating to the growing auto-centric society.

**2. Due to the extent of existing roadways (approximately 27 miles of road per square mile of land) Brockton has less land available for other purposes than other surrounding communities.**

According to the MassDOT *Road Inventory Year-End Report 2014*, Brockton contains a total of 286.20 miles of roadways, of which 237.61 miles are under local jurisdiction, 10.36 miles are under MassDOT jurisdiction, and 2.24 miles are under Combined Federal jurisdiction; the remaining 35.98 miles are listed as unaccepted or private (roadways which have no state, city, or institution has authority over).<sup>17</sup> While the City is responsible for maintaining hundreds of public and private roadways, it does not maintain roadways under MassDOT jurisdiction, such as Route 24, or roadways under Combined Federal jurisdiction. In total, land dedicated to road and rail right-of-ways in the city accounts for approximately 14.4% of its land area.

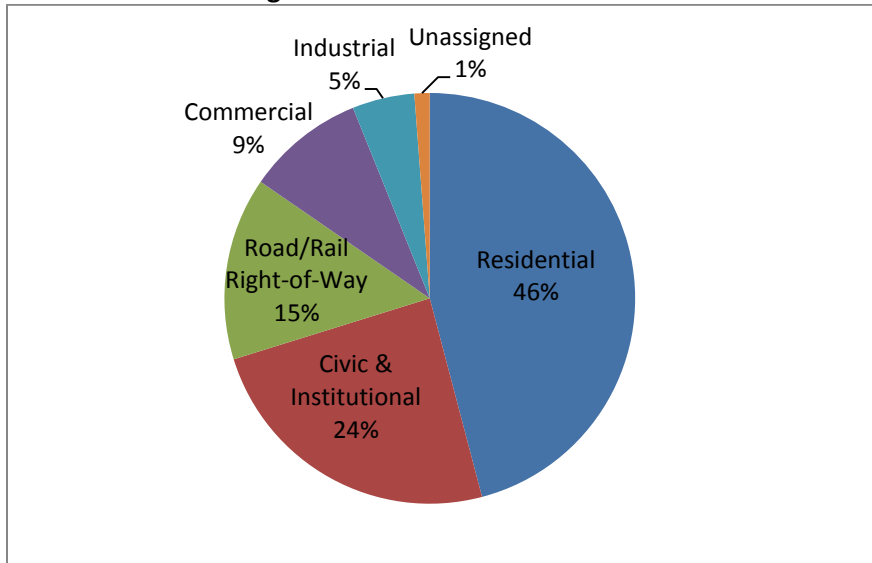
**3. Brockton's has little raw available land for development.**

Due to extensive development during the nineteenth and twentieth century, there is little undevelopable land left in the city. The 2013 Brockton Open Space and Recreation Plan notes that the City is roughly 98% developed, leaving options for new development largely to the reuse of previously developed properties. Figure 1-4 shows the division of land in Brockton by land use category. The largest land use in the city is residential land use, which comprises nearly half of the city's land (approximately 6,300 acres). The second largest land use in the city is civic and institutional land use, which accounts for approximately 25% of Brockton's land area (3,340 acres). The third largest land use is transportation land use (road and rail rights-of-way), which account for approximately 14% of Brockton's land area (1,972 acres). Commercial and industrial land collectively also accounts for 14% of the city's land area (1,964 acres). 1% (177.8 acres) of the land area in Brockton does not have a classification code.

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<sup>17</sup> MassDOT, Office of Transportation Planning. (2014). *Road Inventory Year-End Report 2014*.

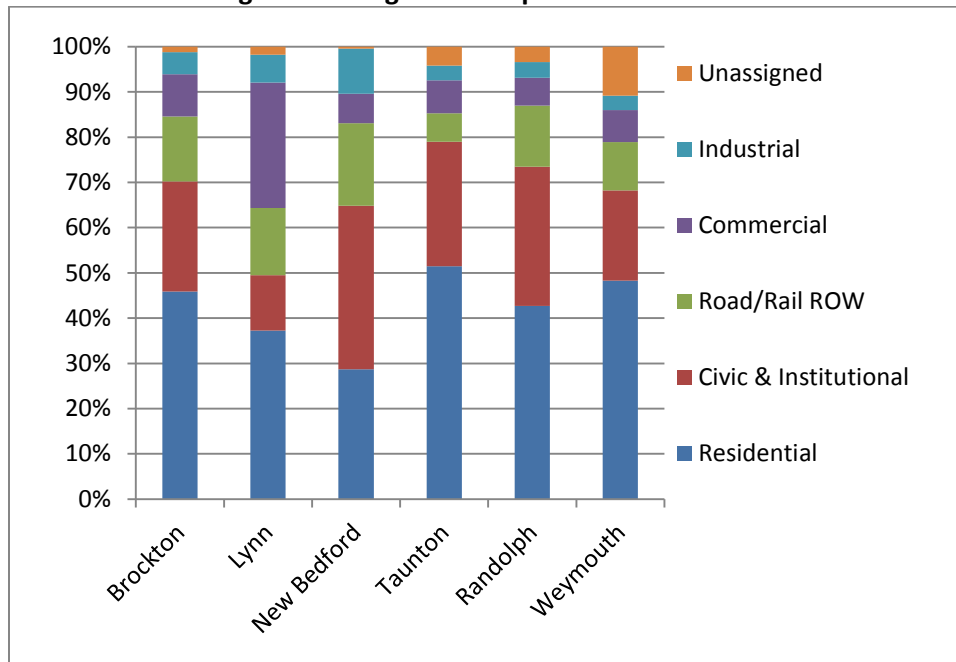
**Figure 1-4: Brockton's Land Use<sup>18</sup>**



**4. The division of land use is quite consistent among the seven comparison communities.**

Land use among the seven comparison communities is quite consistent, with the most popular land uses being residential, civic and institutional, and road/rail right-of-way uses.

**Figure 1-5: Regional Comparison - Land Use<sup>19</sup>**

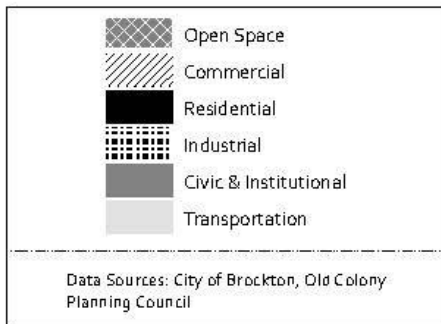


<sup>18</sup> MassGIS

<sup>19</sup> *Ibid.*

Figure 1-6: Existing Land Use in Brockton

## Existing Land Use







## 2. COMMERCIAL LAND USE

### A. HISTORY OF COMMERCIAL DEVELOPMENT

#### 1. Commercial development in Brockton was originally concentrated Downtown.

The origins of commercial development in Brockton can be closely tied to industrial operations established in the city in the first half of the 18<sup>th</sup> century. The burgeoning shoe and boot industry served as the foundation for extensive commercial development the community would experience in the 19<sup>th</sup> century, which was centered in and around the many factories located downtown. Some of the commercial buildings constructed in the late 19<sup>th</sup> century stand to this day, including the Curtis Building, Goldthwaite Block, Howard Block, and Lyman Block, all of which are located along Main Street in the downtown and all of which are on the National Register of Historic Places.

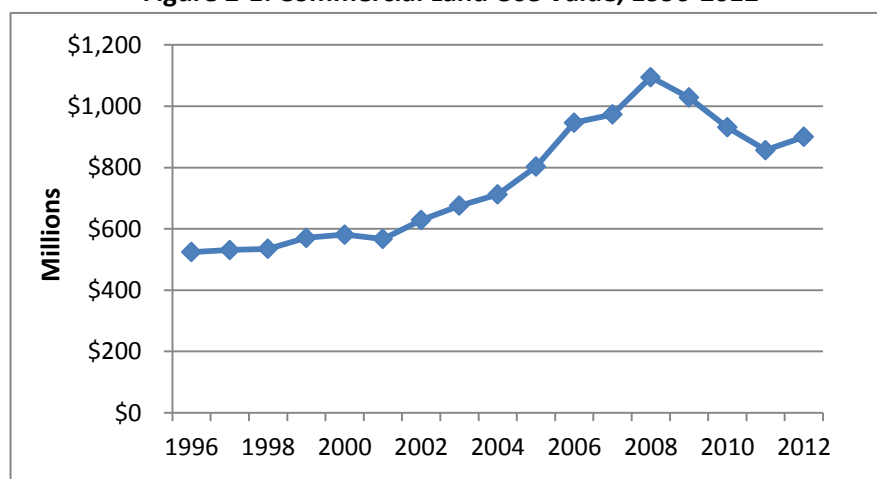
#### 2. Brockton's commercial property is no longer concentrated in the downtown; rather it is dispersed throughout the city.

Following the decline of the shoe industry following World War II, many of the downtown factories shuttered their doors. A combination of the declining shoe industry, the creation of the Interstate Highway System (and an auto-centric society) in the 1950s and the opening of the Westgate Mall in 1963 marked the migration of commerce from the downtown to areas on or adjacent to highways and high-traffic areas. This trend of commerce migrating from the downtown toward the city's two highway interchanges as well as along the city's state numbered routes (particularly Routes 27, 28, and 123) continued through to the 1990s, leaving the downtown a shell of its former self and a depressed commercial area. In recent years however, the downtown has seen a rebirth, beginning with the reintroduction of MBTA commuter rail service in 1997, the construction of the BAT Intermodal Centre in 1999, and the redevelopment of many former factories into modern housing.

#### 3. The value of commercial land in the city has grown steadily since 1996.

From 1996 to 2008, the value of commercial land in Brockton more than doubled, when it peaked at \$1.094 billion in 2008. In the years immediately following 2008, the value of commercial land dropped as a result of the Great Recession, but it has already begun to rebound, as shown in Figure 2-1.

Figure 2-1: Commercial Land Use Value, 1996-2012<sup>20</sup>



<sup>20</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015

## **B. CURRENT CONDITIONS**

### ***4. Brockton has a limited amount of land designated for commercial use; the acreage of residential land is almost five times greater than the amount of commercial land in the city.***

Brockton has approximately 1,285 acres of land in commercial use. This places commercial land use far below the two dominant land uses in the city - residential and civic and institutional, as well as behind road/rail rights-of-way land uses. While commercial land exists throughout the city, as illustrated in Figure 2-12 at the end of this chapter, by and large it is found along the major roadways in the city, specifically along Main, Montello, Pleasant, Belmont, Crescent and Centre Streets. Major concentrations of commercial activity can also be found in the areas around the two Route 24 highway interchanges, as well as in small pockets on the east and south sides of the city.

Despite a limited amount of undevelopable land in the city, there are a number of landowners in the city that own a considerable amount of acreage including: Bertarelli Bros. (120.6 acres), Brockton Audubon Society (119.6 acres), Massachusetts Electric Company (National Grid) (113.1 acres), Massasoit Community College (94.4 acres), Brockton Housing Authority (66.3 acres), Kelly C. Kelly Trustee (59.2 acres), Boston Edison (NSTAR) (54.1 acres), Westgate Mall LLC (48.9 acres), and Brockton Agricultural Society (46.4 acres).<sup>21</sup>

### ***5. Brockton has seen a shift in its commercial land use patterns over the past fifty years.***

Since its settlement in the eighteenth century, the majority of Brockton's commercial activity was concentrated in its downtown. Over the years the downtown commercial area grew rapidly, largely in part to its location along Main Street, which not only served as the city's major thoroughfare, it also ran parallel to railroad. Its location parallel to the railroad lent itself well to the siting of the many shoe and boot factories that were to become the hallmark of Brockton's commercial prowess for more than 100 years. The downtown also featured a number of other amenities and establishments, including stores, offices, restaurants, churches, schools, and banks as well as City Hall.

Other historic commercial areas in the city were Campello, which is located approximately one and a half miles south of the downtown, and Montello, located approximately two miles north of the downtown. Both of these areas were also heavily involved in the boot and shoe manufacturing industries and both were also centered around railroad stations and enjoyed many of the same amenities the downtown experienced, albeit on a smaller scale. Other historic commercial areas in the city were Salisbury Square (also known as Sprague's Factory Village) which was located three-quarters of a mile east of the downtown, located at the intersection of present-day Crescent Street and Summer Street. Another historic commercial area in the city was Brockton Heights, an agricultural enclave located near the Taunton-South Boston Turnpike (present-day Pearl Street).

Over the years each of these areas grew, however none more so than the downtown, which was accessible to a large population that primarily walked everywhere to complete daily tasks. This way of life stayed largely intact until the end of World War II. After World War II, the commercial layout of the city began to change due to changes in the manufacturing industry and the creation of the Interstate Highway System. After the war the manufacturing industry came under intense pressure from foreign markets that capitalized on cheap labor and free trade which caused many of Brockton's shoe and boot

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<sup>21</sup> MassGIS

factories to either relocate overseas or shutter altogether. The creation of the Interstate Highway System in the 1950s resulted in the construction of a network of roads and highways allowing for the increased use and reliance on the automobile as a primary form of transportation. This increased use of the automobile led to the development of suburbia across the country, with Brockton being no exception. The construction of Routes 24 and 128 was crucial in linking southeastern Massachusetts to the metropolitan Boston area.

Brockton's location along Route 24 led to an increasing amount of commercial and industrial development around the City's two interchanges, beginning with the opening of the Westgate Mall in the 1963. Over the years commercial entities started to move from the downtown, which was struggling due to the closure of the many boot and shoe factories, to the Mall and to other commercial areas being developed around the highway interchanges. The downtown continued to struggle in to the 1990s, but in recent years has seen a rebirth with the reestablishment of passenger rail service and the transformation of many shuttered factories into modern housing.

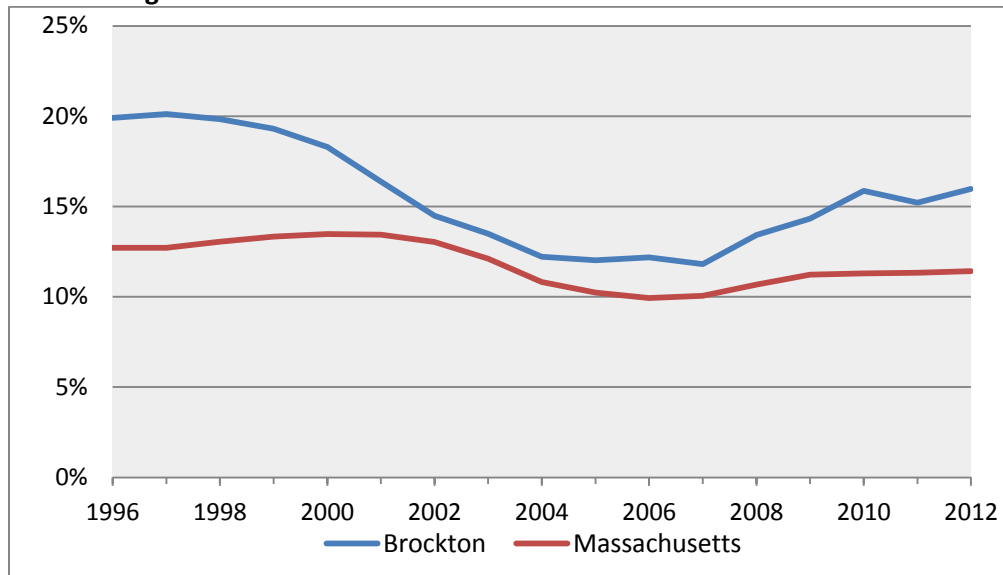


**Figure 2-2: Boston Fresh Distribution Facility**

***6. Brockton's commercial assessed value has increased 71.8%, from \$524 million in 1996 to \$900 million in 2012, but its percentage of commercial assessed value relative to the city's overall assessed value has decreased from 19.9% to 16.0% over the same time period.***

The nominal assessed value of commercial property in Brockton rose more than 70% over the last 17 years. This was less however than the 128.9% surge the Commonwealth experienced during the same time period, which saw the assessed value of commercial property increase from \$45 billion in 1996 to \$103 billion in 2012. As is seen in Figure 2-3 below, both Brockton and the Commonwealth saw their commercial assessed value as a share of their total value decrease, with Brockton experiencing a 3.9% decrease, whereas the Commonwealth only experienced a 1.3% decrease. Nevertheless, Brockton's commercial share of its total assessed value remains 4.6% higher than the Commonwealth's.

**Figure 2-3: Commercial Assessed Value as Share of Total Value<sup>22</sup>**



**7. Almost 25% of the City's total tax levy is generated from commercial uses.**

In addition to providing thousands of job opportunities, commercial uses contribute a sizeable sum of tax revenue to the city. Based on FY2012 data from the Massachusetts Department of Revenue, the tax revenue derived from commercial uses accounted for slightly more \$26.9 million or 24.9% of the city's total annual levy.<sup>23</sup>

**C. REGIONAL COMPARISON**

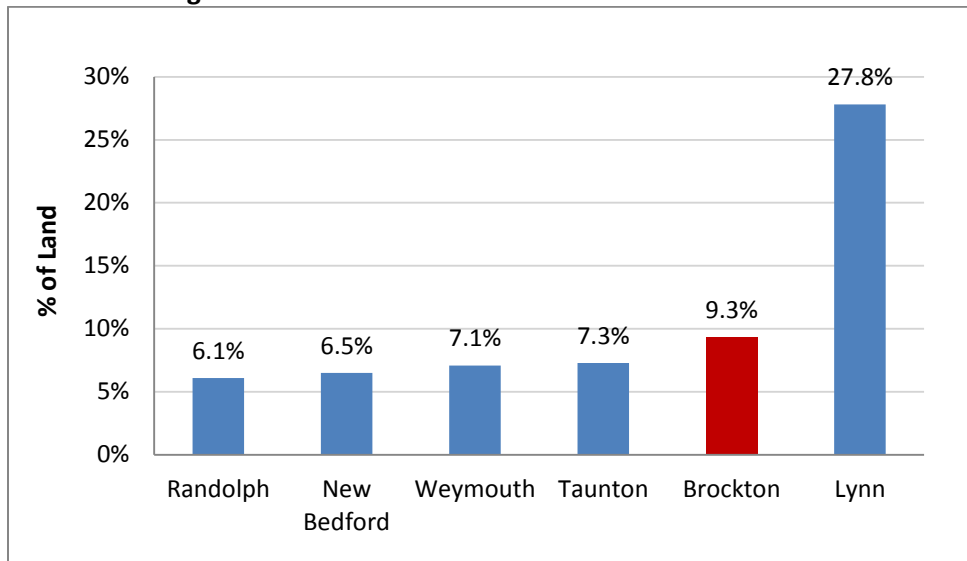
**8. Brockton's portion of commercial land is similar to that of most of the comparison communities, with the exception of Lynn.**

Brockton's utilization of land for commercial uses may be low relative to other land use categories, but it is comparable to most of the other comparison communities as shown in Figure 2-4 below.

<sup>22</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class

<sup>23</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Tax Levies by Class

**Figure 2-4: Commercial Land as % of Total Land Area<sup>24</sup>**

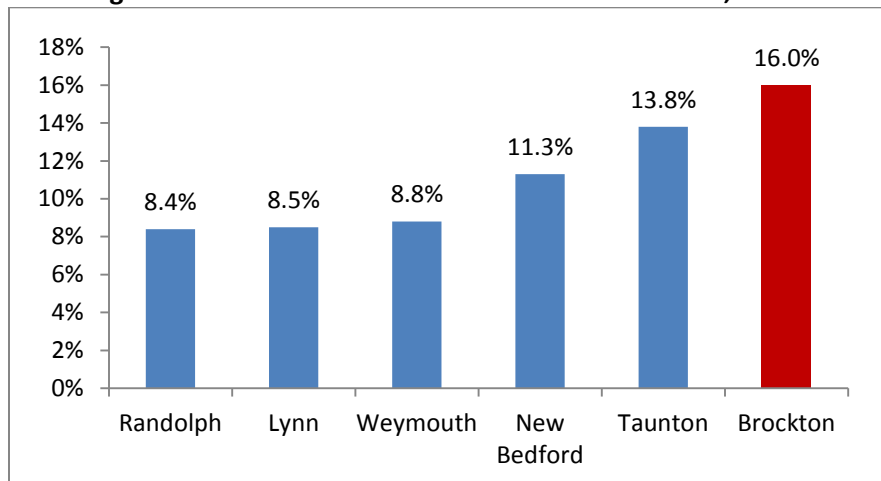


When compared to the comparison communities, one can see that Brockton has a slightly higher percentage of land devoted to commercial uses. The practice of consolidating commerce in just a few select cities has changed over the years, as the population has become more mobile over time. Today, even the smallest communities in the Commonwealth have some degree of commerce.

Brockton’s commercial property is divided into 1,423 parcels, representing 5.7% of Brockton’s 25,152 parcels. The size of the average commercial parcel in Brockton is approximately 39,300 square feet. Commercial parcels are larger than residential parcels due to the nature of their operations, and include uses such as shopping malls, big-box department stores, hotels, and supermarkets.

**9. 16% of the total assessed land value in Brockton comes from commercial land.**

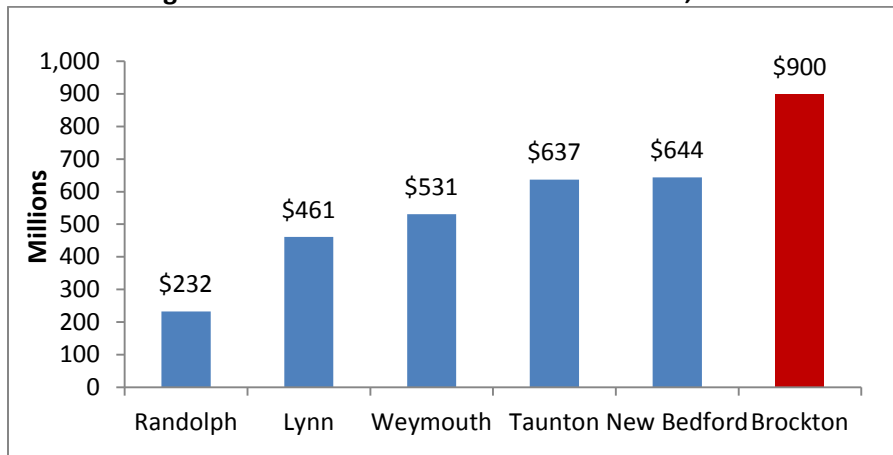
**Figure 2-5: Commercial Assessed Value as % of Total, 2012<sup>25</sup>**



<sup>24</sup> MassGIS

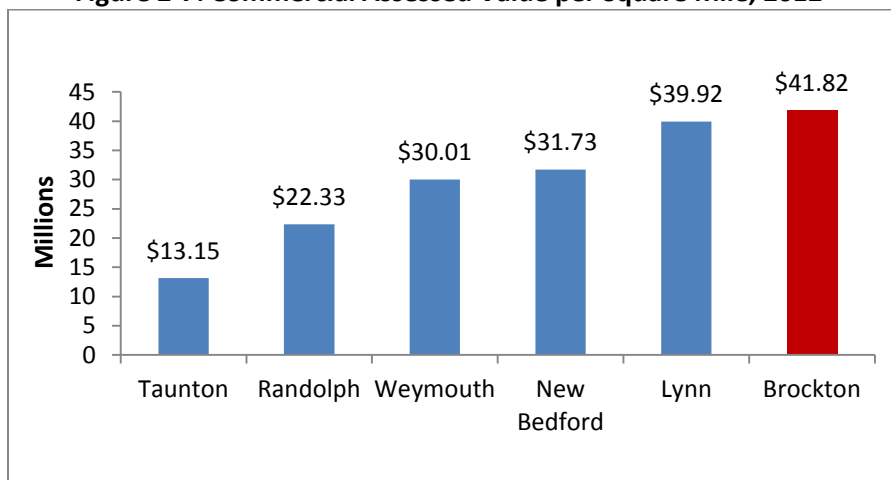
<sup>25</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class

**Figure 2-6: Total Commercial Assessed Value, 2012<sup>26</sup>**



When comparing the commercial land area of the comparison communities to its proportional assessed value, Brockton advances to the top spot, followed by Taunton and New Bedford. The most dramatic change is from Lynn. Lynn, which has the highest percentage of commercial land, has the second lowest proportional commercial assessed value. The low value of commercial land in Lynn may be attributed to its lack of direct access to major highways, a feature that Brockton, Taunton, and New Bedford all enjoy. The difference is also seen when looking at the commercial assessed value not as a share of land use types, but in absolute terms. Brockton, with \$900 million in commercial value has approximately 40% more commercial value than New Bedford and Taunton, and almost twice as much commercial value as Lynn.

**Figure 2-7: Commercial Assessed Value per Square Mile, 2012<sup>27</sup>**



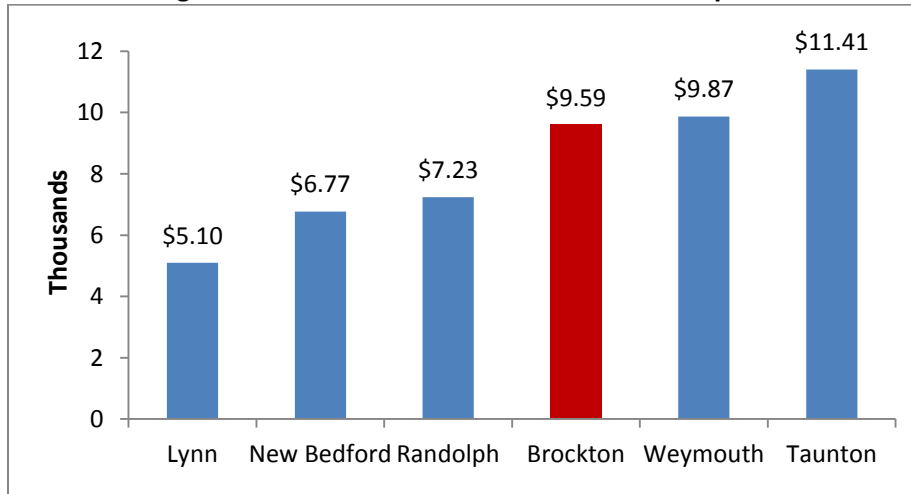
<sup>26</sup> *Ibid.*

<sup>27</sup> MassGIS & Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015

**10. When considering commercial assessed value on a per capita basis, it can be seen that Brockton receives more revenue from commercial property than many of the comparison communities.**

Brockton has been able to outperform cities of similar populations (Lynn and New Bedford) in this category due to Brockton having a higher commercial assessed value.

**Figure 2-8: Commercial Assessed Value Per Capita<sup>28</sup>**



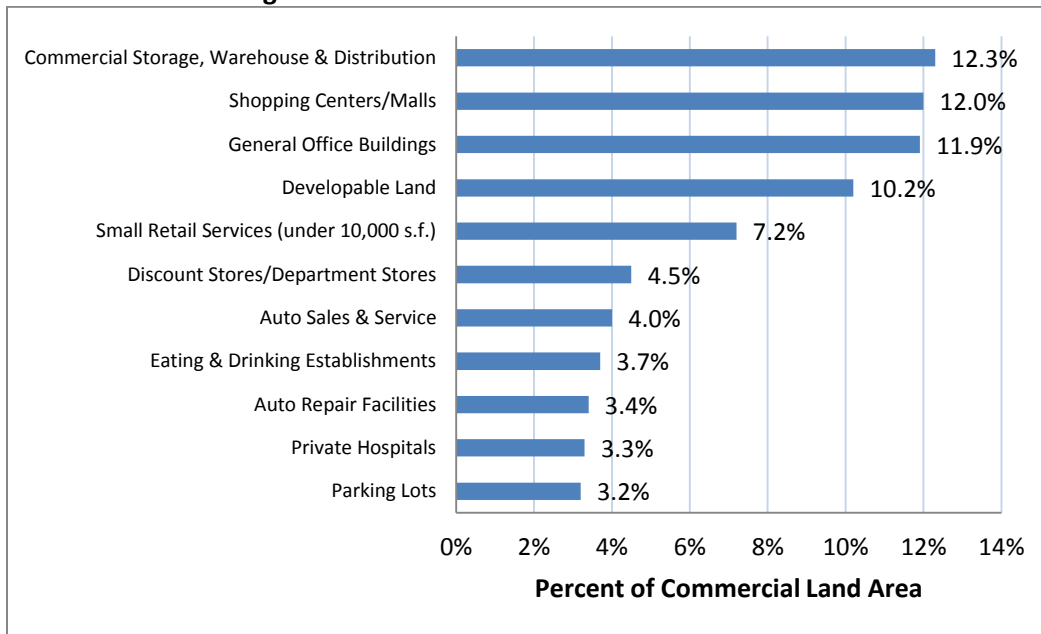
#### **D. COMMERCIAL SUB-CATEGORIES USES**

**11. Among the different types of commercial uses, commercial storage, warehouse and distribution, shopping centers/malls and general office buildings take up the greatest amount of acreage in Brockton.**

Brockton's history has played a major role in the composition of its three largest commercial sub-categories. Commercial storage, warehouse and distribution is the largest subcategory in terms of land area and is concentrated in two areas of the city, along the railroad in the downtown and around Exits 17 and 18 off Route 24. The presence of these facilities in the downtown is due to the number of former shoe and boot factories, many of which have been reutilized as storage and warehouse facilities. The storage and warehouse facilities located around Exits 17 and 18 are newer, with most being constructed after 1960 and coinciding with the construction of Route 24 and the rise of Brockton as a suburb of Boston. The construction of Route 24 also led to the increased construction of shopping centers/malls and office buildings in and around Exits 17 and 18, as areas around highway interchanges became immensely appealing to developers as not only being accessible to residents of Brockton, but to residents across the region.

<sup>28</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015 & U.S. Census

**Figure 2-9: Commercial Land Area Distribution<sup>29</sup>**

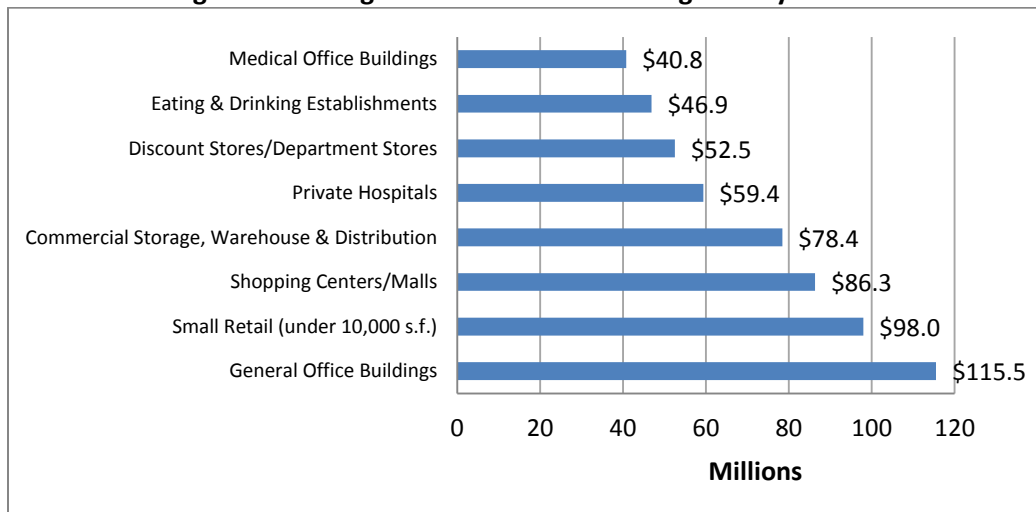


The remaining commercial land types generally fall into five categories: (1) developable commercial land, (2) retail stores and services, (3) auto oriented services, (4) restaurants, and (5) private hospitals.

**12. In terms of value, General Office Buildings are the largest sub-category within commercial uses.**

While the commercial storage, warehouse and distribution and shopping centers/malls sub-categories have higher commercial land areas, general office buildings have the highest assessed value due to higher average densities and high rent tenants.

**Figure 2-10: Largest Commercial Sub-Categories by Value<sup>30</sup>**



<sup>29</sup> MassGIS

<sup>30</sup> MassGIS & Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015



## E. CONFLICTS

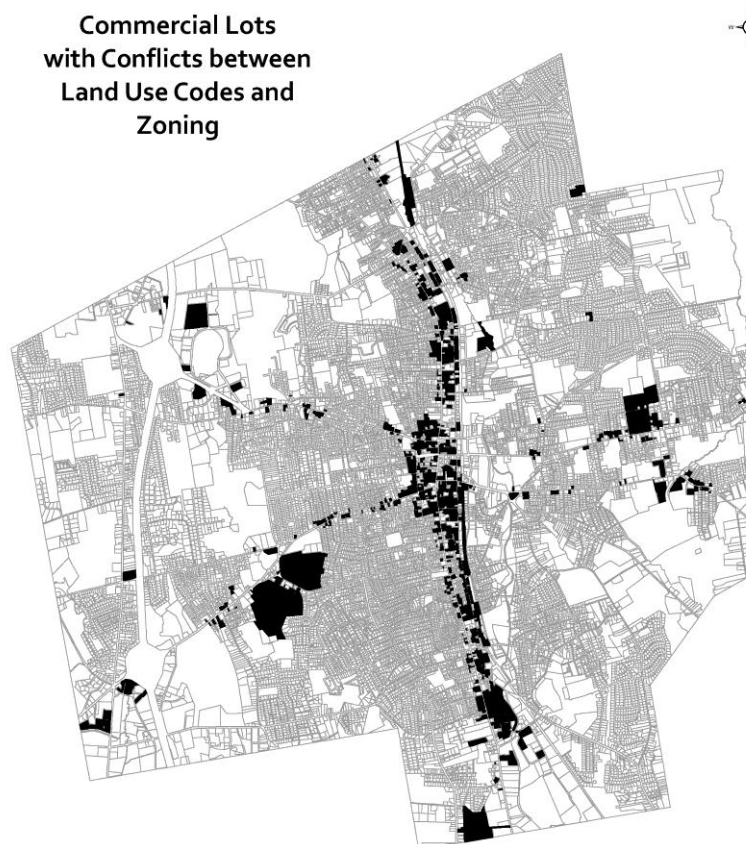
### 13. Only 57.6% of the commercially zoned land in Brockton has a commercial land use.

Of the 1,490.6 acres of commercially zoned land in Brockton, only 858.9 acres has a commercial land use. As seen in Figure 2-11 below, commercially zoned land in Brockton has a variety of uses. Figure 2-12 highlights commercially zoned parcels that do not have a commercial land use.

**Figure 2-11: Land Uses within Commercially Zoned Land**

Land Use (Code)	Area	
	Acres	Percentage
Residential (Code 1)	200.7	13.5%
Commercial (Code 3)	858.9	57.6%
Industrial (Code 4)	49.5	3.3%
Civic & Institutional (Codes 2,6, 7, 8, 9)	381.5	25.6%
Total	1,490.6	100.0%

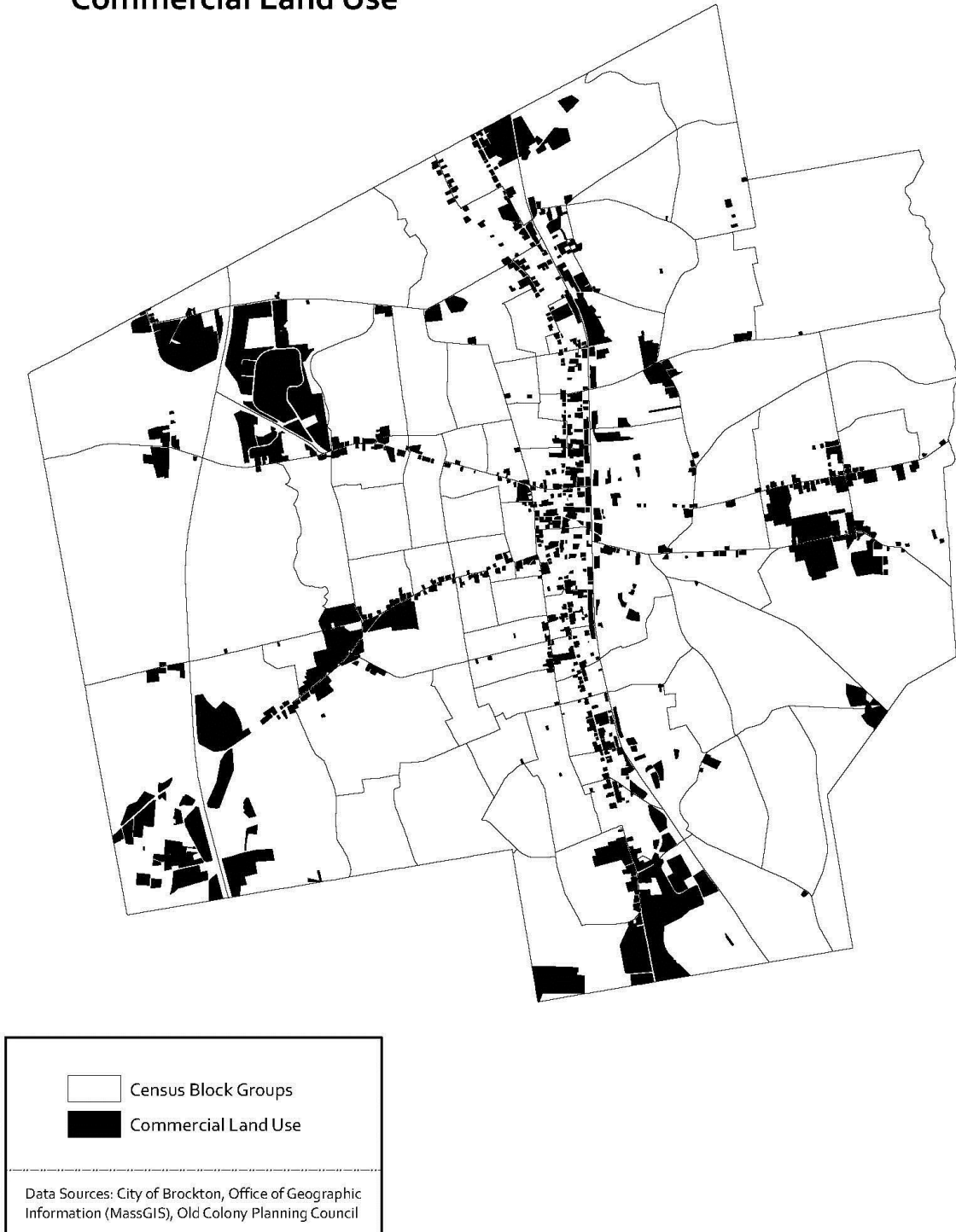
**Figure 2-12: Commercial Lots with Conflicts between Land Use Codes & Zoning**



Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council

Figure 2-12: Commercial Land Use in Brockton

## Commercial Land Use



### 3. INDUSTRIAL LAND USE

#### A. HISTORY OF INDUSTRIAL DEVELOPMENT

**1. Industrial development, much like commercial development, was originally concentrated Downtown.**

The origins of industrial development in Brockton date back to the eighteenth century, when there were a few sawmills, grist mills, and iron forges scattered throughout the town. More intensive and concentrated industrial development began in the downtown in the early 19<sup>th</sup> century, when Micah Faxon began making shoes and transporting them to the markets in Boston. D. S. Howard is held to have initiated the national fame of Brockton shoes about 1848, shortly after the Randolph and Bridgewater Railroad built its line through town in 1846.<sup>31</sup> The railroad line, which ran north-south through the middle of the town served as the hub upon which most of the shoe and boot factories were located.

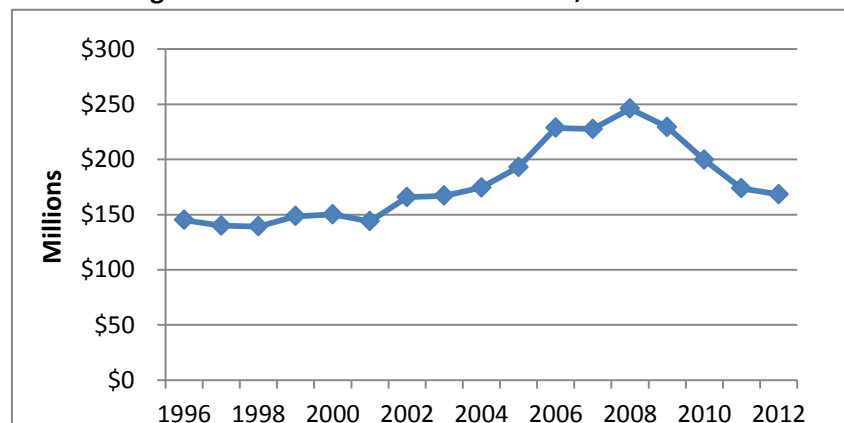
**2. Land used for industrial purposes has declined since the end of World War II.**

As is common in many other cities across the Commonwealth, Brockton’s economy has transitioned over time from an industrial-based economy to a service-based economy. The area that has undergone the most significant change in land use is Downtown Brockton, which was the site of the many shoe and boot factories in the city. As industry (and in particular the shoe and boot industry) began to leave the city in the years following World War II, many of these factories were never reutilized for industrial purposes and sat either vacant or were utilized for less intensive uses, such as storage. However, in the early 2000s some of these long-dormant buildings got a second life when they were transformed into housing, both in the form of condominiums and apartments, which appealed to a large number of people due to their proximity to transit amenities, namely the MBTA commuter rail station and the BAT Intermodal Centre.

**3. The value of industrial land in the city has grown little since 1996.**

From 1996 to 2012, the value of industrial land in the city has grown only 16.1%, (or less than 1% per year) from \$145 million in 1996 to \$168 million in 2012. As is seen in Figure 3-1, the value of industrial land peaked in 2008 at \$246 million, but fell sharply following the Great Recession and has struggled to rebound since.

**Figure 3-1: Industrial Land Use Value, 1996-2012<sup>32</sup>**



<sup>31</sup> MHC Reconnaissance Survey Town Report: Brockton, Massachusetts Historical Commission, 1981

<sup>32</sup> MassGIS & Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015

## B. CURRENT CONDITIONS

**4. Brockton has a limited amount of land designated for industrial use; the acreage of residential land is more than nine times greater than the amount of industrial land in the city.**

Brockton has approximately 680 acres of land in industrial use. This places industrial land use far behind all other land uses in the city. As illustrated in Figure 3-12 at the end of this chapter, industrial land in the city is concentrated in two locations – adjacent to the railroad tracks that bisect the city and around the Exit 17 interchange off Route 24.

**5. The majority of the city's industrial areas are located adjacent to the railroad tracks as well as around the Exit 17 interchange off Route 24.**

The areas adjacent to the railroad tracks, which traverse the city from north to south, have traditionally been the heart of industry in this old manufacturing city. As traditional manufacturing began to wane in the years following World War II, industry began to relocate to newly formed industrial parks or to areas located near highway interchanges. While industry is still present along the railroad tracks, it is to a much lesser degree than it has been in the past. Some of the more prominent industrial areas along the railroad tracks include the area around the Montello MBTA Station; the area between Ames Street and Court Street; the Commercial Yard area; and the Oak Hill Way area. The other primary industrial area in Brockton is the area located south of Exit 17 off Route 24 along West Chestnut, Manley and Liberty Streets. This area has grown in recent years due to its adjacency to Route 24, which gives businesses easy access to Boston and surrounding communities. Infrastructure improvements along West Chestnut Street implemented during the late 1990s provided for enhanced access and safety. Enhanced access to Route 106 in the south was realized with the implementation of the Manley Street improvements in West Bridgewater.



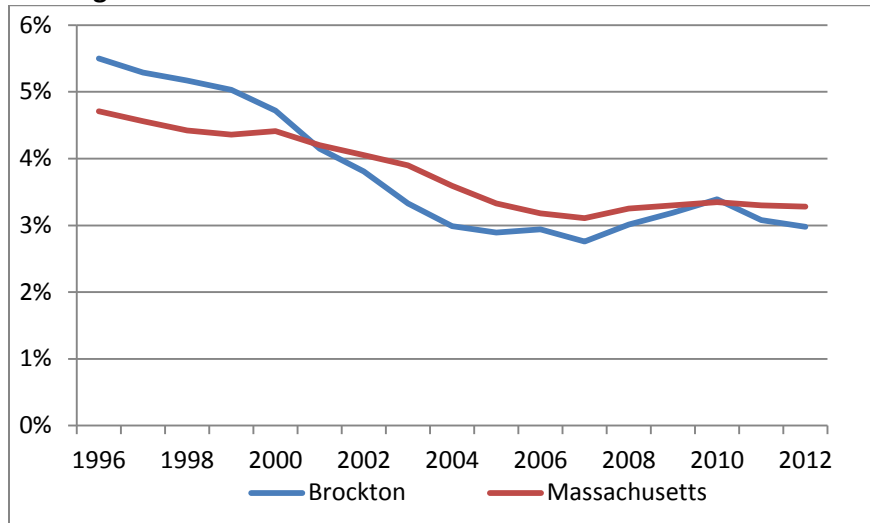
**Figure 3-2: Cindy's Kitchen Manufacturing Facility**

**6. Brockton's industrial assessed value has increased 16.1%, from \$145 million in 1996 to \$168.4 million in 2012, but its percentage of industrial assessed value relative to the city's overall assessed value has decreased from 5.5% to 3.0% over the same time period.**

The nominal assessed value of industrial property in Brockton rose slightly more than 16% over the last 17 years. This was far less than the 78.3% surge the Commonwealth experienced during the same time period, which saw the assessed value of industrial property increase from \$16.7 billion in 1996 to \$29.8 billion in 2012. As seen in Figure 3-3, both Brockton and the Commonwealth saw their industrial assessed value as a share of their total value decrease, with Brockton experiencing a 2.5% decrease,

whereas the Commonwealth only experienced a 1.4% decrease. Nevertheless, Brockton’s industrial share is only 0.3% lower than the Commonwealth’s.

**Figure 3-3: Industrial Assessed Value as Share of Total Value<sup>33</sup>**



**7. Slightly more than \$5 million of the City’s total tax levy is generated from industrial uses (4.7%)**

In addition to providing a number of employment opportunities, industrial uses contribute to the city in terms of tax revenue. Based on FY2012 data from the Massachusetts Department of Revenue, the tax revenue derived from industrial uses accounted for slightly more than \$5 million, or approximately 4.7%, of the city’s total annual levy.<sup>34</sup>

**C. REGIONAL COMPARISON**

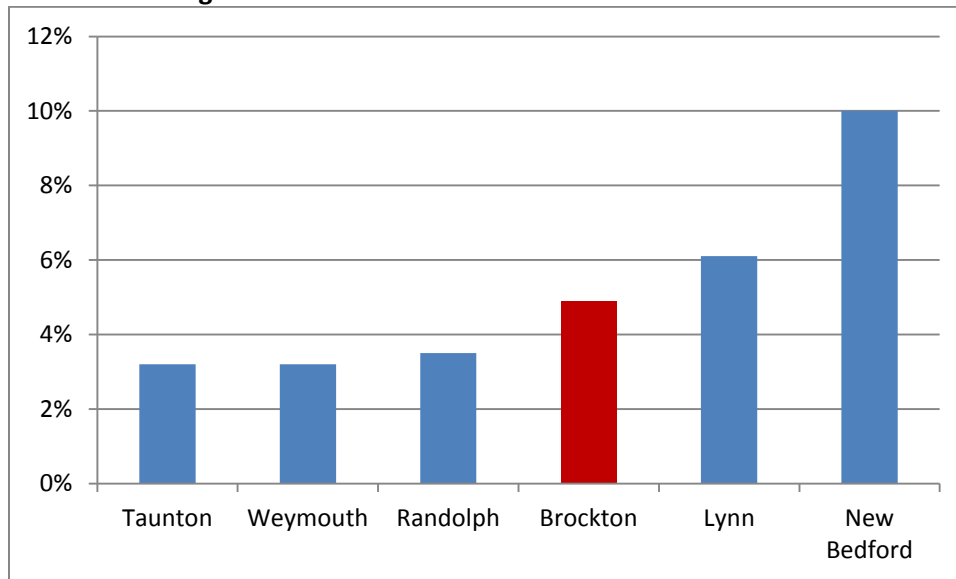
**8. Brockton’s portion of industrial land is similar to that of most of the comparison communities, with the exception of New Bedford.**

Brockton’s utilization of land for industrial uses is low relative to other land use categories, but it is comparable to most of the other comparison communities as shown in Figure 3-4 below.

<sup>33</sup> Ibid.

<sup>34</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Tax Levies by Class

**Figure 3-4: Industrial Land as % of Total Land Area<sup>35</sup>**



When compared to the rest of the comparison communities, one can see that Brockton and the older industrial cities of Lynn and New Bedford have a higher percentage of land devoted to industrial uses than the more suburban and less populated communities. While dense and highly populated cities have historically been the centers of industry, the practice of locating industry in more suburban areas, (particularly in industrial parks off major highways) has been the trend in recent years.

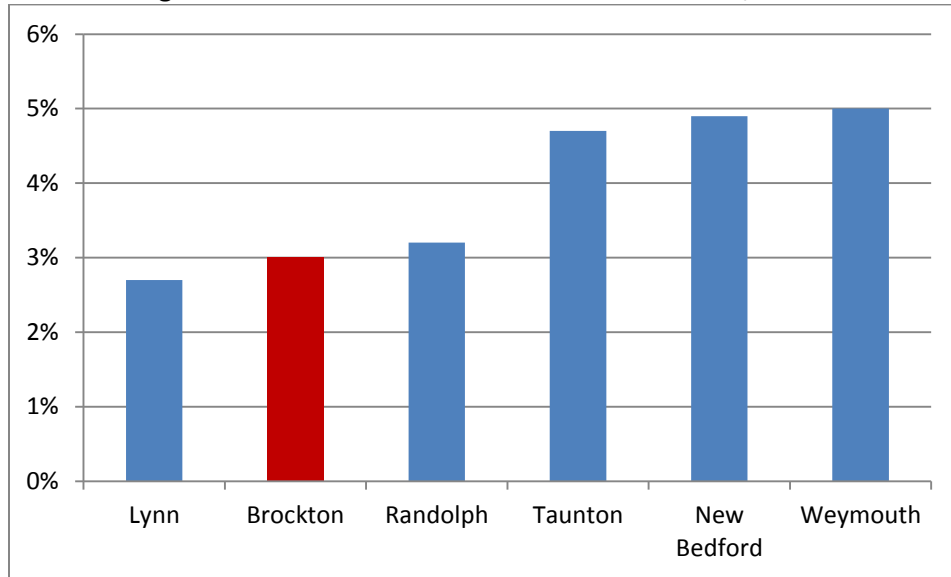
Brockton's industrial property is divided into 290 parcels, representing just 1.2% of Brockton's 25,152 parcels. The size of the average industrial parcel in Brockton is approximately 102,018 square feet. Industrial parcels are larger than commercial parcels due to the nature of their operations, and it is especially true of industrial entities like manufacturing and processing facilities that require large buildings and warehouses.

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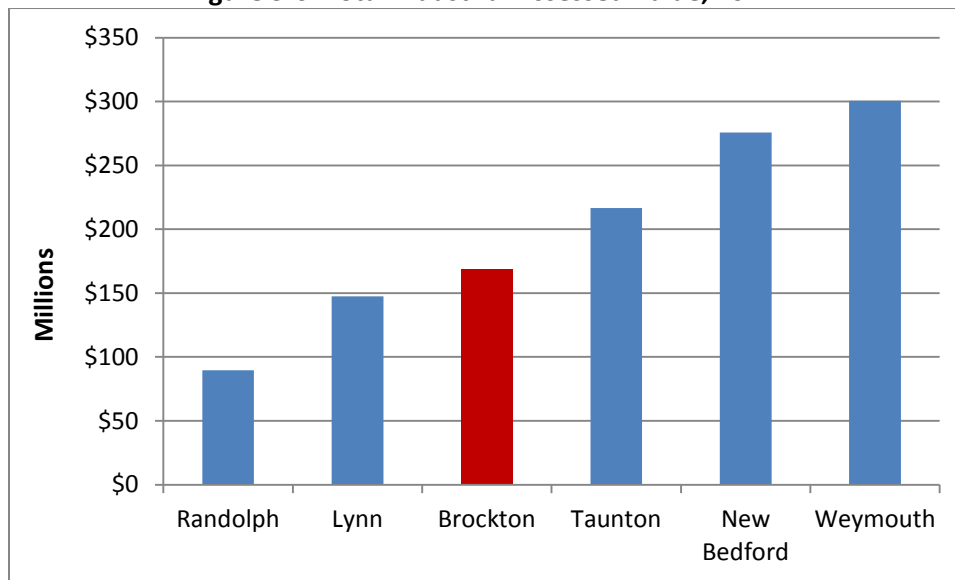
<sup>35</sup> MassGIS

**9. 3% of the total assessed land value in Brockton comes from industrial land.**

**Figure 3-5: Industrial Assessed Value as % of Total, 2012<sup>36</sup>**



**Figure 3-6: Total Industrial Assessed Value, 2012<sup>37</sup>**



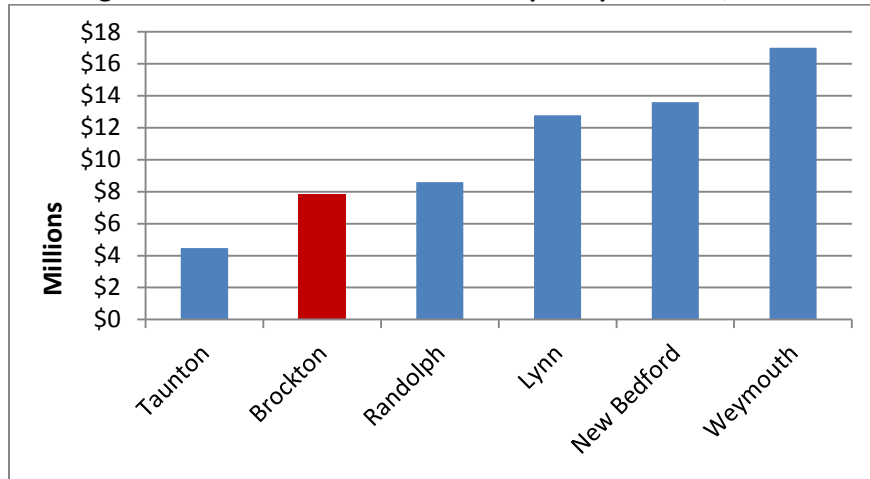
When comparing the industrial land area of the comparison communities to both its proportional industrial assessed value and total industrial assessed value, Weymouth advances to the top spot, despite having the second lowest percentage of industrial land. The high value of industrial land in Weymouth can most likely be attributed to its close proximity to Boston and its direct access to major highways, whereas the high value of industrial land in New Bedford is due to the presence of the 150+ acre New Bedford Business Park as well as the presence of the commercial fishing industry in the Port of

<sup>36</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class

<sup>37</sup> Ibid.

New Bedford. Taunton’s high industrial value can be linked to the presence of the 1,000+ acre Myles Standish Industrial Park. Brockton trails these three communities in terms of industrial value, likely due to the absence of a large industrial park, a feature possessed by the three aforementioned communities. In terms of commercial assessed value per square mile, Weymouth and New Bedford are first and second again, while Brockton is second to last.

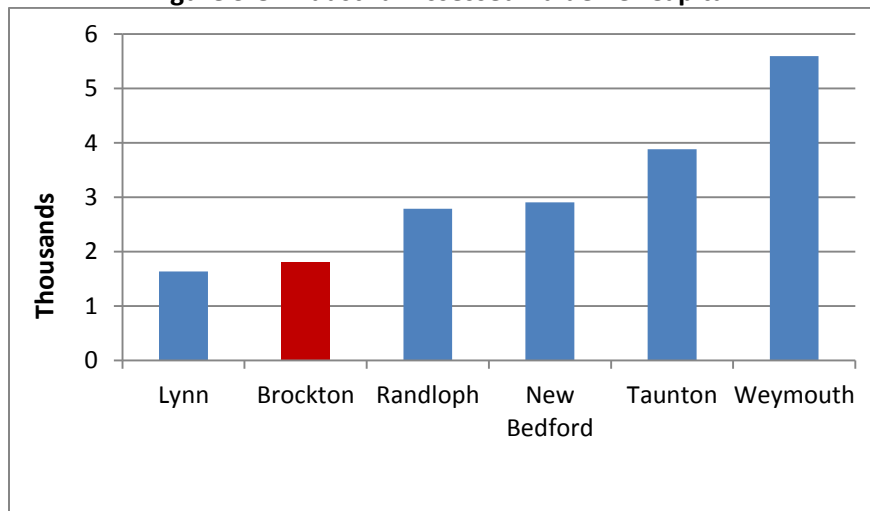
**Figure 3-7: Industrial Assessed Value per Square Mile, 2012<sup>38</sup>**



**10. When considering industrial assessed value on a per capita basis, it can be seen that Brockton receives less revenue from industrial property than most of the comparison communities.**

The older industrial Gateway Cities of Brockton and Lynn have struggled to reinvent themselves since losing their industrial economic base following World War II. As a result, both Brockton and Lynn have lower industrial assessed values per capita than the other comparison communities.

**Figure 3-8: Industrial Assessed Value Per Capita<sup>39</sup>**



<sup>38</sup> MassGIS & Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015

<sup>39</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015 & U.S. Census

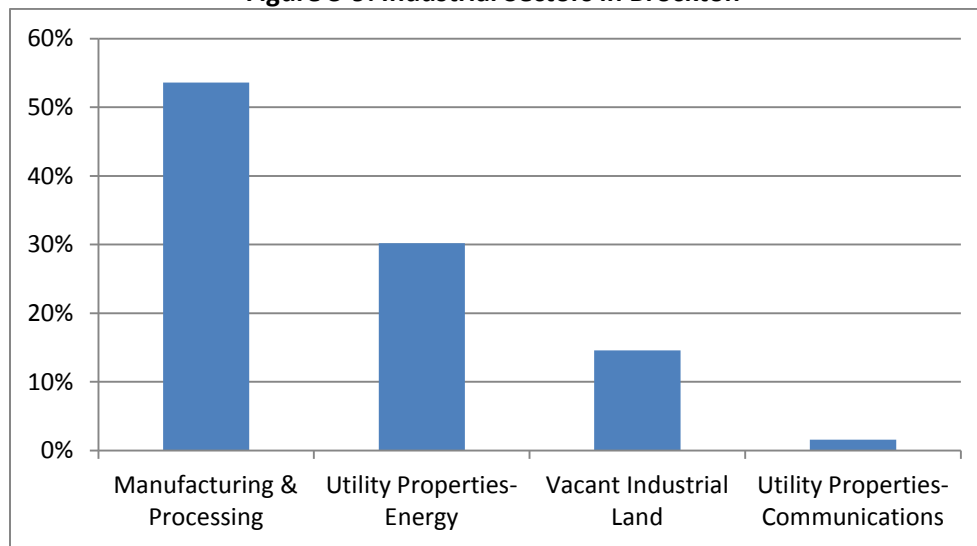


## D. INDUSTRIAL SUB-CATEGORIES USES

### 11. The majority of Brockton’s industrial land use can be categorized as Manufacturing & Processing (53.6%) and Utility Property (30.2%) uses.

Of the industrial land that remains in the city, the majority (53.6%) of industrial land is dedicated toward the manufacturing and processing of goods and includes the land, buildings, warehouses, and offices associated with such activities. The second largest segment of industrial land in the city is for utility properties. Utility properties comprise 30.2% of the industrial land and include properties primarily associated with the storage and distribution of energy, primarily electricity and gas.

**Figure 3-9: Industrial Sectors in Brockton<sup>40</sup>**



## E. CONFLICTS

### 12. Only 47.6% of the industrially zoned land in Brockton has an industrial land use.

Of the 911.8 acres of industrially zoned land in Brockton, only 425.6 acres has an industrial land use. As seen in Figure 3-10 below, industrially zoned land in Brockton has a variety of uses. Figure 3-11 on the following page highlights industrially zoned parcels that do not have an industrial land use.

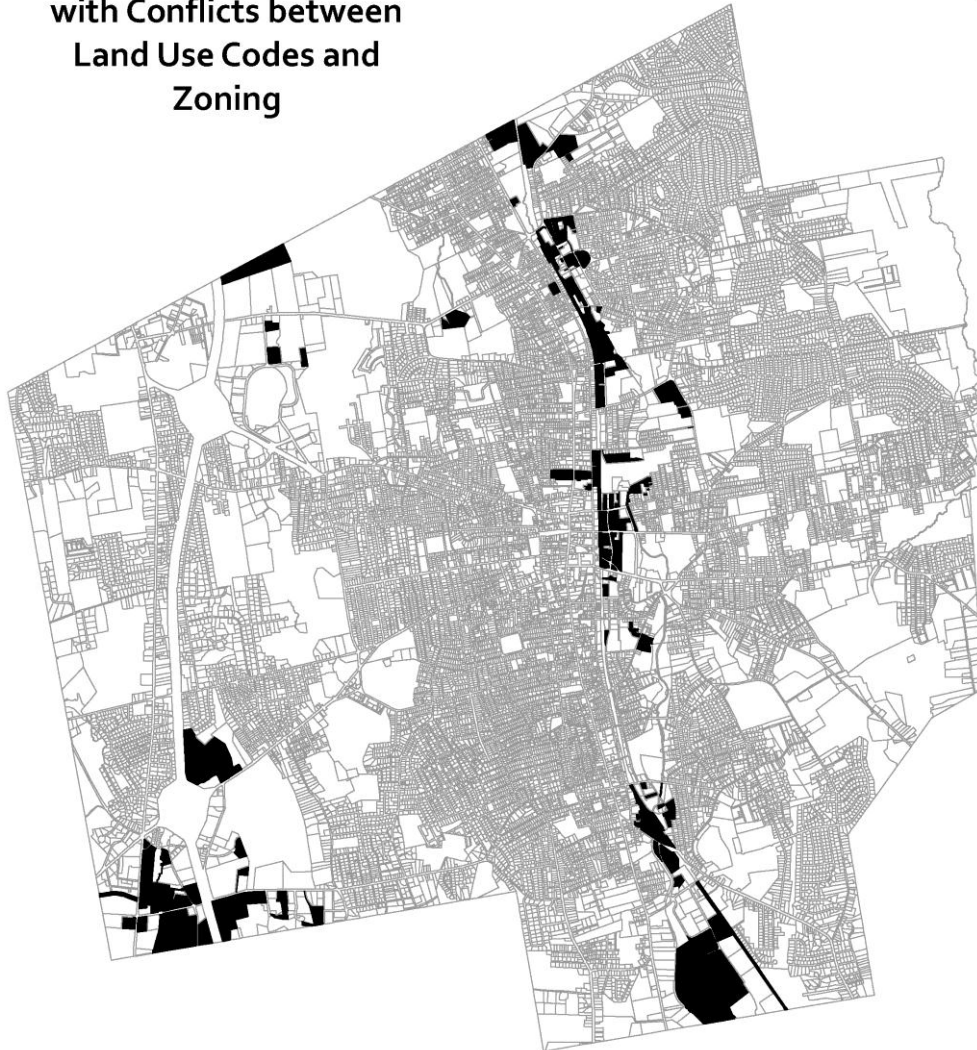
**Figure 3-10: Land Uses within Industrial Zoned Land**

Land Use (Code)	Area	
	Acres	Percentage
Residential (Code 1)	15.4	1.7%
Commercial (Code 3)	277.2	30.4%
Industrial (Code 4)	425.6	46.7%
Civic & Institutional (Codes 2,6, 7, 8, 9)	193.6	21.2%
Total	911.8	100.0%

<sup>40</sup> MassGIS

**Figure 3-11: Industrial Lots with Conflicts between Land Use Codes & Zoning**

**Industrial Lots  
with Conflicts between  
Land Use Codes and  
Zoning**

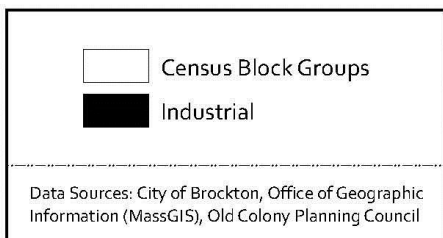
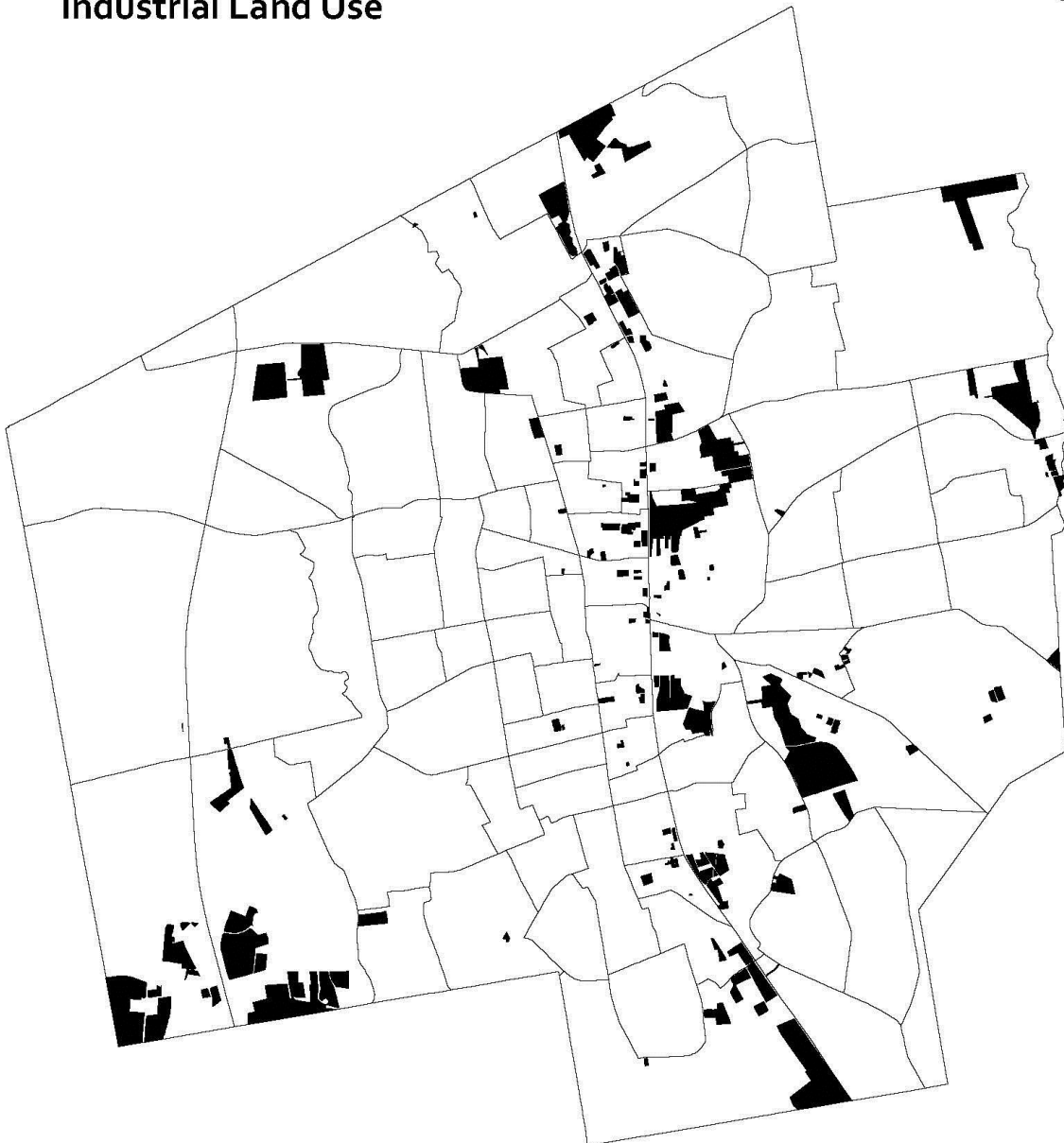


Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council

Figure 3-12: Industrial Land Use in Brockton



## Industrial Land Use





## 4. RESIDENTIAL LAND USE

### A. HISTORY OF RESIDENTIAL LAND USE

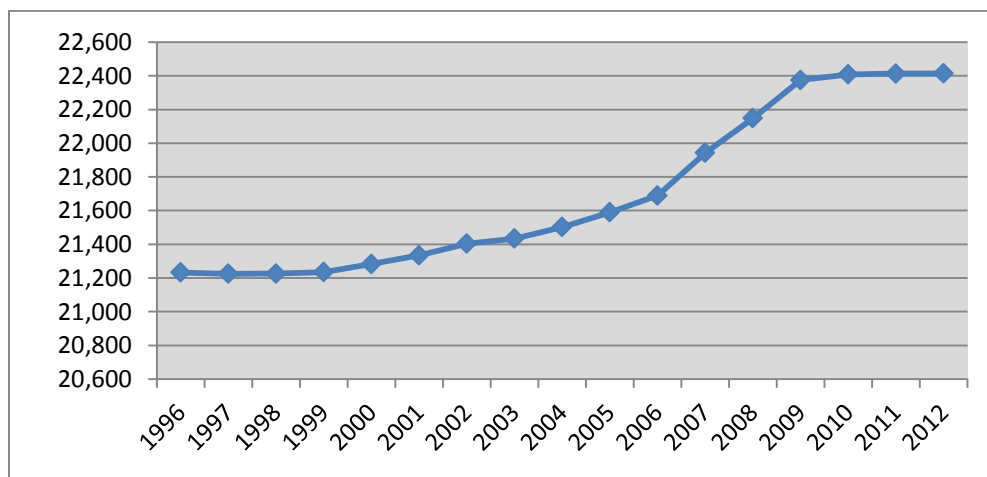
#### **1. Residential development in Brockton was closely tied to the city's rise as commercial and industrial center.**

Early residential settlements in Brockton primarily consisted of scattered farmhouses with some crossroads clustering. It was not until the city established itself as a shoe and boot manufacturing center in the mid-nineteenth century, that considerable residential growth occurred. Residential growth was initially focused around the centers of industry in the city - the Downtown, the Campello and Montello neighborhoods. This resulted in the elongated growth of the city, specifically along Main and Montello Streets. Residential growth continued to expand into the late nineteenth century as a result of the conversion of horsecar routes to trolley lines, which created "streetcar suburbs" of duplexes and triple-deckers along many major roads in the city. Residential growth continued throughout the twentieth century, with much of it occurring on the city's periphery, where the land remained undeveloped.

#### **2. From 2000 to 2010, Brockton experienced a sharp increase in the number of residential parcels.**

As illustrated in Figure 4-1, Brockton had approximately 21,200 residential parcels in 1996, a number which remained relatively steady until the year 2000, when the number of residential parcels began to increase. This increase, which was part of the larger national real estate boom, saw the number of residential parcels in the city increase by 1,125 or 5.28% from 21,283 in 2000 to 22,408 in 2010. The increase was led by brisk condominium development in the city, which accounted for more than half of all new residential parcels during this time, as the number of condominiums increased by 38.2% from 1,477 in 2000 to 2,043 in 2010.<sup>41</sup> Two of the more prominent condominium developments in the city during this time period involved the renovation of two former mill buildings in the downtown; the Lofts at SoCo and SoCo 146, which were transformed into 64 and 72 new condominiums respectively.

**Figure 4-1: Number of Residential Parcels (including Condo Units)<sup>42</sup>**



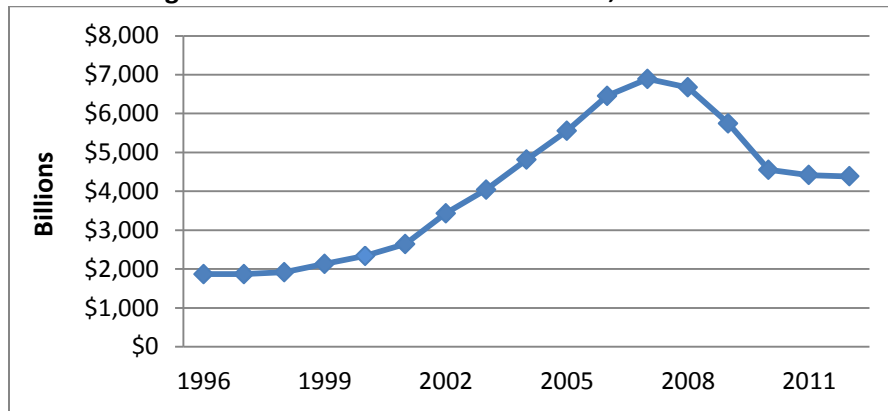
<sup>41</sup> Massachusetts Department of Revenue, Division of Local Services, Municipal Databank/Local Aid Section, Parcel Counts by Usage Code, 2015

<sup>42</sup> *Ibid.*

**3. Brockton’s residential land value has increased considerably since 2000 and peaked in 2008. Since 2008 however, Brockton’s residential land value has declined.**

From the period of 2000 through 2008, Brockton’s residential market followed the national trend of increasing home values. The city however fell victim to the national housing market’s steep decline in the years that followed and was particularly susceptible to foreclosures caused by the subprime mortgage crises. As a result, Brockton suffered from some of the highest foreclosure rates in the state.

**Figure 4-2: Residential Land Use Value, 1996-2012<sup>43</sup>**

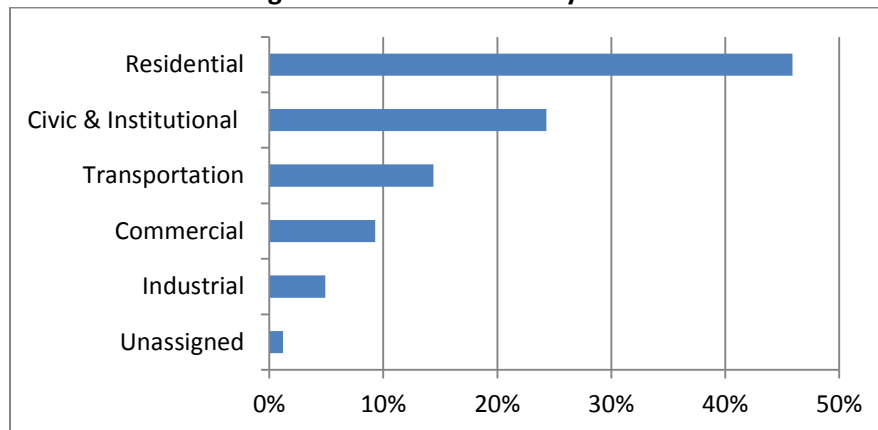


**B. CURRENT CONDITIONS**

**4. The majority of Brockton’s land is used for residential use (6,317.6 acres or 45.9% of the total land area). During the last decade most new housing that has been constructed has been in the form of high-density housing in the downtown.**

With almost 46% of its land area dedicated to residential uses, Brockton has an array of housing opportunities throughout the city. As illustrated in Figure 4-3, no other use represents a comparable share of Brockton’s overall land use distribution.

**Figure 4-3: Use of Land Citywide<sup>44</sup>**



<sup>43</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015

<sup>44</sup> MassGIS

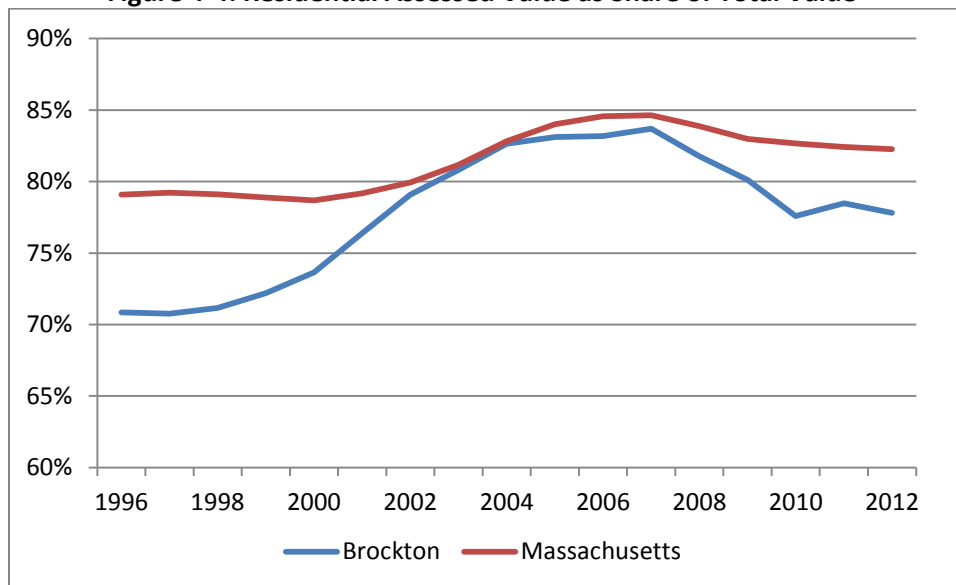
**5. Despite scarce land resources in Brockton, there remains a modest amount of vacant residential land available.**

Vacant residential land accounts for 718 acres or 11% of the total residential land in Brockton. Of these 718 acres, 337 acres or approximately 5% of residential land is categorized as developable residential land (land that has the potential to be developed), whereas 381 acres or approximately 6% of residential land is categorized as undevelopable residential land (land that cannot be developed due to its size, shape, frontage, topography or location).<sup>45</sup>

**6. Brockton's residential assessed value increased a dramatic 234.9% from \$1.87 billion in 1996 to \$4.39 billion in 2012. Due to this dramatic increase, the city's percentage of residential assessed value relative to the city's overall assessed value has increased from 70.8% to 77.8% over the same time period.**

The nominal assessed value of residential property in Brockton rose almost 235% over the last 17 years. This was slightly less than the almost 266% surge the Commonwealth experienced during the same time period, which saw the assessed value of residential property increase from \$279.98 billion in 1996 to \$744.44 billion in 2012. As is seen in Figure 4-4, both Brockton and the Commonwealth saw their residential assessed value as a share of their total value increase, with Brockton experiencing a 7.0% increase, and the Commonwealth experiencing a 3.2% increase. The impact of the Great Recession impacted Brockton more than most communities and resulted in a steep decline in home values and a record number of foreclosures.

**Figure 4-4: Residential Assessed Value as Share of Total Value<sup>46</sup>**



<sup>45</sup> *Ibid.*

<sup>46</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class

**7. Almost two-thirds of the City's total tax levy is generated from residential uses.<sup>47</sup>**

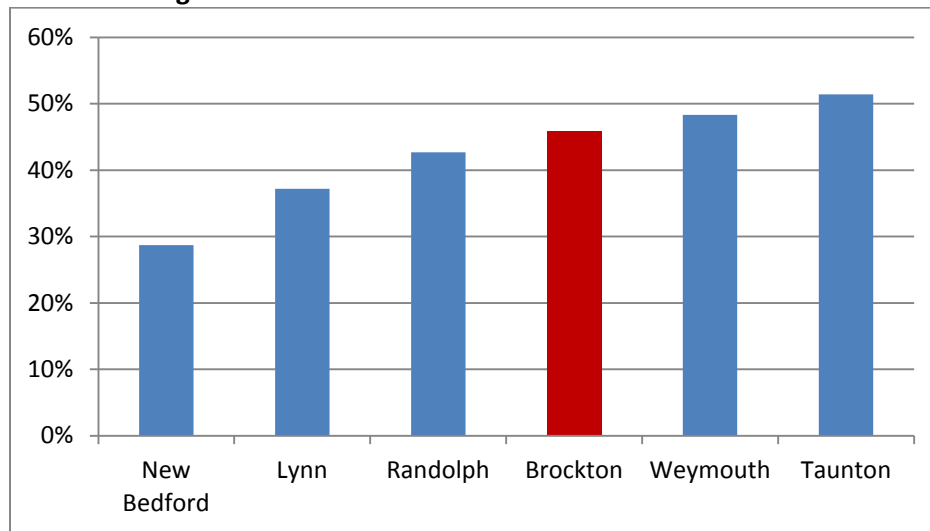
Like most communities across the Commonwealth, the majority of Brockton's tax levy is from residential use. Based on FY2012 data from the Massachusetts Department of Revenue, the tax revenue derived from residential uses accounted for slightly more \$70.7 million or 65.4% of the city's total annual levy.

**C. REGIONAL COMPARISON**

**8. Almost half of Brockton's land is utilized for residential purposes.**

Approximately 46% of Brockton's land is utilized for residential purposes. When examining the percentage of residential land in each of the comparison communities, Brockton is at the higher end, trailing only Taunton and Weymouth.

**Figure 4-5: Residential Land as % of Total Land Area<sup>48</sup>**



Brockton's residential property is divided into 22,063 parcels, representing 87.7% of Brockton's 25,152 parcels. The size of the average residential parcel in Brockton is approximately 12,473 square feet.

**Figure 4-6: Variety of Housing Types in Brockton**



*From Left to Right: Chateaux Westgate Apartment Complex; Brockton Housing Authority's Campello Towers; SoCo Loft Apartments; Single-Family residences on the east-side of the City.*

<sup>47</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Tax Levies by Class

<sup>48</sup> MassGIS



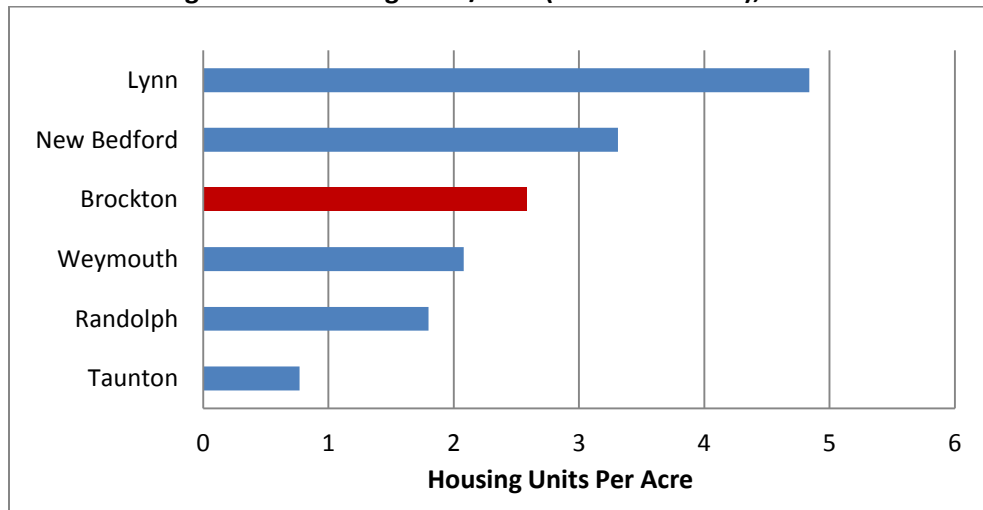
**9. Brockton has the third highest residential density among the comparison communities.**

Brockton’s average residential unit density is 1,625 units/square mile, or approximately 2.58 units per acre. As illustrated in Figures 4-7 & 4-8, Brockton has the third highest overall residential density among the comparison communities (total housing units/total land area) when taking total land area into account. Among the comparison communities, only Lynn and New Bedford have a higher number of housing units per acre.

**Figure 4-7: Housing Units/Acre (Total Land Area), 2010<sup>49</sup>**

Community	Housing Units, 2010	Land Area, Square Miles	Land Area, Acres	Units/Acre
Lynn	35,776	11.54	7,385.6	4.84
New Bedford	42,933	20.28	12,981.2	3.31
Brockton	35,552	21.52	13,772.8	2.58
Weymouth	23,480	17.68	11,315.2	2.08
Randolph	12,008	10.41	6,662.4	1.80
Taunton	23,896	48.47	31,020.8	0.77

**Figure 4-8: Housing Units/Acre (Total Land Area), 2010<sup>50</sup>**



A more accurate understanding of housing unit density can be achieved by analyzing the total housing units per acre of residential land. This density calculation can eliminate biases created by the presence of large areas of non-residential land use, such as shopping malls, institutional uses (hospitals, schools, etc.) and open space.

Brockton has approximately 6,317.6 acres of residential use, yielding a density calculation of 5.63 housing units/residential acre. As illustrated in Figures 4-9 & 4-10, Lynn (13.0) and New Bedford (11.5) have significantly higher housing/residential density values than Brockton. Weymouth and Randolph are

<sup>49</sup> U.S. Census 2010, MassGIS

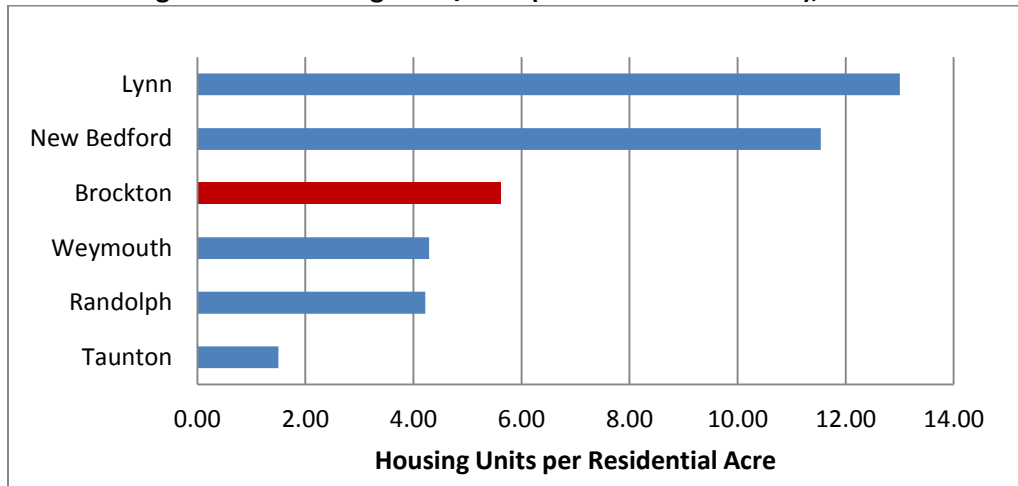
<sup>50</sup> *Ibid.*

slightly below Brockton, with a density of 4.3 and 4.2 units/residential acre respectively, while Taunton trails with just 1.5 units/residential acre.

**Figure 4-9: Housing Units/Acre (Residential Land Area), 2010<sup>51</sup>**

Community	Housing Units, 2010	Residential Acres	Units/ Residential Acre
Lynn	35,776	2,751.8	13.0
New Bedford	42,933	3,719.7	11.5
Brockton	35,552	6,317.6	5.6
Weymouth	23,480	5,467.3	4.3
Randolph	12,008	2,843.7	4.2
Taunton	23,896	15,958.9	1.5

**Figure 4-10: Housing Units/Acre (Residential Land Area), 2010<sup>52</sup>**

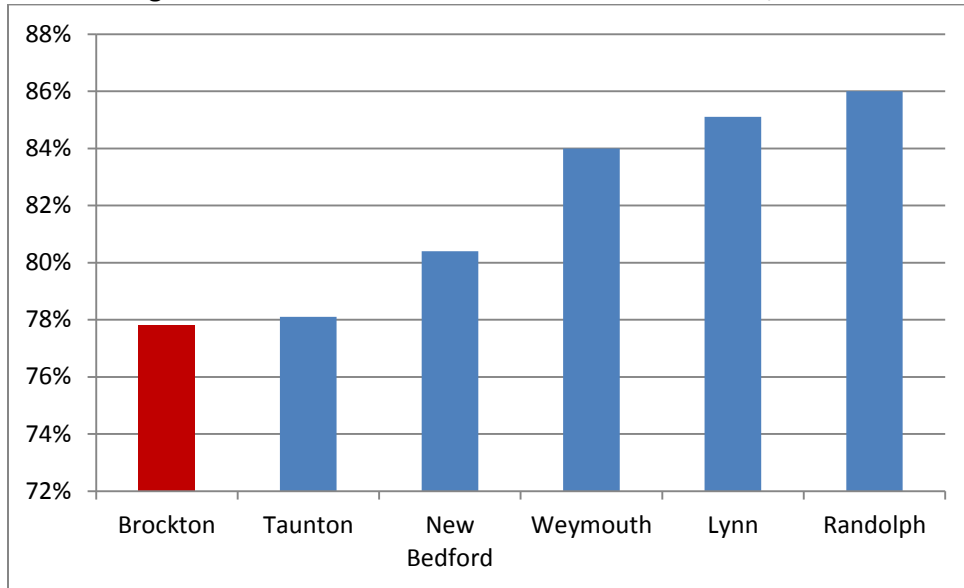


<sup>51</sup> *Ibid.*

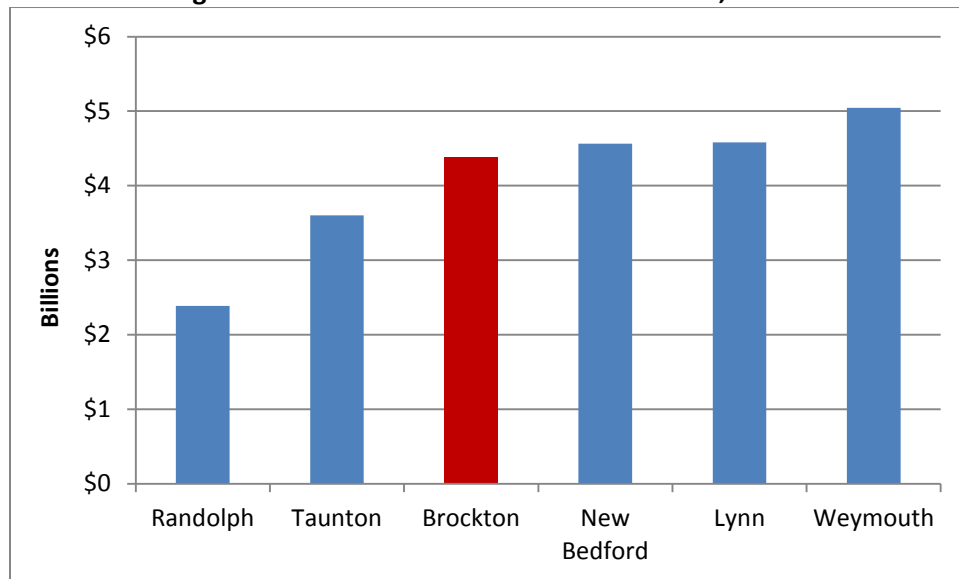
<sup>52</sup> *Ibid.*

**10. Approximately 78% of the total assessed land value in Brockton comes from residential land.**

**Figure 4-11: Residential Assessed Value as % of Total, 2012<sup>53</sup>**



**Figure 4-12: Total Residential Assessed Value, 2012<sup>54</sup>**

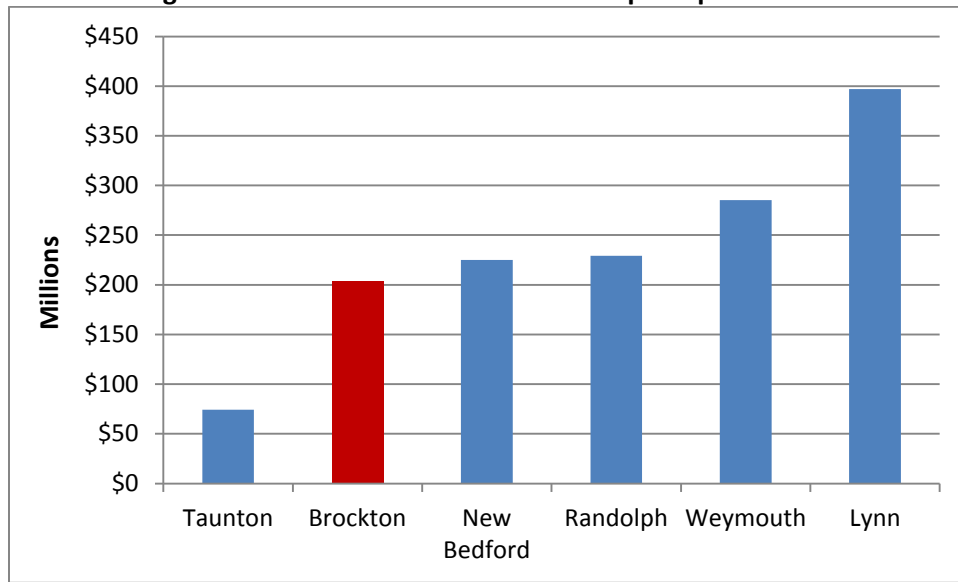


Amongst the comparison communities, Brockton has the lowest percentage of residential assessed value relative to a community’s total assessed value. This is mainly due to the fact that Brockton has the highest percentage (16.0%) of commercial assessed value relative to a community’s total assessed value among the comparison communities. When comparing Brockton’s total assessed residential value, it is very similar to the two other older industrial Gateway Cities of New Bedford and Lynn.

<sup>53</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class

<sup>54</sup> Ibid.

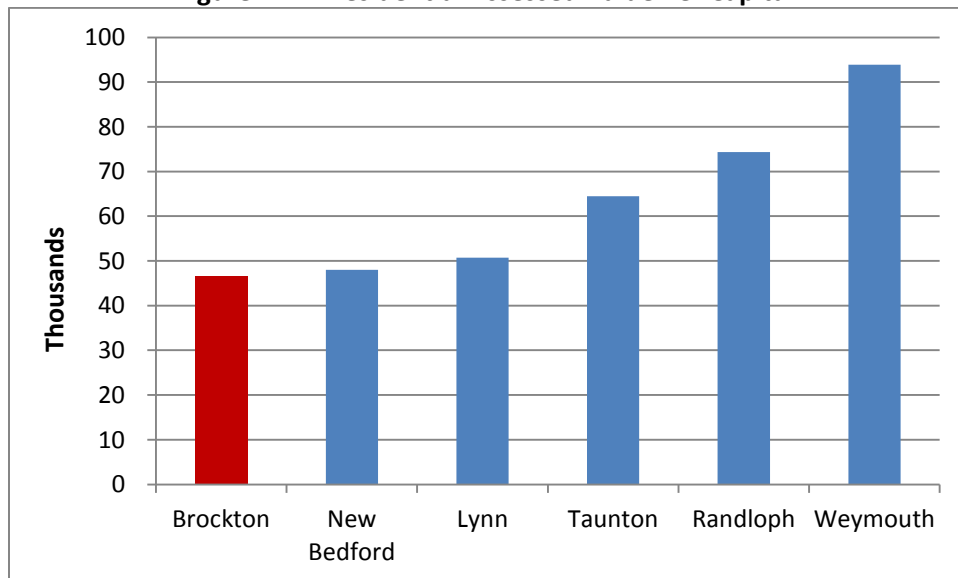
**Figure 4-13: Residential Assessed Value per Square Mile<sup>55</sup>**



**11. When considering residential assessed value on a per capita basis, it can be seen that Brockton is the lowest.**

Brockton, New Bedford and Lynn are all very closely grouped the the lowest residential assessed value per capita among the comparison communities. It should be noted that each of these communities is very similar in nature, with each being older, industrial Gateway Cities, having high populations and relatively low residential values than many of their neighbors.

**Figure 4-14: Residential Assessed Value Per Capita<sup>56</sup>**



<sup>55</sup> MassGIS & Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015

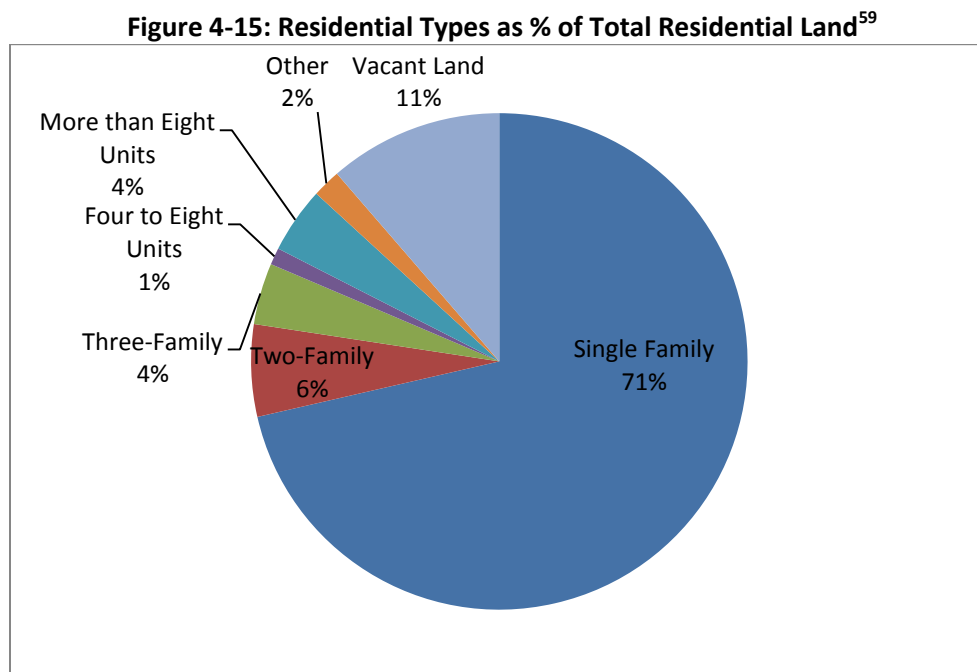
<sup>56</sup> Massachusetts Department of Revenue Division of Local Services, Municipal Databank/Local Aid Section, Assessed Values by Class, 2015 & U.S. Census

## D. RESIDENTIAL SUB-CATEGORIES USES

**12. Residential land in Brockton is primarily used for single-family residences, which accounts for 4,509 acres or 71% of residential land in the city.<sup>57</sup>**

The six most common categories of occupied residential land uses in Brockton are single-family dwellings, two-family dwellings, three-family dwellings, 4-8 unit apartment buildings, 8 (or more) unit apartment buildings and vacant land. These six categories comprise slightly more than 98% of residential land use in the city. The remaining 2% account for accessory land uses, mobile homes, boarding houses and congregate housing.

Figure 4-15 shows each of the residential land use categories, along with the percentage they comprise of total residential land.<sup>58</sup> Two-family residential properties represent approximately 380 acres of land (approximately 6% of residential land). Three-family residential properties represent approximately 251 acres of land (approximately 4% of residential land). Small apartment buildings containing 4-8 residential units represent approximately 73 acres of land (approximately 1% of residential land). Large apartment buildings containing 8+ residential units represent approximately 271 acres of land (approximately 4% of residential land). Vacant residential land represents 718 acres of land (approximately 11% of residential land).



Brockton's lengthy history as an industrial city would lead many to think that the majority of its residential land use may be devoted to multi-unit dwellings, when in reality it is the exact opposite, with the majority of residential land use (approximately 71%) devoted towards single-family housing.

<sup>57</sup> MassGIS

<sup>58</sup> *Ibid.*

<sup>59</sup> *Ibid.*

**13. Brockton’s residential stock is heavily weighted towards single-family homes on quarter-acre lots.**

Figure 4-16 identifies the mean lot size for each of Brockton’s residential types. The mean lot size for single-family residences is 11,964 square feet or 0.27 acres. The mean lot size for two-families, three-families, and residences with four to eight units is quite comparable, and ranges from 7,154 to 9,484 square feet per lot.

**Figure 4-16: Mean Lot Size<sup>60</sup>**

<b>Residential Type</b>	<b>Mean Lot Size (Square Feet)</b>
Single Family	11,964
Two-Family	8,252
Three-Family	7,154
Four to Eight Units	9,484
More than Eight Units	108,380

**14. Brockton’s housing density varies throughout the city, with the Downtown area having the highest housing density with more than 5 units per acre, whereas the city’s periphery is less dense, especially the west side of the city, where there is less than 1 unit per acre.**

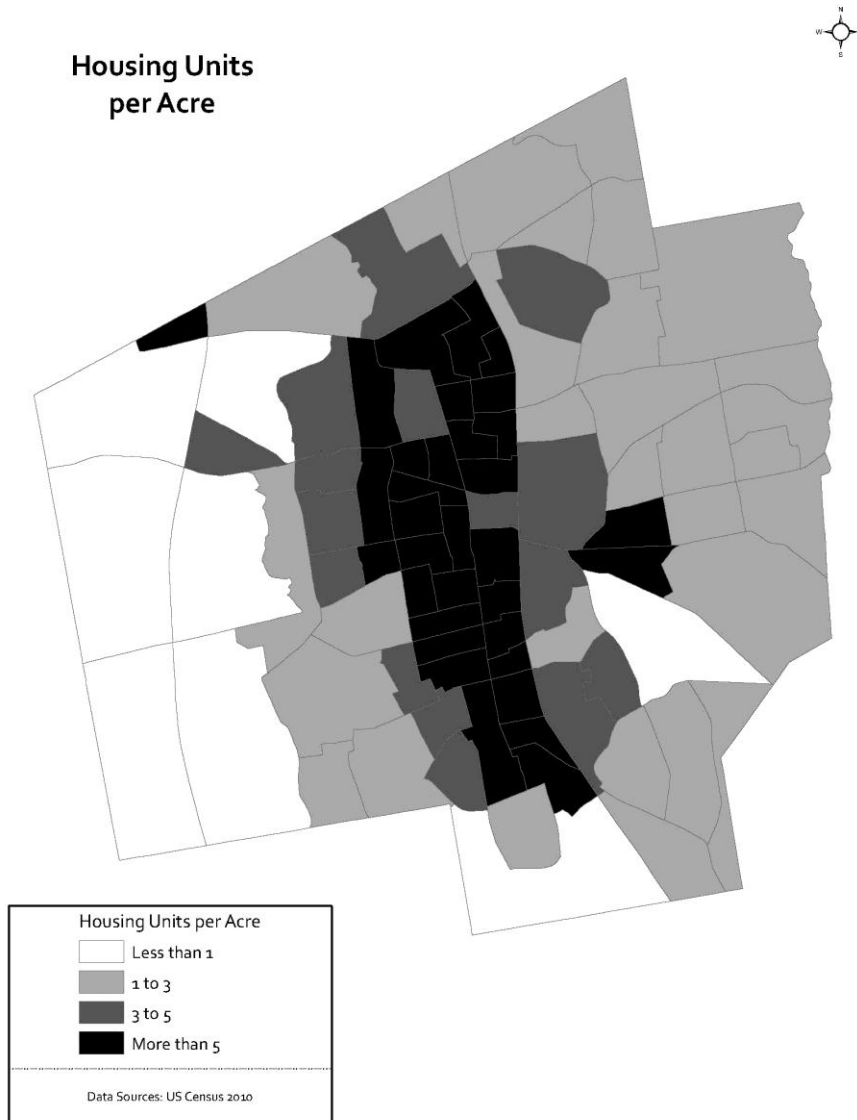
Brockton has a mix of housing types, but they are segregated, with the downtown area containing a number of multi-family, apartment and condominium residences, whereas the city’s periphery contains mostly single-family housing.

An analysis of Census Block Group data as shown in Figure 4-17 below shows that the population is not equally distributed throughout the city. Brockton’s densest residential areas (with more than 5 housing units per acre) occur within the Block Groups closest to Main Street, Montello Street and Warren Avenue. Other areas of Brockton with densities above 5 units per acre are areas where a number of apartment complexes are located, such as Oak Street in the northwestern part of the city and Crescent Street on the east side of the city. In contrast, areas on the west side of the city which feature large areas of non-residential land use have many block groups with a housing density of less than 1 unit per acre.

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<sup>60</sup> *Ibid.*

Figure 4-17: Housing Units per Acre in Brockton



## E. CONFLICTS

### ***15. The conformity of residential lots as it pertains to minimum lot size requirements is largely dependent upon its zone.***

When analyzing the minimum lot size requirements of the R-1, R-2, and R-3 zones in Brockton, the R-1 Zone has the largest percentage of non-conforming lots. The R-1 zone, which has a large 30,000 square foot minimum lot size, has a small percentage (5.96%) of its lots in conformity (1,035 of 17,347 lots). The R-2 zone, which has a much smaller 5,000 square foot minimum lot size, has a much higher percentage (86.89%) of lots in conformity (2,208 of 2,541 lots). The R-3 Zone, which also has a 5,000 square foot minimum lot size, also has a high percentage (73.93%) of lots in conformity (1,804 of 2,440 lots).

**16. When analyzing average residential lot sizes, the vast majority are below the average.**

When analyzing the average residential lot sizes in the R-1, R-2, and R-3 zones, most lots are below the average in each zone. In the R-1 zone, the average lot size is 20,727 square feet. 89.7% or 15,568 of the 17,347 lots are below the average. In the R-2 zone, the average lot size is 10,549 square feet. 84.4% or 2,146 of the 2,541 lots are below the average. In the R-3 zone, the average lot size is 10,465 square feet. 87.1% or 2,126 of the 2,440 lots are below the average. Figures 4-18 to 4-20 below highlight lots within each zoning district that are below the district's average size.

**Figure 4-18: R-1 Lots Below Average Size**

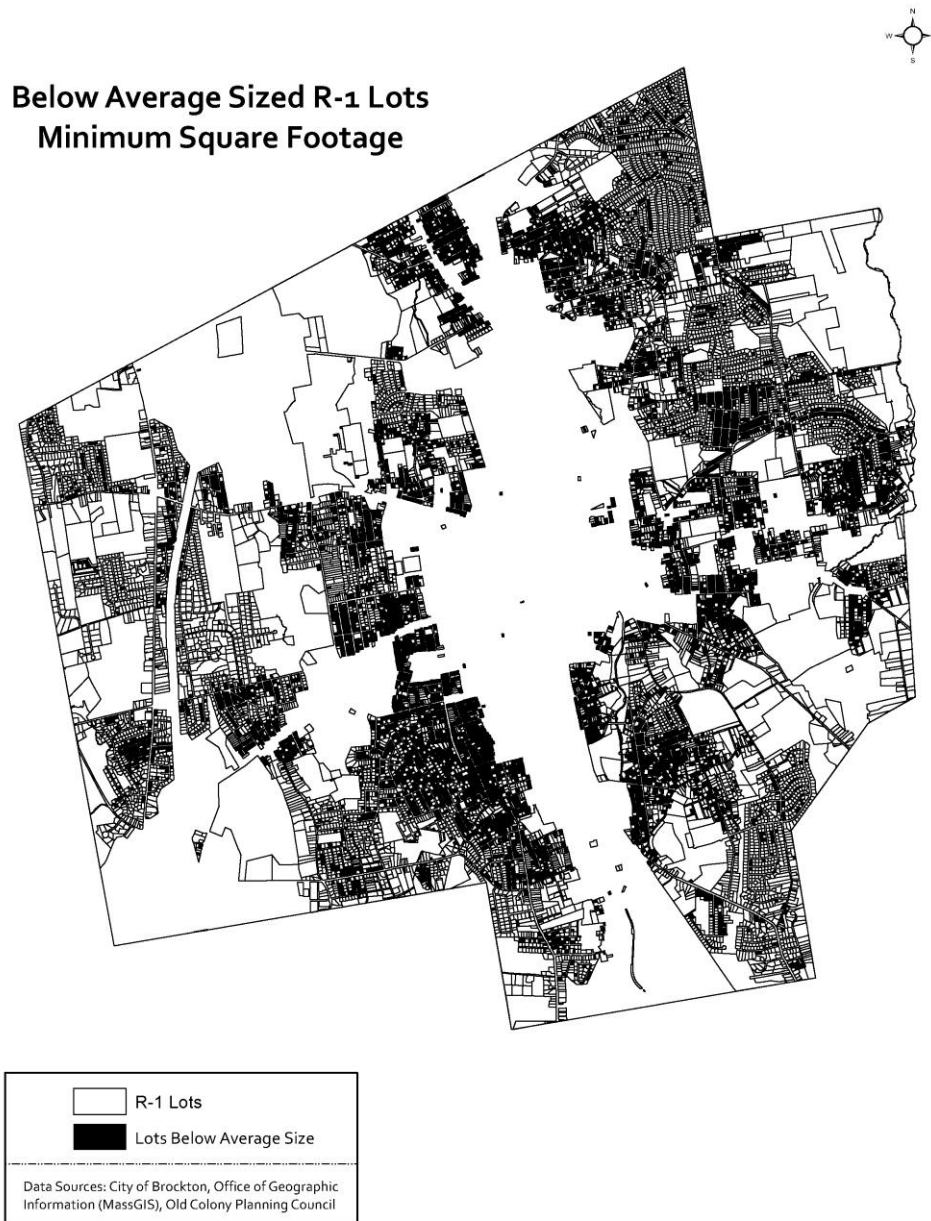
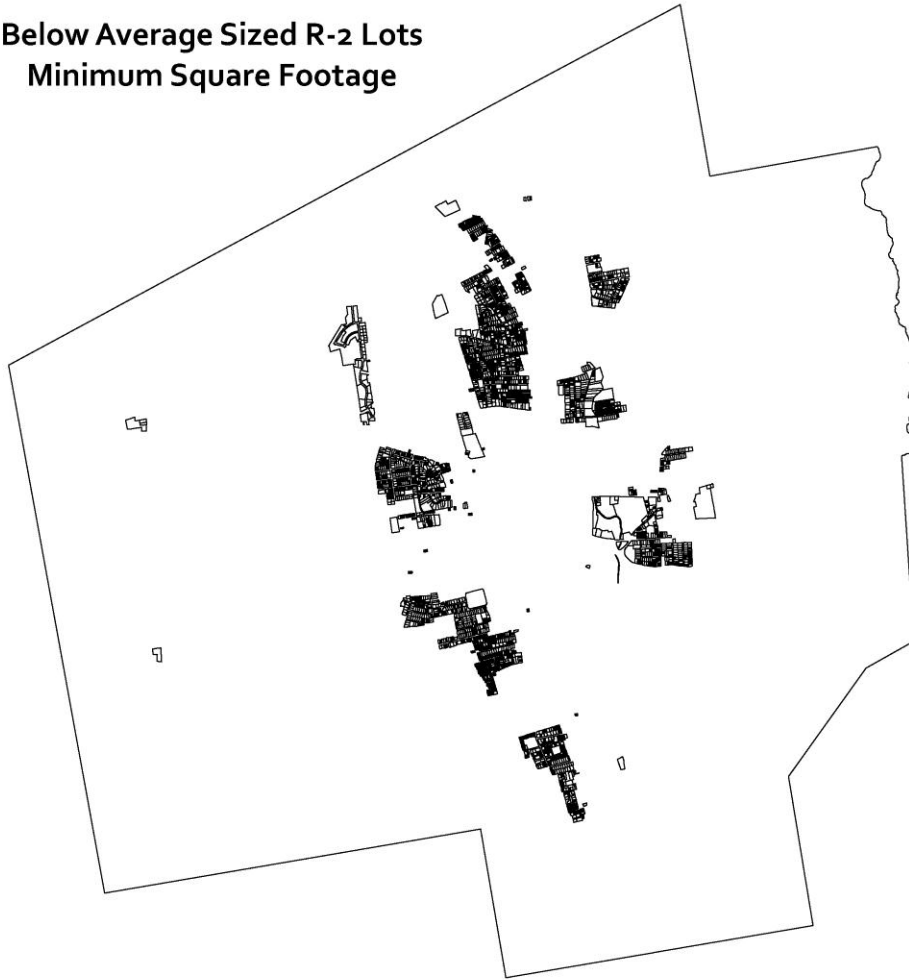




Figure 4-19: R-2 Lots Below Average Size



**Below Average Sized R-2 Lots  
Minimum Square Footage**





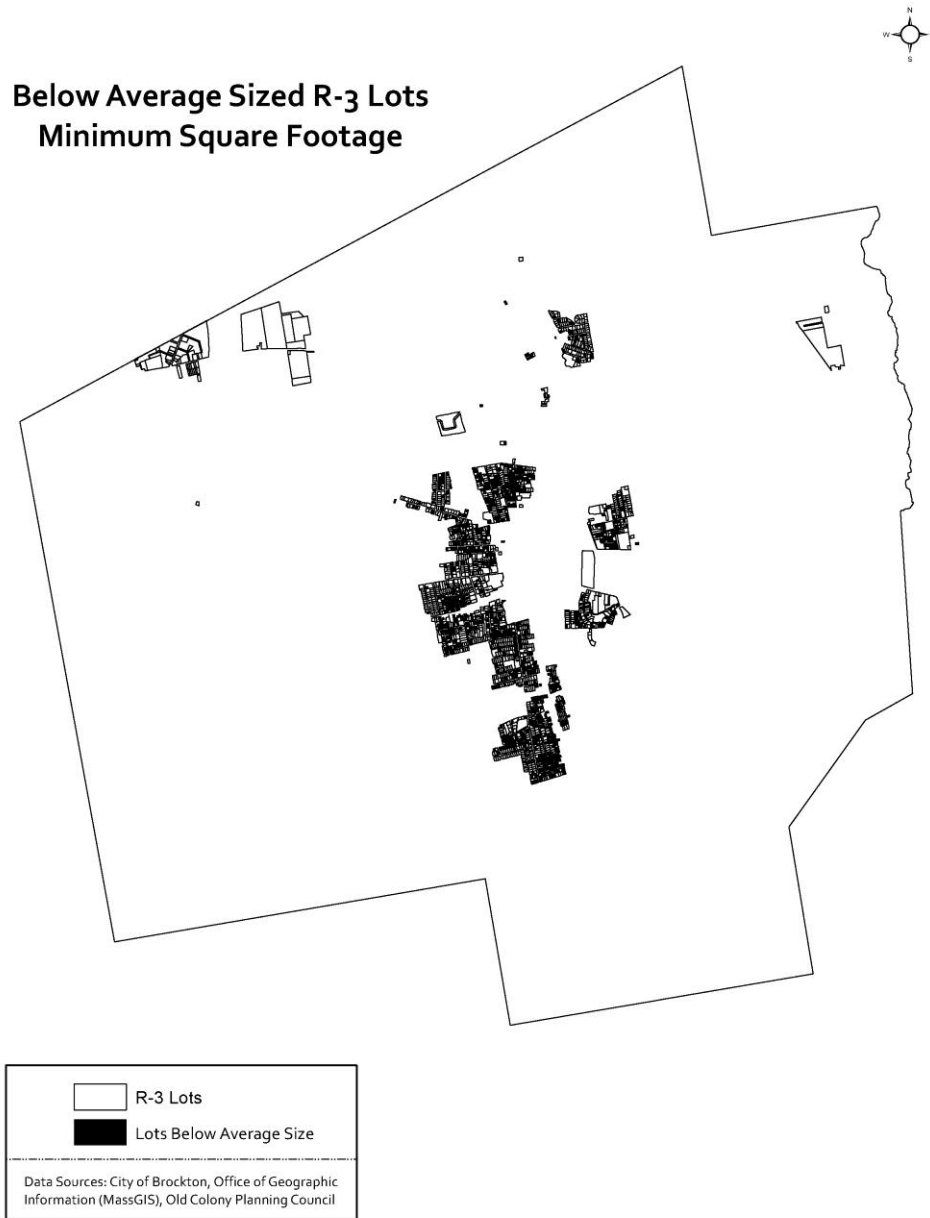
	R-2 Lots
	Lots Below Average Sized
<small>Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council</small>	

Figure 4-20: R-3 Lots Below Average Size



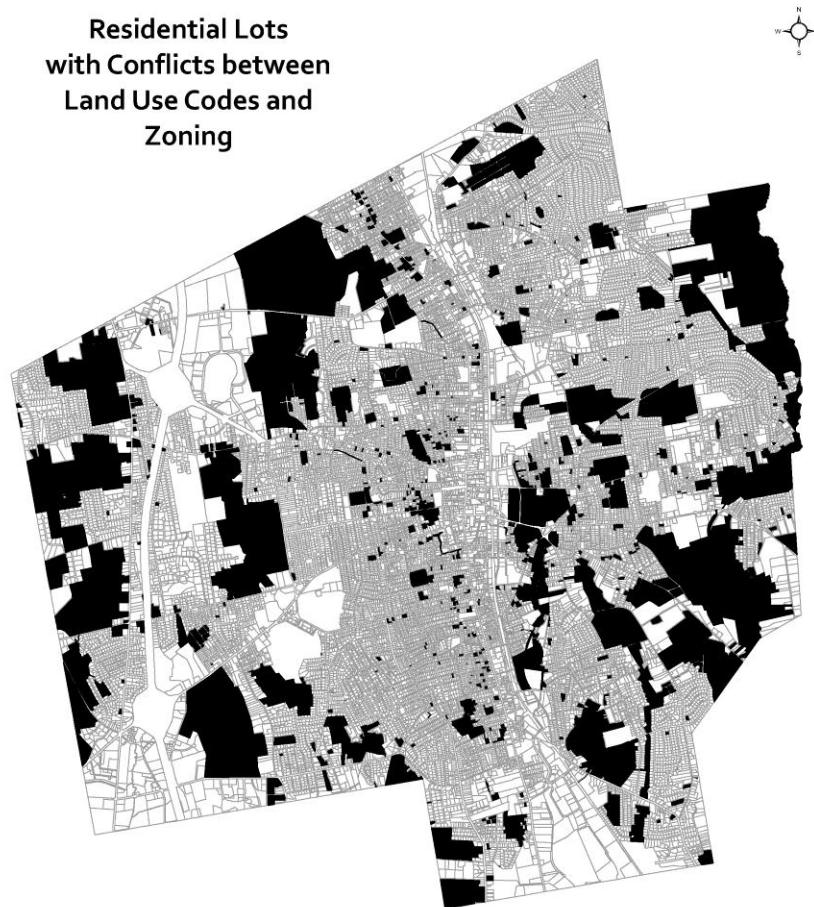
**17. 64.4% of the residentially zoned land in Brockton has a residential land use.**

Of the 9,472.2 acres of residentially zoned land in Brockton, 6,097.1 acres has a residential land use. As seen in Figure 4-21 below, residentially zoned land in Brockton has a variety of uses. Figure 4-22 highlights residentially zoned parcels that do not have a residential land use.

**Figure 4-21: Land Uses within Residential Zoned Land**

Land Use (Code)	Area	
	Acres	Percentage
Residential (Code 1)	6,097.1	64.4%
Commercial (Code 3)	148.6	1.6%
Industrial (Code 4)	204.3	2.2%
Civic & Institutional (Codes 2,6, 7, 8, 9)	3,022.2	31.9%
Total	9,472.2	100.0%

**Figure 4-22: Residential Lots with Conflicts between Land Use Codes & Zoning**





Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council

Figure 4-23: Residential Land Use in Brockton



## Residential Land Use



	Census Block Groups
	Residential

Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council

## 5. CIVIC & INSTITUTIONAL LAND USE

Civic and institutional land uses are properties that benefit the public good. They are lands owned by a governmental entity at the municipal, state or federal level or lands owned by a non-profit, charitable or religious organization. These properties include lands used for a variety of purposes such as schools, hospitals, roadways and open spaces. Open space and transportation uses are the largest subset of civic and institutional uses and are discussed in further detail below.

**1. Civic and institutional land uses occupy 5,321.3 acres or 38.6% of the land in Brockton. This is the second largest land use category behind residential uses (45.9% of land), and comprises more than twice the land area than all of the commercial and industrial lands combined (1,964 acres).**

**Figure 5-1: Civic and Institutional Land Uses by Type<sup>61</sup>**

	Acres	% of Total Civic Lands	% of Total Land (13,773 acres)	
<b>Civic &amp; Institutional Lands</b>	<b>3,341.8</b>	<b>62.8%</b>	<b>24.2%</b>	
Vacant & Improved Land, Tax Title/Treasurer	1,064.9	31.9%		
Municipal Education	374.6	11.2%		
Active Recreation	334.5	10.0%		
Comm. of Massachusetts (Dept. of Cons. & Rec.)	219.4	6.6%		
Churches, Synagogues & Temples (Religious Uses)	200.9	6.0%		
Unites States Government (Miscellaneous)	178.5	5.3%		
Agricultural Land (Chapter 61 Land)	131.2	3.9%		
Vacant Conservation Land	119.7	3.6%		
Community College	103.5	3.1%		
Housing Authority	98.0	2.9%		
Utility Authority	72.9	2.2%		
Cemeteries	45.8	1.4%		
Charitable Housing	38.8	1.2%		
Golfing (Chapter 61 Land)	37.7	1.1%		
Private Education	37.7	1.1%		
Charitable Services	35.6	1.1%		
All Other Civic & Institutional Lands	248.1	7.4%		
<b>Transportation &amp; Infrastructure Lands</b>	<b>1,979.5</b>	<b>37.2%</b>		<b>14.4%</b>
Right of Way-Road	1,918.8	96.9%		
Right of Way-Rail	60.7	3.1%		
<b>Total Civic &amp; Institutional Lands</b>	<b>5,321.3</b>	<b>100%</b>	<b>38.6%</b>	

<sup>61</sup> MassGIS

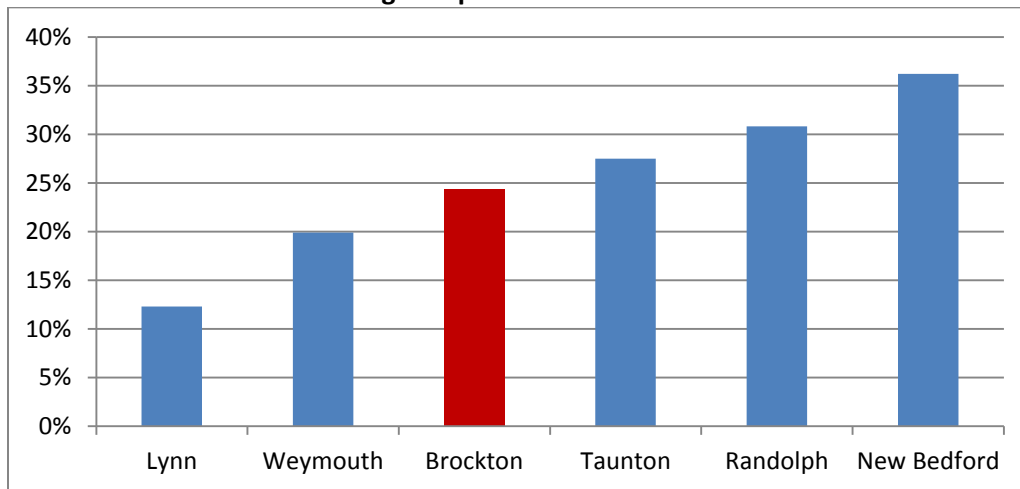
**2. The top five civic and institutional land uses in Brockton account for approximately two-thirds of all its civic and institutional uses.**

When transportation land use is excluded from consideration, the remaining civic and institutional uses occupy 3,341.8 acres, or approximately 24.2% of the city’s total land area. 65.7% of the civic and institutional lands are associated with five specific uses; vacant and improved tax title/treasurer (31.9%), municipal education (11.2%), active recreation (10.0%), land owned by the Commonwealth’s Department of Conservation & Recreation (6.6%), and religious institutions (6.0%).

**3. Brockton has less land dedicated to civic and institutional uses than other comparison communities.**

When transportation land use is excluded from consideration, Brockton has less land devoted to civic and institutional uses than several of the comparison communities, as can be seen in Figure 5-2 below. The comparison places Brockton in the middle when compared to the other communities. New Bedford has a substantial percentage of civic and institutional land use largely due to the presence of parts of the 2,000+ acre Acushnet Cedar Swamp State Reservation.

**Figure 5-2: Percentage of Land devoted to Civic and Institutional Uses  
Among Comparison Communities<sup>62</sup>**



<sup>62</sup> Ibid.

## A. OPEN SPACE

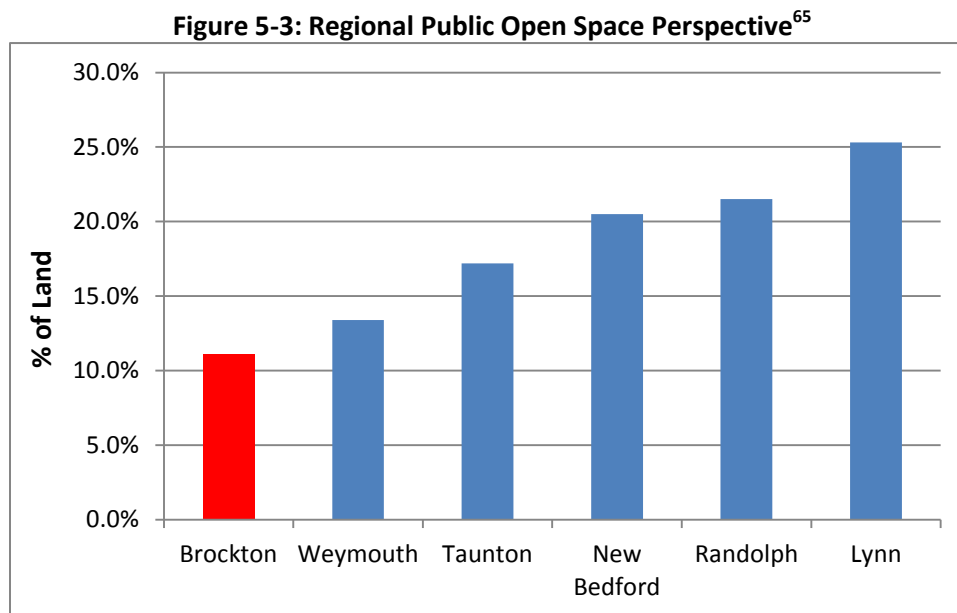
The Massachusetts Division of Conservation Services *Open Space and Recreation Planner's Workbook* refers to open space as "conservation land, forested land, recreation land, agricultural land, corridor parks and amenities such as small parks, green buffers along roadways or any open area that is owned by an agency or organization dedicated to conservation. However, the term can also refer to undeveloped land with particular conservation or recreation interest. This includes vacant lots and brownfields that can be redeveloped into recreation areas."<sup>63</sup>

Brockton has been able to offer its residents a variety of open space and recreational opportunities, despite the vast majority of the city being developed. These opportunities include conservation and nature areas as well as a number of playgrounds, playing fields, basketball courts, tennis courts, and swimming pools.

### 4. Open space accounts for approximately 11.1% of Brockton's total land area, which is the second lowest among the comparison communities.<sup>64</sup>

Brockton's open space land area totals approximately 1,529 acres or 11.1% of the total land area according to the *City of Brockton 2013 Open Space and Recreation Plan*. Of this, approximately 8.10% (approximately 1,115 acres) is publicly-owned land and the rest, 3.01% (approximately 414 acres) is privately owned. Privately owned open space includes the Brockton Audubon Preserve, Brockton Fairgrounds, Brockton Country Club, Wedgewood Country Club, and Thorny Lea Golf Course.

When comparing Brockton to the other comparison communities, Brockton has the second lowest percentage of available public open space, accounting for approximately 8.10% of total city land.



<sup>63</sup> Executive Office of Energy and Environmental Affairs, Massachusetts Division of Conservation Services *Open Space and Recreation Planners Workbook* (March 2008 revision)

<sup>64</sup> MassGIS Protected and Recreational Open Space Data Layer, 2015

<sup>65</sup> *Ibid.*

Public open space supports a number of different uses, including both passive and active recreation activities as well as providing a natural habitat for area wildlife. 96.5% (1,075.77 acres) of public open space in the city is owned by the City of Brockton. The remaining 3.5% is owned by the Commonwealth of Massachusetts in the form of athletic fields at Massasoit Community College (36.36 acres) and parts of Ames Nowell State Park that stretch into Brockton (2.50 acres).

In addition to Brockton’s parks and open spaces, residents have access to other regional open and natural spaces.

**Figure 5-4: Public and Private Open Space, by ownership<sup>66</sup>**

<b>Public Open Space</b>	<b>Acres</b>
City-Owned	1,075.77
State-Owned	38.87
<b>Total Public Open Space (City &amp; State)</b>	<b>1,114.63</b>
<b>Percentage of Open Space Land Area</b>	<b>8.09%</b>
<b>Private Open Space</b>	<b>Acres</b>
Thorny Lea Golf Club	136.69
Brockton Audubon Preserve	111.37
Brockton Fairgrounds	46.40
Calvary Cemetery	41.23
Wedgewood Country Club	31.56
Brockton Country Club	31.01
Plymouth Rock Cemeteries	5.50
Saint Patrick’s Cemetery	4.76
Former East Side Improvement Park Property	2.93
Our Lady of Sorrows Convent Cemetery	2.04
Thayer Cemetery	0.48
<b>Total Private Open Space</b>	<b>413.97</b>
<b>Percentage of Open Space Land Area</b>	<b>3.01%</b>
<b>TOTAL OPEN SPACE (City, State, Private)</b>	<b>1,528.6</b>
<i>TOTAL LAND AREA IN BROCKTON</i>	13,773.0
<b>TOTAL PERCENTAGE OF OPEN SPACE LAND AREA</b>	<b>11.1%</b>

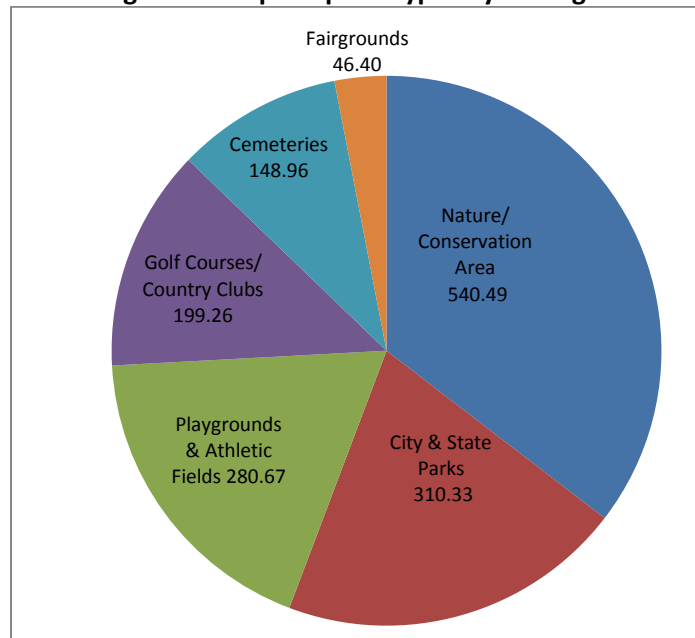
The Department of Conservation and Recreation’s 607-acre Ames Nowell State Park and 1,782-acre Borderland State Park are located in the neighboring communities of Abington and Easton, respectively. Other nearby natural attractions include the 354-acre Lake Nippenicket in Bridgewater and the 528-acre Monponsett Ponds in Halifax.

The total inventory of Brockton’s open space can be summarized in six categories: nature/conservation areas, city and state parks, playgrounds and athletic fields, golf courses and country clubs, cemeteries, and the Fairgrounds. The breakdown is shown in Figure 5-5.

<sup>66</sup> *Ibid.*



**Figure 5-5: Open Space Types by Acreage<sup>67</sup>**



Nature/Conservation areas are larger areas of open space and usually contain wetlands or other environmentally sensitive areas that are conducive for wildlife. There are 540.49 acres of nature/conservation areas in Brockton.

City and state parks are smaller area of open space that benefit the entire community by providing much needed vital green space in a dense and populated city. Residents utilize these parks for a variety of activities, including recreational activities, leisure activities, and social interactions. There are 310.33 acres of city and state parks in Brockton.

Playgrounds and athletic fields are areas of open space specifically designed for recreational and/or athletic activities, of which there are dozens spread throughout the city. There are 280.67 acres of playgrounds and athletic fields in Brockton.

**5. The greatest amount of open space is used for passive recreation (850.82 acres), followed by active recreation (479.93 acres).**

The two primary uses of open space in Brockton are for active recreation and passive recreation, as shown in Figure 5-6. Passive recreation accounts for more slightly more than 55% of the total open space and includes nature/conservation areas and city and state parks. These areas include natural areas, landscaped areas, bike and walking paths and water bodies. Active recreation accounts for slightly more than 31% of the total open space and includes playgrounds, athletic fields and golf courses. These areas include schoolyard playgrounds, recreational playgrounds, basketball courts, tennis courts, baseball fields, soccer fields, and golf courses.

<sup>67</sup> Ibid.

**Figure 5-6: Open Space Uses<sup>68</sup>**

Open Space Uses	Total Area (Acres)	Total Open Space (%)
Active Recreation	479.93	31.40%
Passive Recreation	850.82	55.66%
Cemeteries	148.96	9.74%
Fairgrounds	46.40	3.04%

**6. Brockton has the second lowest amount of open space per capita when compared to the Local Communities and Gateway Cities, with an average of 16.29 acres of open space per 1,000 residents.**

Open space in Brockton is somewhat scarce. This scarcity can be attributed to the city’s development as a manufacturing center in the late 19<sup>th</sup> and early 20<sup>th</sup> century and as an affordable suburb of Boston in the mid-20th century. When compared to comparison communities, Brockton has the lowest ratio of open space per 1,000 residents, whereas Taunton has the highest amount of open space per 1,000 residents, primarily due to its large land area, low population, and suburban land use pattern.

**Figure 5-7: Open Space per 1,000 Residents**

Community	Open Space Acres	Per 1,000 Residents	Ranking
Taunton	5,321.38	95.24	1
Randolph	1,434.95	44.69	2
Weymouth	1,512.84	28.15	3
New Bedford	2,657.28	27.95	4
Lynn	1,870.03	20.70	5
Brockton	1,528.62	16.29	6

**7. Brockton has approximately 913 acres of open space protected in perpetuity.**

As is shown in Figure 5-8, Brockton has approximately 913 acres or 60% of its open space protected in perpetuity. Properties protected in perpetuity are considered so only if they have a deed restriction or received funding through the Land and Water Conservation Fund Protection (LWCF). Examples of Brockton open spaces that are protected in perpetuity include D.W. Field Park, Beaver Brook Conservation Area, Brockton Audubon Preserve, Stone Farm Conservation Area, and Washburn Meadow Conservation Area. Properties considered to have limited protection include properties protected through functional or traditional use and include lands likely to remain open space such as cemeteries, playgrounds and athletic fields.

**Figure 5-8: Open Space Protection<sup>69</sup>**

Level of Protection	Total Area (Acres)	Number of Parcels	Total Open Space %
In Perpetuity	913.44	55	59.76
Limited Protection	315.74	41	20.66
None	299.44	8	19.59
<b>Totals</b>	<b>1528.62</b>	<b>104</b>	<b>100%</b>

<sup>68</sup> *Ibid.*

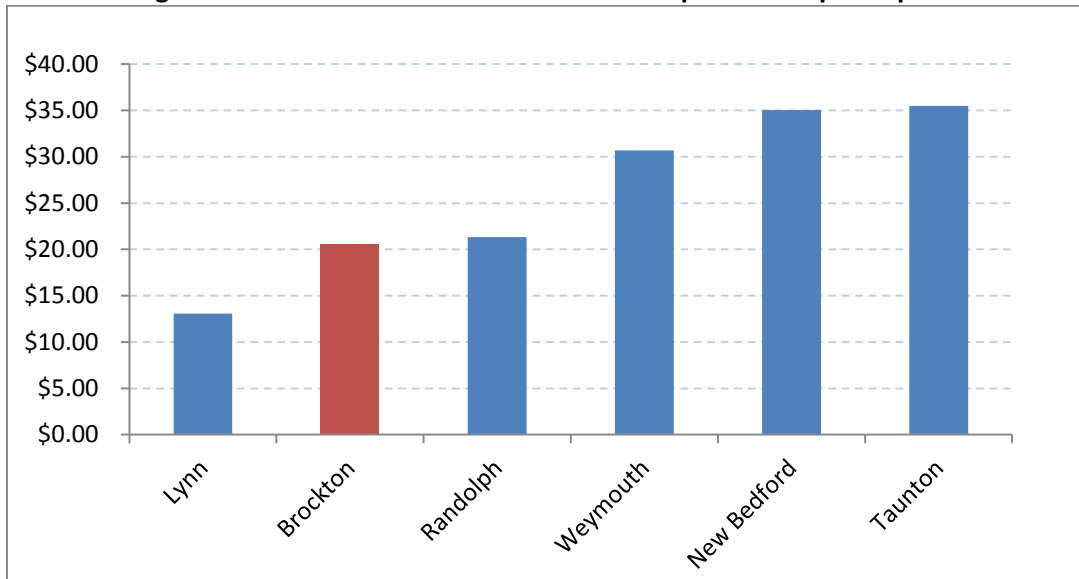
<sup>69</sup> *Ibid.*

**8. The City of Brockton dedicated approximately 0.77% of its FY2012 annual budget to open space.**

Compared to the comparison communities, Brockton’s commitment to fund open space and recreation is high. Brockton is second in spending in the FY2012 budget for “Culture and Recreation” (the closest category kept by the Department of Revenue for comparative purposes), having spent slightly more than \$1.9 million out of a \$251 million general fund budget.

However, on a per capita basis, Brockton falls behind Taunton, New Bedford, Weymouth, and Randolph. Interestingly, even though Lynn has 350 more acres of open space than Brockton does, Brockton’s per capita investment is almost 60% higher than Lynn’s.

**Figure 5-9: FY2012 Culture and Recreation Expenditures per Capita<sup>70</sup>**



**B. TRANSPORTATION**

**9. Transportation rights of way occupy 1,979.5 acres (14.4% of Brockton’s land). Of that, 1,918.8 acres (96.9% of transportation lands) is comprised of the road network and 60.7 acres (3.1% of transportation lands) is comprised of the rail network.<sup>71</sup>**

The public and private road network comprises 96.9% of the transportation land. The vast majority of the road network is under the jurisdiction of the City of Brockton, with MassDOT and the federal government having jurisdiction only on certain parts of the road network; MassDOT on Route 24 and the federal government on the V.A. Hospital campus. The regional rail system comprises 3.1% of the transportation land. Brockton is fortunate to have three MBTA Commuter Rail Stations located within the city; Montello Station, on the city’s north side; Brockton Station in the city’s downtown; and Campello Station on the city’s south side.

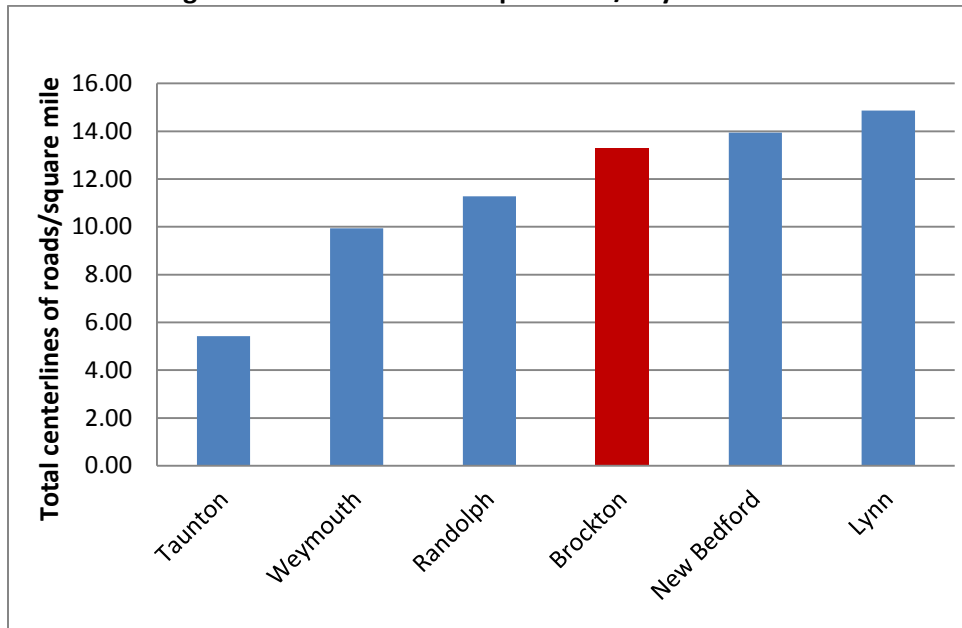
<sup>70</sup> MassGIS Protected and Recreational Open Space Data Layer, 2015 & Massachusetts Department of Revenue

<sup>71</sup> MassGIS

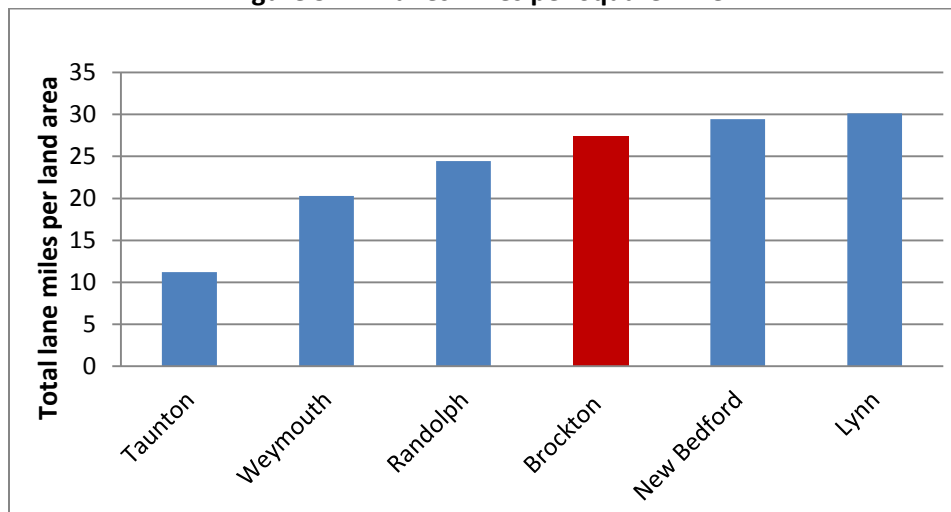
**10. Brockton has the third highest ratio of road mileage to land area among the comparison communities and trails only the much denser cities of Lynn and New Bedford.**

Brockton has 286.2 miles of paved roadways. Figure 5-10 shows the ratio of road miles per land area in Brockton and the surrounding communities, and Figure 5-11 shows the ratio of lane miles per land area. Linear road mileage is the measure of the total linear length of roadways, whereas lane mileage is the measure of the total length and width (area) of the roadway. Compared to the comparison communities, Brockton has the third highest number of linear feet of roadway per square mile and the third highest amount of roadway area per square mile, only trailing Lynn and New Bedford.

**Figure 5-10: Miles of Roads per Town/City Land Area<sup>72</sup>**



**Figure 5-11: Lanes Miles per Square Mile<sup>73</sup>**



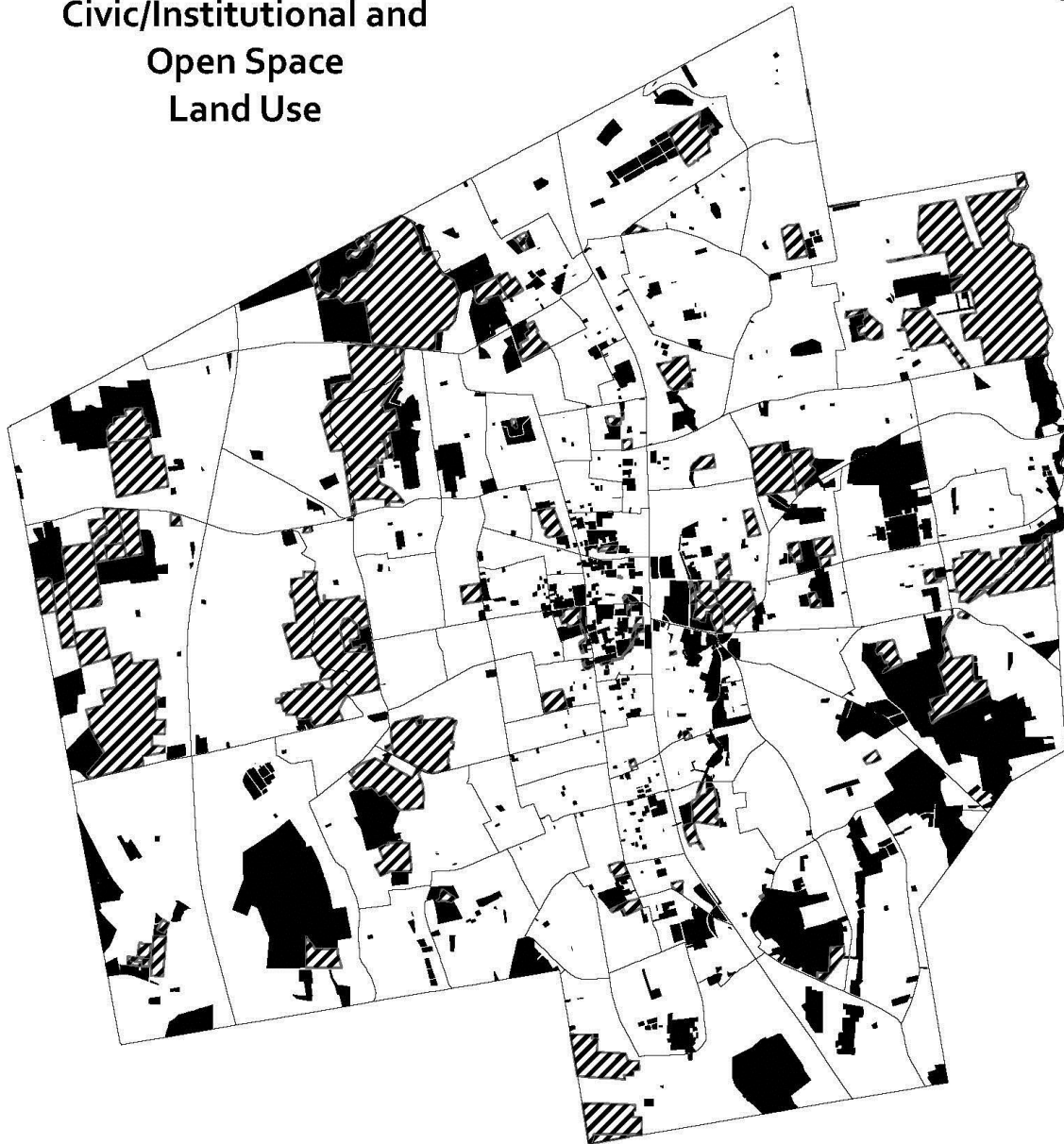
<sup>72</sup> MassDOT, Office of Transportation Planning. (2014). *Road Inventory Year-End Report 2014*.

<sup>73</sup> Ibid.

Figure 5-12: Civic/Institutional and Open Space Land Use in Brockton



### Civic/Institutional and Open Space Land Use



	Census Block Groups
	Open Space
	Civic/Institutional

Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council



## 6. OTHER LAND ATTRIBUTES

### A. INTRODUCTION

Brockton's physical landscape is characterized by gently rolling moraine lands whose elevation ranges from 240 feet above mean sea level at Cary Hill in the northeast corner of the city to 80 feet above mean sea level where the Salisbury Plain River exits the city on the West Bridgewater town line. While this soft landscape offers few opportunities for long, varied views, minor changes in elevation have often assumed a greater importance than normal. A glacial-outwash trough dissects the city along its central north/south axis. This trough played an early role in molding Brockton's urban form, as the Downtown area developed within the shallow glacial valley, running parallel to Trout Brook and the Salisbury Plain River.<sup>74</sup>

Within the city's boundaries, there a wide variety of soil types, but two most prevalent are those of till or bedrock and sand and gravel deposits. The areas of Brockton that exhibit the generally fine-textured, well-drained soils with the absence of steep slopes encouraged intensive development, whereas areas with till type soils did not.<sup>75</sup>

Brockton's water supply is drawn from several sources, with the primary source being Silver Lake in Kingston, which supplies the city with more than 92% of its water. Brockton draws the remainder of its water from water from the Brockton Reservoir in Avon, Furnace Pond in Pembroke and Monponsett Pond in Halifax. Brockton must search outside the city to obtain its water due to the limited groundwater yield of the city's tight till soils. Emergency sources include the Hubbard Avenue well, located in the southern part of Brockton and Pine Brook, which can be temporarily diverted to feed Silver Lake. The Hubbard Avenue well has not been active since 1985 due to fear of drawing nearby contaminated groundwater toward the well. The Pine Brook diversion has only been used once in 1986. It requires DEP authorization under a Declaration of Water Emergency.<sup>76</sup> Brockton also has the option to purchase water from the Aquaria Desalinization Plant in Dighton. Brockton's wastewater is processed by its Advanced Wastewater Reclamation Facility on Oak Hill Way in the southern part of the city. In addition to processing Brockton's wastewater, the facility also services thousands of customers in the neighboring communities of Abington and Whitman.

Due to Brockton's location at the northern end of the Taunton River Watershed, Brockton has a limited number of surface water resources. The largest and most notable water resources are six man-made waterbodies within D.W. Field Park in the northwestern part of the city. These waterbodies include Waldo Lake, Upper Porter Pond, Lower Porter Pond, Thirty Acre Pond, Ellis Brett Pond, and Cross Pond. The remaining surface water resources consist of a number of smaller streams and waterways, including Beaver Brook, Trout Brook, Salisbury Brook, West Meadow Brook and the Salisbury Plain River.

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<sup>74</sup> 2013 City of Brockton Open Space and Recreation Plan

<sup>75</sup> *Ibid.*

<sup>76</sup> 2014 Drinking Water Quality Report: Consumer Confidence Report:  
[http://www.brockton.ma.us/docs/default-source/documents/Drinking\\_Water\\_Report\\_for\\_2013.pdf?sfvrsn=8](http://www.brockton.ma.us/docs/default-source/documents/Drinking_Water_Report_for_2013.pdf?sfvrsn=8)

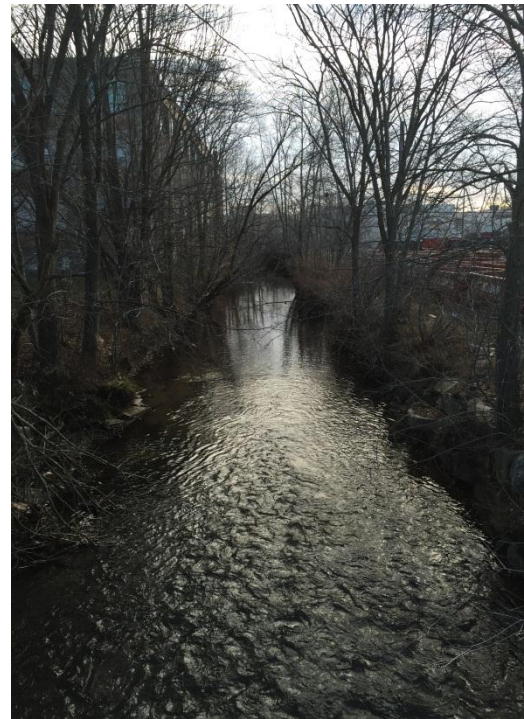
## B. BROCKTON'S LAND RESOURCES

### Watersheds

#### ***1. Increased regional watershed-level planning has led to an improvement to the health of the Taunton River Watershed.***

A watershed is an area of land that drains all the streams and rainfall to a common outlet such as the mouth of a bay. The boundaries of a watershed and are often defined by ridges and hills that create a drainage divide. Brockton is almost completely within the Taunton River Watershed, with the exception of a small residential area in the uppermost northeast portion of town, which is located within the Boston Harbor Watershed. For the purposes of this study, the focus is on the Taunton River Watershed. The Taunton River Watershed is the second largest watershed in Massachusetts, covering 562 square miles or roughly 7% of the land area of Massachusetts. The Watershed is located in all or in parts of 43 communities with a population of more than 500,000 people. Its headwaters begin in Bridgewater, Brockton and West Bridgewater with the Taunton River forming at the confluence of the Matfield River (of which the Salisbury Plain River is a tributary of) and the Town River in Bridgewater. The Taunton River flows from Bridgewater through the communities of Halifax, Middleboro, Raynham, Taunton, Berkley, Dighton, Somerset, Freetown, and Fall River before emptying into Mount Hope Bay. There are 221 lakes and ponds within the Watershed, with Assawompsett Pond being the largest standing body of water at 2,404 acres in size.<sup>77</sup>

The topography of the watershed ranges from flat lowlands to low rolling hills, typical of the glaciated landscape of southern New England. The approximately 40 mile river is quite flat, only dropping 21 feet in elevation with saltwater intrusion extending 12 miles from the mouth of the river. The River has a long history beginning with Native American settlements dating back more than 12,000 years as is evidenced by the discovery of ancient campsites.<sup>78</sup> In colonial times the river served a significant role in everyday life by providing a plentiful amount of fish, as well as serving as transportation route to export and import goods. While the Taunton River remained undammed, a number of its tributaries did not, as many had dams constructed along them for the purposes of industry. These dams prevented fish migration and had a detrimental environmental effect on the entire watershed. Also having a detrimental effect on the watershed were the watershed's changing land uses. As land continued to be developed within the watershed, many waterways were channelized and culverted, as is the case in a number of waterways in Brockton, including the Salisbury Brook and Salisbury Plain River.



**Figure 6-1: Trout Brook at the Salisbury Plain River**

<sup>77</sup> Taunton River Watershed Facts: Taunton River Watershed Alliance  
<http://savethetaunton.org/watershed/facts.htm>

<sup>78</sup> Five-Year Watershed Action Plan for the Taunton River Watershed: GeoSyntec Consultants: September 2006



Over the past forty years, the Taunton River's health has greatly improved. In the past, the river had been considered toxic because of industrial and commercial uses polluting this valuable water source. Much of the river's improvement in water quality can be attributed to the passage and enforcement of environmental regulations pursuant to the federal Clean Water Act and Wetlands Protection Act. The amount of pollutants entering the river has also decreased due to the closing of riverside mills.<sup>79</sup> Despite the river and watershed's increased health, there remains much work to do. Actions that can be taken to increase the River's health are outlined in the September 2006 Five-Year Watershed Action Plan for the Taunton River Watershed, which includes a series of actions focusing on; improving wastewater management, wildlife habitat and ecology protection, recreation and access, open space, land use and sustainable development, and public outreach and education. The watershed is fortunate to have these actions supported and undertaken by a number of dedicated local organizations, most notably the Taunton River Watershed Alliance (TRWA), the Taunton River Watershed Campaign (TRWC), and the Taunton River Stewardship Council (TRSC).

In March 2009, the Taunton River and Taunton River Watershed received another level of protection when the Taunton River became part of the National Park Services Wild and Scenic Rivers System. The System's mission is to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations.<sup>80</sup> The Wild and Scenic designation also prohibits federally-licensed dams and any other federally-assisted water resource project if the project would negatively impact the river's outstanding values, establishes a quarter-mile protected corridor on both sides of the river, and requires the creation of a cooperative river management plan that addresses resource protection, development of lands and facilities, and user capacities.<sup>81</sup>

## Wetlands

### ***2. Brockton has few remaining wetland resources, but these areas are critical to the city's natural environment.***

Brockton, like many other industrial cities of the nineteenth and twentieth centuries, lost most of its wetland resources to extensive development. The few wetland resources that remain are located along the city's waterways and in the city's conservation areas. Waterways with modest wetland resources include Beaver Brook, Edson Brook, Salisbury Plain River, West Meadow Brook and Dorchester Brook. Conservation areas with modest wetland resources include the Beaver Brook Conservation Area, Washburn Meadow, Stone Farm, D.W. Field Park and the Brockton Audubon Preserve.

#### *Wellhead Protection Areas*

Wellhead protection areas are areas that protect surface and subsurface zones surrounding a well or well field that supply water to the public. In total there are six wellhead protection areas in Brockton. Three of the wellhead protection areas are classified by MassDEP as Zone II areas. Zone II areas of an aquifer contributes water to a well under the most severe pumping and recharge conditions that can be realistically anticipated (180 days of pumping at approved yield, with no recharge from precipitation).

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<sup>79</sup> Ibid.

<sup>80</sup> Safeguarding the Character of our Nation's Unique Rivers: National Wild and Scenic Rivers System  
<http://www.rivers.gov/wsr-act.php>

<sup>81</sup> What Does It Mean To Be A Wild And Scenic River? American Rivers  
<http://www.americanrivers.org/initiatives/wild-and-scenic/designating/>

The three Zone II areas in Brockton are small and are parts of larger Zone II areas in Avon, Holbrook, West Bridgewater and Easton. The other three wellhead protection areas are designated as Interim Wellhead Protection Areas (IWPA). IWPA is the designation for public water systems using wells or wellfields that lack a Department approved Zone II. An IWPA is an area that is one-half mile radius measured from the well or wellfield for sources whose approved pumping rate is 100,000 gallons per day (gpd) or greater. For wells or wellfields that pump less than 100,000 gpd, the IWPA radius is proportional to the approved pumping rate.<sup>82</sup> Of the three IWPA's in Brockton, two are small non-community groundwater wells, and the other is for the inactive Hubbard Avenue well. Brockton obtains the vast majority of its drinking water not from wells within the city, but rather from Silver Lake in Kingston, with just a minimal percentage of its water supply coming from the Zone II protected Brockton Reservoir.

#### *Water Pollution*

Water pollution occurs when a body of water is contaminated with chemicals and/or foreign substances that are harmful to humans, plants and animals. There two types of water pollution, point and non-point sources. Point source pollution refers to contaminants that enter a waterway from a single, identifiable source, such as a pipe or ditch. Examples include discharges from a sewage treatment plant, a factory, or a city storm drain. Non-point source pollution refers to contaminants that do not originate from a single discrete source, of which stormwater runoff is one of the largest offenders. Stormwater runoff typically contains a large amount of contaminants, including roadway sand and salt, fertilizers, pesticides, automotive leakage and animal waste. In Brockton, historic development up to top-of-bank of many stretches of the city's streams has also contributed to untreated runoff discharging directly into the waters.

#### Floodplains

### ***3. Most of Brockton's 100 & 500-year floodplains are located along the banks of the multiple waterways that flow through the city as well as in areas dedicated to open space and recreation.***

Within Brockton there are a number of areas located within FEMA 100 and 500-year floodplains. FEMA defines a 100-year floodplain as an area that has a 1% (one out of 100) chance of occurring in any given year and a 500-year floodplain as an area that has a 0.2% (one out of 500) chance of occurring in any given year. Floodplains in Brockton are concentrated along the banks of the following waterways; Beaver Brook, Edson Brook, Lovetts Brook, Salisbury Brook, Salisbury Plain River, West Meadow Brook, and Trout Brook. Larger floodplains in the city are limited to open space and recreation areas, including the Beaver Brook Conservation Area, Brockton Audubon Preserve, D.W. Field Park, and Washburn Meadow.

The 2013 Brockton Open Space and Recreation Plan notes that many of the city's waterways have been significantly altered over time. These alterations included areas of floodplain being either filled and/or developed and watercourses being re-directed, culverted, and channelized, all of which were done to accommodate the developing industrial city and all of which were done prior to the establishment of floodplain regulations.<sup>83</sup>

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<sup>82</sup> MassDEP: Water Supply Protection Area Definitions  
<http://www.mass.gov/eea/agencies/massdep/water/drinking/water-supply-protection-area-definitions.html>

<sup>83</sup> 2013 Brockton Open Space and Recreation Plan, City of Brockton

As a result of these alterations, heavy storm events have resulted in the flooding of land surrounding these many waterways, particularly in areas where the waterways have been channelized. Some of the more prominent areas of flooding in the city include Westgate Drive at Lovetts Brook; Ames, Intervale and Spark Streets at Trout Brook; and Belmont Avenue and Spring Street at Salisbury Brook. Flooding was so intense in the Belmont Avenue neighborhood that the city purchased and demolished three homes on Belmont Avenue in 2000, as they became inhabitable due to chronic flooding.<sup>84</sup>

#### Stormwater

#### ***4. Brockton experiences drainage problems due to a lack of adequate flood storage areas.***

There are a number of areas in Brockton that suffer from localized stormwater flooding during extreme precipitation events, but maybe none more so than the aforementioned Westgate Mall Drive area, Ames Street, Spark Street/Intervale Street neighborhood, and Belmont Avenue/Spring Street neighborhood. Flooding in these specific areas as well as in other areas of the city can be attributed to a variety of factors, including: a lack of adequate flood storage areas, large amounts of impervious surface; the piping of a number of brooks and streams; undersized bridge opening and culverts; and an accumulation of sediment at the inlets and outlets of culverts.

#### Impervious/Pervious Surfaces

#### ***5. Brockton has a high percentage of impervious surface - 35.7% of the city's total land area.***

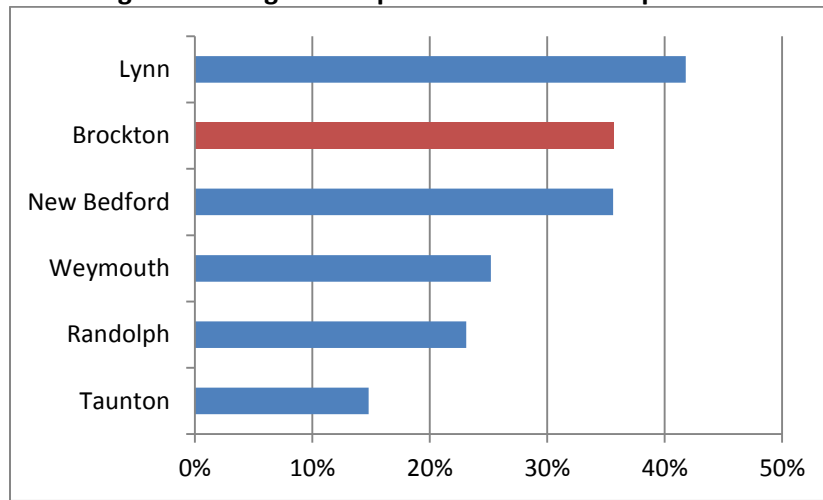
Impervious surfaces are surfaces that water cannot effectively absorb or infiltrate rainfall. Impervious surfaces generally consist of man-made materials such as asphalt, concrete, brick and metal in the form of roads, parking lots, sidewalks, driveways, and rooftops. Impervious surfaces are an environmental concern because they eliminate rainwater infiltration and natural groundwater recharge, which has serious implications on water quality and flood control.

Typical pollutants from runoff include a variety of contaminants, including fertilizers, pesticides, oil, litter, sediment, salt, and bacteria. In addition to changing the quality of the water running into local ponds and streams, increasing amounts of impervious cover also changes the quantity of the runoff, which can erode and change the physical structure of existing streams. Figure 6-2 below compares the percentage of impervious surface of Brockton with selected communities. Brockton has the second highest percentage (35.7%) of impervious surface among the comparison communities, trailing only the very dense City of Lynn (41.8%).

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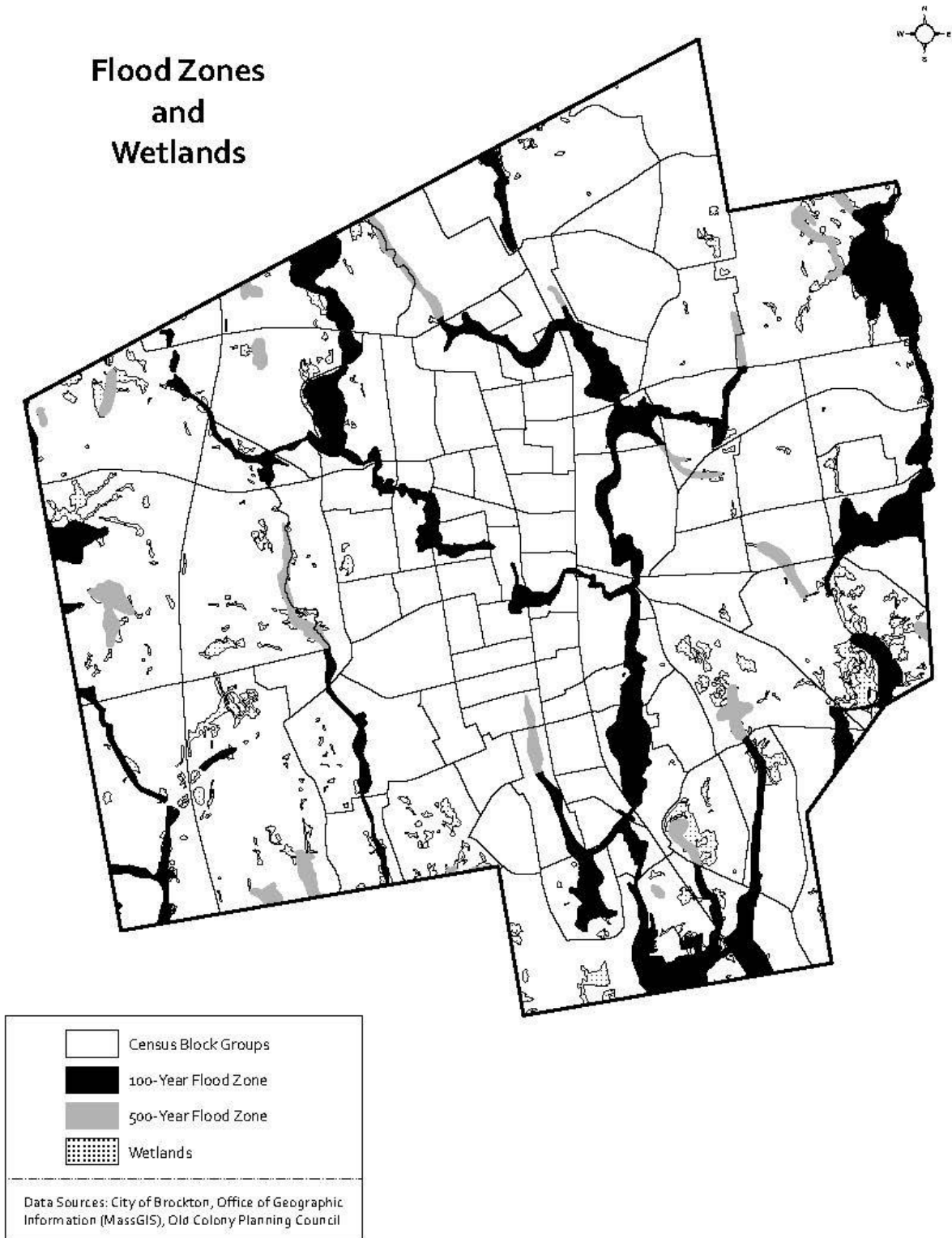
<sup>84</sup> Ibid.

**Figure 6-2: Regional Impervious Surface Comparison<sup>85</sup>**



<sup>85</sup> MassGIS

Figure 6-3: Flood Zones and Wetland in Brockton



### C. HAZARDOUS MATERIAL SITES

The Massachusetts Department of Environmental Protection (DEP) Bureau of Waste Site Cleanup (BWSC) regulates the identification, assessment, and remediation of contaminated sites, known as Disposal Sites under the Massachusetts Contingency Plan (MCP) regulations. Brockton's long history of industry has resulted in a number of contaminated sites in the city, with 41 sites being "tier classified". Sites that have not been cleaned up within one year of being reported are classified into tiers, based on their complexity, number of sources and how serious a potential threat the contamination poses. Tier I sites are the highest threat sites (with Tier IA the highest threat) whereas Tier II sites pose a less serious threat. Brockton has 4 Tier IA sites; 22 Tier ID sites; and 15 Tier II sites.

DEP has also identified 28 sites in Brockton that are subject to Activity and Use Limitations (AUL). An AUL is a legal document that identifies site conditions that are the basis for maintaining a condition of No Significant Risk at a property where contamination remains after a cleanup. The primary purpose of an AUL is to help prevent unacceptable exposures to contamination left at a site. An AUL accomplishes this objective by identifying activities, based on an evaluation of human health risk, which are consistent and inconsistent with maintaining a condition of No Significant Risk.<sup>86</sup>

In recent years Brockton has begun to make a concerted effort to cleanup and redevelop these contaminated areas. Brockton's most well-known redeveloped contaminated site is the former Brockton Gas Works. Located on the corner of Grove and East Union Streets, the site is now home to the Brockton Brightfields, as shown in Figure 6-4. The three acre site now consists of approximately 1,400 photovoltaic solar panels that can produce up to 425 kilowatts of renewable energy on a daily basis.<sup>87</sup>



**Figure 6-4: Brockton Brightfields**

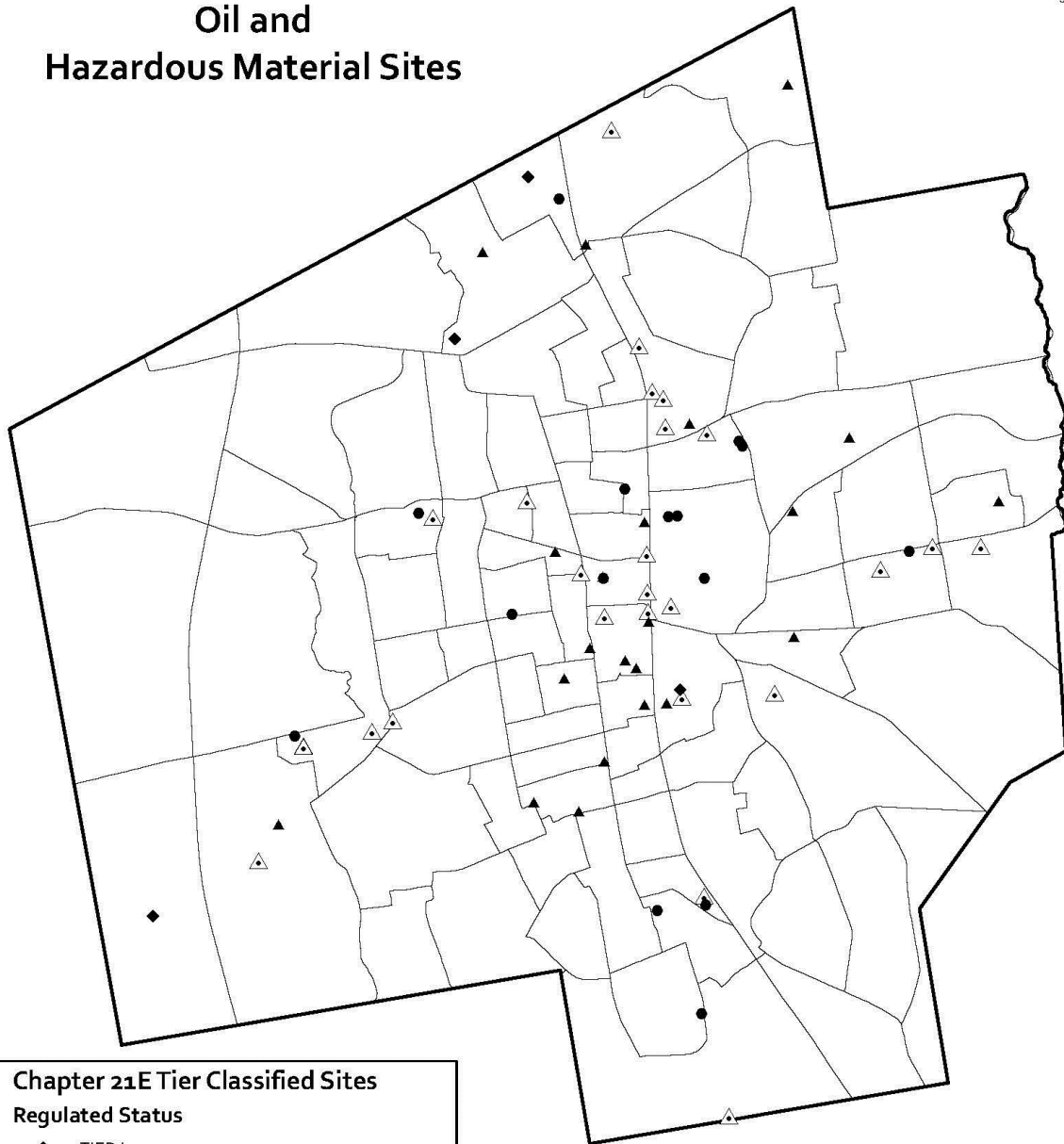
<sup>86</sup> Guidance on Implementing Activity and Use Limitations  
<http://www.mass.gov/eea/docs/dep/cleanup/laws/14-300.pdf>

<sup>87</sup> City of Brockton, Planning Department: Brockton Brightfields:  
<http://www.brockton.ma.us/government/Departments/Planning/BrocktonBrightfields.aspx>

Figure 6-5 Oil and Hazardous Material Sites in Brockton



## Oil and Hazardous Material Sites



**Chapter 21E Tier Classified Sites**  
**Regulated Status**

- ◆ TIER I
- TIER II
- ▲ TIER1D
- ▲ Sites with Activity and Use Limitations (AUL)
- Census Block Groups

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Data Sources: City of Brockton, Office of Geographic Information (MassGIS), Old Colony Planning Council