



Braintree Ivory Street Corridor: A Transit Oriented Development (TOD) Opportunity

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District Local Technical Assistance (DLTA)
Unified Planning Work Program (UPWP)
Town of Braintree; FX Messina
Enterprises, Covanta

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SECTION I EXECUTIVE SUMMARY AND RECOMMENDATIONS

The Metropolitan Area Planning Council (MAPC) partnered with the Town of Braintree, property owners, business owners and residents to shape a vision along with short- and long-term recommendations for the area in the vicinity of the Braintree Massachusetts Bay Transportation Authority's (MBTA or "T") Red Line Station. The study area is also referred to as the Ivory Street Corridor, comprising the land north of the MBTA Station between MA Route 3 and the MBTA tracks (Best Buy, Nordstrom Rack) and south of the MBTA Station, west of Ivory Street/John Mahar Highway south to Plain Street. The project includes recommendations for land use, zoning changes, and transportation connectivity improvements so that the community can begin to implement its vision.

This project developed a range of land use scenarios to determine how best to capture economic development and housing opportunities within close proximity to the transit station, consistent with the vision for the area. Maximizing the potential of land served by transit is referred to as Transit Oriented Development (TOD). The availability of fixed route transit, in this case both subway and commuter rail, creates higher value for land within a 15 to 20 minute walk of the station. The higher value translates into increased economic opportunity and generally higher density commercial uses and housing, since less land needs to be allocated for parking. This project seeks to develop a clear action-oriented path for the Town and other stakeholders that will help maximize the benefits to properties located within the Ivory Street Corridor, proximate to both transit and highway access.

The elements of this report include:

Community Engagement –What do the various stakeholders think of this area now? What would they like to see in the future? MAPC conducted extensive community outreach.

The Vision – Draft a vision for the area. How could this area better serve the Town, its residents, businesses, property owners and transit commuters?

The Market – Conduct a market analysis for commercial and residential development. What do we know about the demand for office, retail, and housing in this area? What other developments in the area compete with this location?

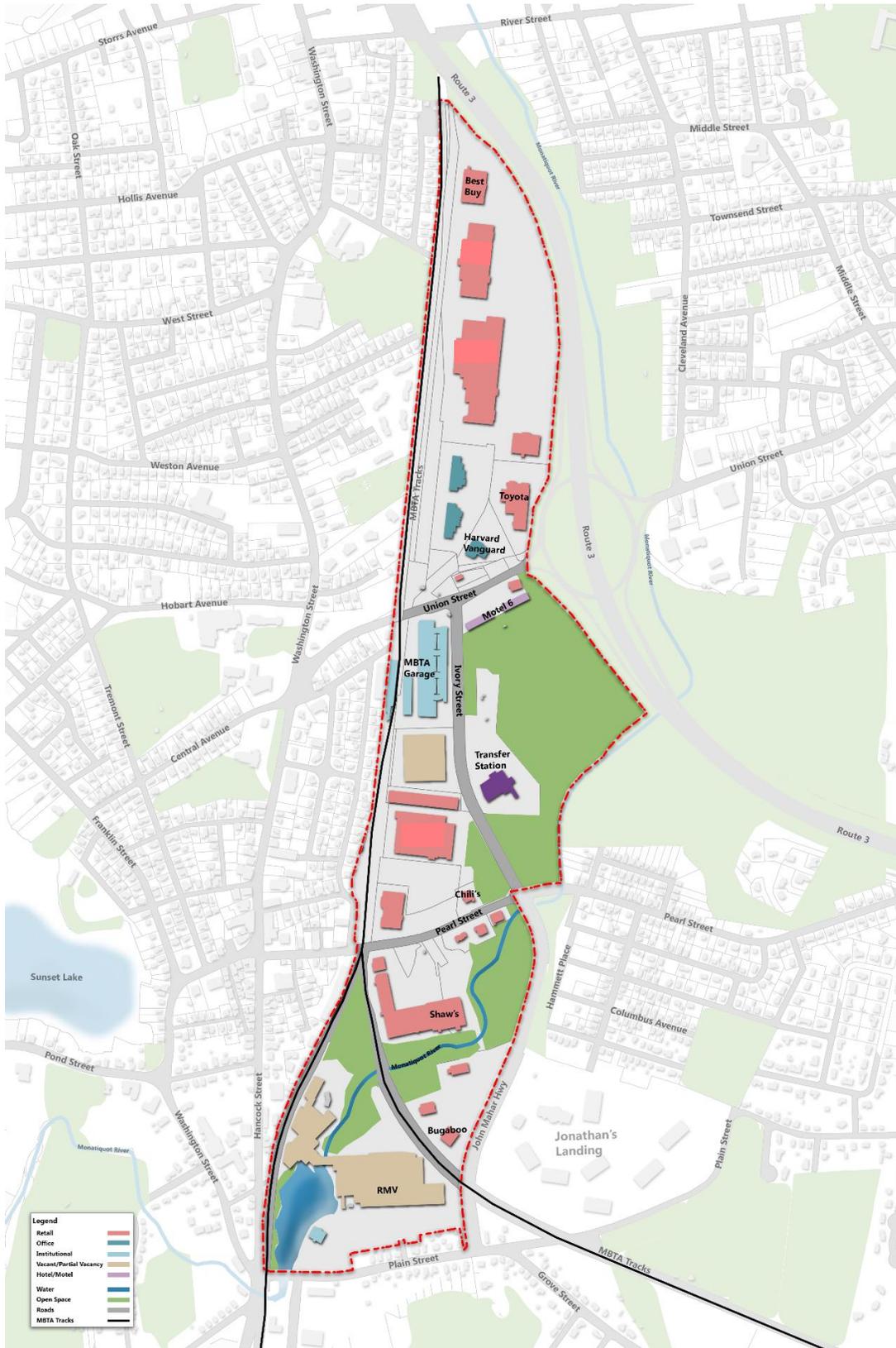
Development Scenarios – Informed by the market analysis and the vision, how could the Ivory Street corridor be transformed through public actions and private investments?

Zoning: Implementing the Vision – How can the land use regulations support the community's vision for the area?

Transportation – Recommend transportation improvements. How can we make walking, biking, transit, and driving safer and easier for all users?

MAPC's Project Report details a vision for the Study Area with recommendations for land use, zoning changes, and transportation improvements.

The Ivory Street Corridor Study Area is shown below.



IVORY STREET CORRIDOR VISION

The Ivory Street Corridor will be a welcoming gateway to Braintree. Proximity to the Massachusetts Bay Transportation Authority's Red Line and Commuter Rail Stations, as well as highway access, allow for increased economic vitality and housing choices in this area. Development in the Corridor will provide opportunities for a mix of uses, including health care, offices, retail, restaurants, and housing. Development projects will be designed to encourage transit use, thereby reducing the amount of auto trips. Improved connections with Washington Street and a new Monaquot River pathway will provide additional links between Ivory Street and other neighborhoods in Braintree. Safety upgrades will improve vehicular access to the area and walkability.

KEY RECOMMENDATIONS FOR LAND USE AND ZONING

In order to implement the community's vision, MAPC offers recommendations for land use, zoning and transportation. Some of the recommendations could be characterized as "short-term", but others are on-going/long term. These are recommendations to address issues that would not be time limited but that should be incorporated into the Town's current and future planning and regulatory efforts.

SHORT-TERM RECOMMENDATIONS

Ensure that the current zoning recodification consider the recommendations in this report.

Revised zoning should be flexible to enable property owners to respond to the market

Include robust definitions for mixed use and retail uses. Encourage additional health-related uses and bio-technology uses.

Provide reduced parking for developments near transit. Recognize the advantages of the MBTA Red Line and commuter rail transit

Streamline the Town's permitting processes

Consider Administrative Site Plan Review for smaller projects, as well as reviewing all existing processes to minimize review and approval timeframes.

Consider re-zoning the southern portion of the study area near the former Armstrong Cork mill facility.

Allow as-of-right multi-family housing, and/or multi-family housing with retail/office components (mixed use). Provide flexibility to address market demand.

Consider Planned Unit Development (PUD) zoning.

Discuss this option as part of the current zoning recodification. Braintree has a PUD provision, but it has never been used. Review and revise the current provisions. PUDs maximize flexibility while providing for appropriate oversight of coordinated, often phased, development.

Coordinate with the MBTA so that any station/garage rebuilding maximizes connectivity.

The MBTA is planning to replace the existing pedestrian bridge with a lobby and elevators. As the MBTA parking garage and station require updating, ensure that connections to existing neighborhoods, the Ivory Street area, and the commuter rail are incorporated. Ensure that any station rebuilding offers opportunities for retail.

ON-GOING/LONG TERM RECOMMENDATIONS

Continue the planning process for the Braintree Station/Ivory Street Corridor.

The Town should continue to work with property owners on a long range master plan for the Ivory Street Corridor. Starting with the Scenarios described in this report, the plan could help establish the street types and block sizes, along with open space and bicycle and pedestrian connectivity critical to long range success for creating a new transit-oriented district.

Periodically assess the cost/benefits of the transfer station at the current location.

At some future point, the benefits to the Town will not outweigh the foregone development opportunities of the transfer station. Regular evaluations need to be conducted so that other options can be pursued.

Incorporate the Recommendations in MAPC's Climate Vulnerability Assessment.

Transformation of the study area provides an opportunity to redress current and future flooding due to centuries of land filling in the Monaquot River floodplain. All new development and redevelopment in the Corridor should incorporate measures to keep stormwater on site. Low Impact Development techniques should be maximized in this area.

KEY RECOMMENDATIONS FOR TRANSPORTATION

Specific details and additional recommendations are in the Greenman-Pedersen, Inc. report in **Appendix A**.

SHORT-TERM RECOMMENDATIONS

Improve/Install Pedestrian and Universal Access Accommodations

At Ivory Street/Union Street/Grossman Drive; Ivory Street at Pearl Street/John Mahar Highway: install a crosswalk across northbound Ivory Street approach, signal improvements such as shortening the cycle and repairing/upgrading pedestrian displays.

Ivory Street at the MBTA garage: reducing the entrance width to shorten pedestrian crossing distance, providing ADA compliant features (curb cuts/ramps), installing pedestrian displays and push buttons, providing pedestrian/bike accommodations to access the platform and bike parking area, and restricting the southbound right-turn-on-red.

Jonathan's Landing

Install a rapid flashing beacon or pedestrian hybrid beacon to accommodate safe crossing at the site driveway at Maher Highway.

Consider Installing Bicycle Lanes on Ivory Street/Mahar Highway

Reduce the travel lane width to allow for the installation of bicycle lanes.

LONG TERM RECOMMENDATIONS**Establish Pedestrian Connections**

As planning for this area continues, a priority should be to establish pedestrian connections. Connecting the T station and bus routes with the existing neighborhoods, particularly Washington Street, will allow residents easier access to the station. Long term, additional potential pedestrian/bicycle connections should be explored as the Ivory Street corridor develops.

Create a Complete Street

Plan and develop Ivory Street/John Mahar Boulevard as a complete street that includes bicycle infrastructure, sidewalks on both sides, and storm water infiltration.

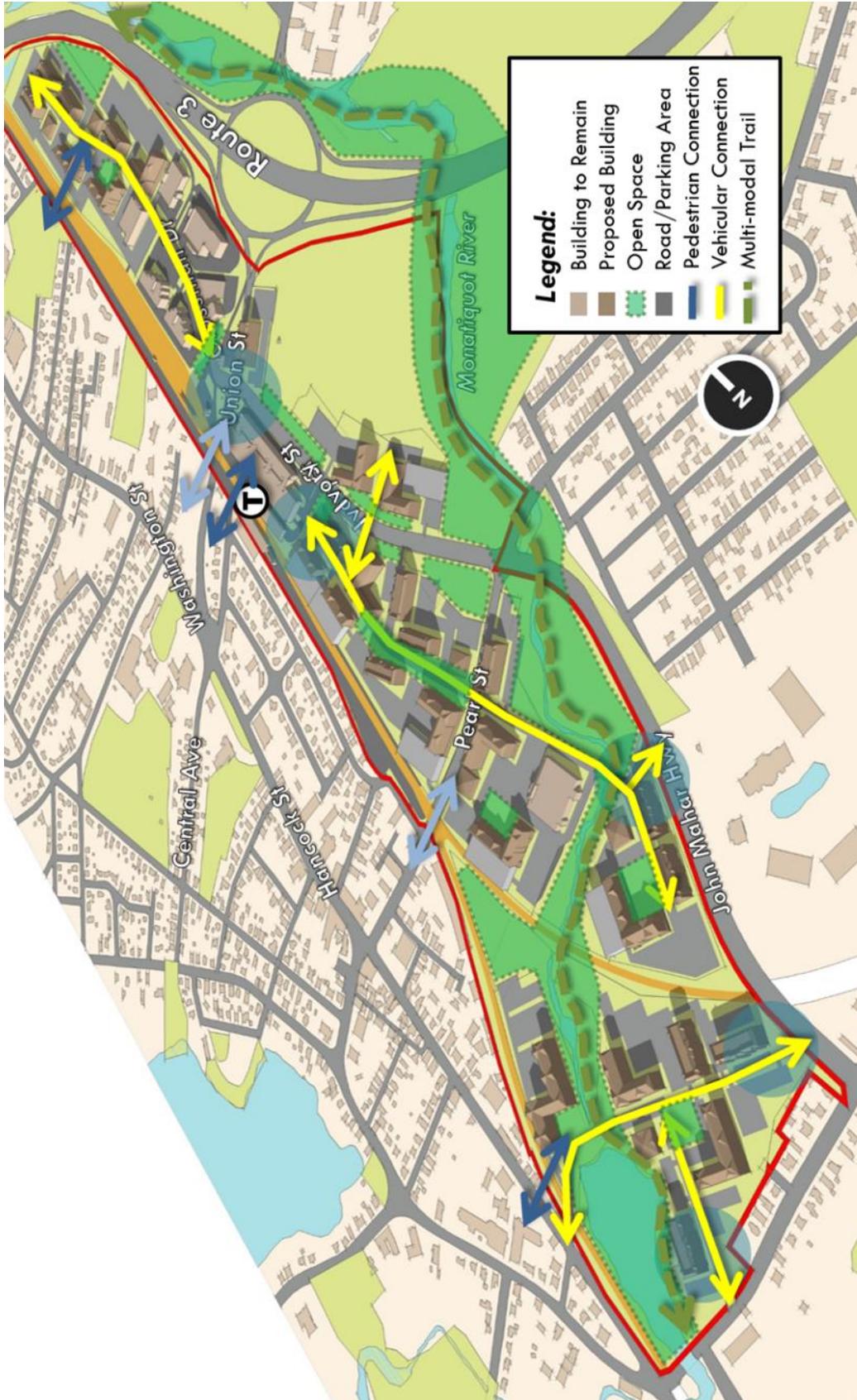
Monatiquot River Path

Participate in planning for the pathway.

On-Going Planning

Participate in any planning work for the Corridor to ensure pedestrian/bicycle connections and accommodations are the properties are redeveloped.

A re-imagined, mixed-use, connected Ivory Street



SECTION II INTRODUCTION

PROJECT PURPOSE AND DELIVERABLES

The purpose of this project was to work with the Town of Braintree, property owners, business owners and residents to develop a vision for the area in the vicinity of the Braintree Massachusetts Bay Transportation Authority's (MBTA) Red Line Station. This area is also referred to as the Ivory Street Corridor. The project includes short and long recommendations for land use, zoning changes and transportation connectivity so that the community can begin to implement the vision for the future.

CONTEXT: WE KNOW THIS AREA HAS POTENTIAL, BUT FOR WHAT?

While this project has been categorized as a Transit Oriented Development (TOD) effort because of the availability of mass transit, TOD tells only part of the story. The larger picture is that as part of the community's ongoing planning, Braintree recognizes that this area is transitioning from earlier development patterns, and it has the potential for very different land uses, thus maximizing opportunities and revenue for the property owners and for the Town. Historic industrial uses located in this area because of the availability of water power (the Monaquot River) and later the railroad gave way to highway oriented "big box" retail with the completion of MA Route 3 and the Union Street interchange. Changes in the retail sector, demographic shifts, the presence of the T Red Line, and the proximate, but disconnected MBTA commuter rail station have created the opportunity for this area to be strengthened as a driver of economic development in Braintree.

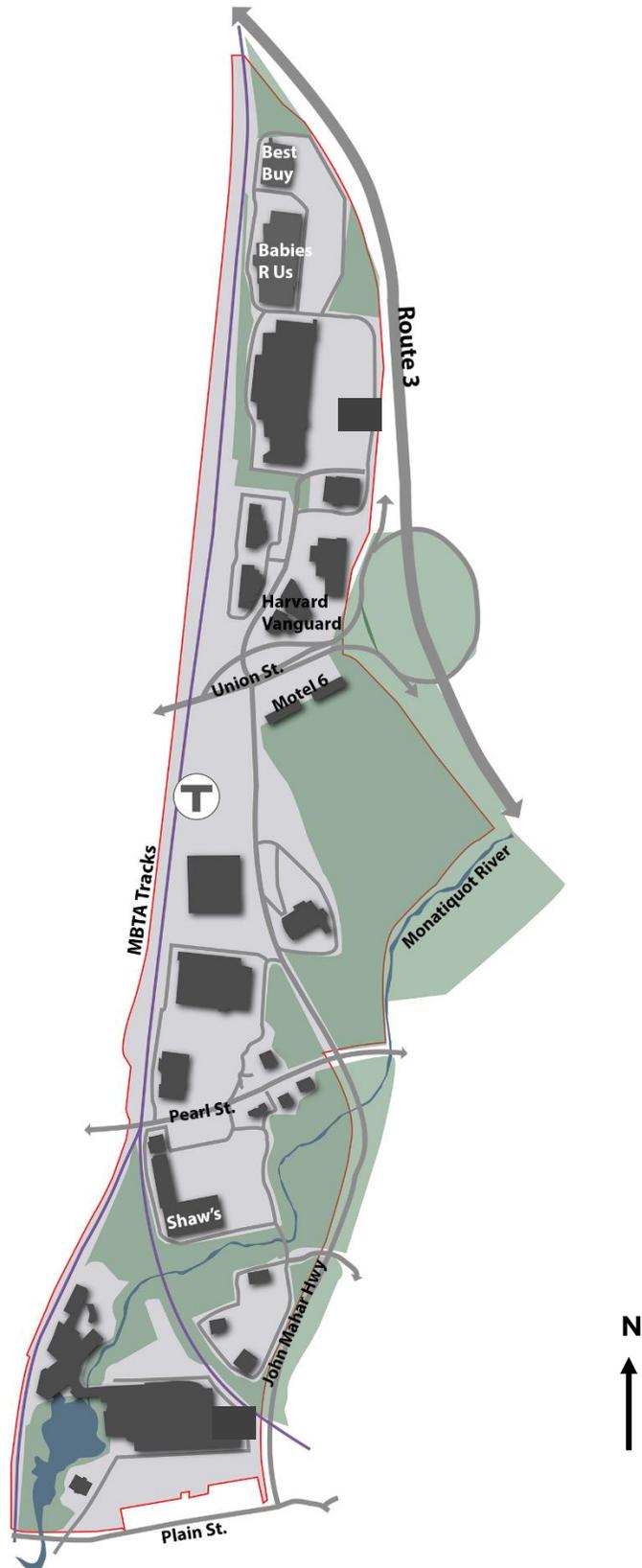
As part of MAPC's work, and to answer the question of how could economic development be enhanced along Ivory Street, a market study was done to evaluate the demand for office space, retail, and housing. MAPC also contracted with Greenman-Pedersen, Inc. (See Appendix A) to evaluate traffic conditions and provide details on potential connections in the study area.

THERE ARE FEW COMPARABLE LOCATIONS IN THE BOSTON AREA

MAPC evaluated similar development opportunities, most notably Assembly Row in Somerville, and Station Landing in Medford. Both of these former industrial areas have been transformed into mixed use centers of economic development served by transit. Within the Ivory Street corridor, FX Messina Enterprises owns 82 acres, running west of Ivory Street/John Mahar Boulevard from the MBTA station south to Plain Street. There are very few communities with large tracts of land in single ownership near to transportation corridors that present such incredible potential to create a new transit-oriented district. Ongoing planning in partnership with Messina and the other land and business owners will be the key to transforming this area, as well as zoning changes to facilitate implementation of the desired the land use changes.

The Scenarios section of this report provides details on exactly how the Ivory Street corridor might be transformed. The vision is considered through a series of diagrams to show how incremental changes that are consistent with the overall vision for the district can yield a vibrant and walkable transit-oriented district that expands the amount of economic activity that the land can support.

Map of the Ivory Street Study Area.



SECTION III COMMUNITY ENGAGEMENT

PLANNING PROCESS

The project work was informed by a Steering Committee appointed by the Town of Braintree. The Committee was comprised of property and business owners in the study area, a representative of Thayer Academy, and residents of the Jonathan's Landing, a newly constructed condominium project on the east side of John Mahar Boulevard. The Steering Committee met four times with MAPC for presentations on Braintree's population projections, land use, zoning, and transportation issues in the Study Area, and to offer feedback on the project. The project was guided by the Town of Braintree's Director of Planning & Community Development.

MAPC's Community Engagement team developed social media and community outreach activities in order to include as many people as possible in this project: residents, business owners, commuters and town officials.

The planning process began with a community kick-off event on May 11th, 2015 when staff from MAPC spent the day at several locations around the study area including the Red Line station, Shaw's grocery store and Town Hall to talk to about 200 residents, employees, and commuters who use the area on a daily basis. MAPC also attended the Braintree 375th Anniversary event (*image shown below*) on May 14th, 2015 at Town Hall to speak with residents about the project.



Braintree's 375th Celebration

In July of 2015, MAPC hosted two resident focus groups to discuss the project and the future of the district. Public Forums were held on October 1st, 2015 to provide background on the project and to discuss the potential of the Ivory Street Corridor. The March 23, 2017 Forum presented development scenarios that illustrated how to capture the long term the economic potential of the area.

COMMUNITY COMMENTS

Below is summary of comments heard during various outreach activities:

Assets	Opportunities
<ul style="list-style-type: none">▪ Access to T & Commuter Rail▪ Proximity to Highway▪ Close to Boston but a Quiet Town▪ Shopping & Amenities▪ Sunset Lake▪ Schools▪ Invested Residents	<ul style="list-style-type: none">▪ Make it walkable/bikeable▪ Need restaurant/retail options▪ Improve accessibility of open space & recreational activities▪ T Parking full by 7 am▪ Improve traffic flow/safety▪ Beautify▪ Transfer station improvements

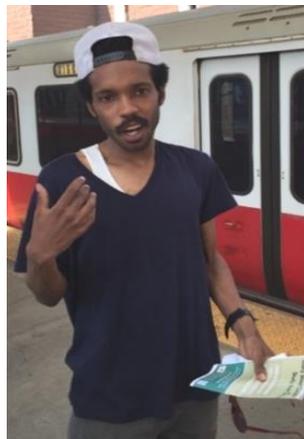
“Essentials are there.”

“Make this area a desirable destination”

“Retail is not aesthetic.” “Area needs a facelift”

“Could do a linear connection through the site, like the Greenway with a fenced dog area.”

“Clean the environment and then we’ll talk business”



SECTION IV THE VISION FOR THE IVORY STREET CORRIDOR STUDY AREA

Ivory Street Corridor Vision Statement

The Ivory Street Corridor will be a welcoming gateway to Braintree.

Proximity to the Massachusetts Bay Transportation Authority's Red Line and Commuter Rail Stations, as well as highway access, allow for increased economic vitality and housing choices in this area.

Development in the Corridor will provide opportunities for a mix of uses, including health care, offices, retail, restaurants, and housing. Development projects will be designed to encourage transit use, thereby reducing the amount of auto trips.

Improved connections with Washington Street and a new Monaquot River pathway will provide additional links between Ivory Street and other neighborhoods in Braintree. Safety upgrades will improve vehicular access to the area and walkability.

Drafted based on Community Engagement activities: Focus Groups; Day at the T; October 1, 2015

This vision statement was drafted based on comments from a variety of sources, including the Community Engagement activities, a large public meeting, and input from the Steering Committee. The purpose of the vision statement is to summarize and guide the planning process, but also to direct future improvements and investments in the area.

CONTEXT

Today, the Ivory Street Corridor is a retail, restaurant and commercial center that benefits from direct and convenient access to Route 3 and a terminus of the MBTA Red Line at Braintree Station. The current uses and the siting of those uses on the properties responds primarily to the automobile access to the area. The retail uses occur in single story strip mall or "big box" type stores fronted by large parking lots. The restaurants are single story buildings isolated and surrounded by their parking. While the area is active today, it does include a sizeable volume of vacant space and significant areas of underutilized surface parking lots. However, with its direct and convenient access to Route 3 and the Red Line it could be a much stronger district in the future.

The vision for the Ivory Street Corridor begins to communicate what that future may look like. The vision invites reconsideration of the Corridor as a more densely used, walkable and transit-oriented node that will better leverage the multi-modal access advantages that this location provides.

A vision must balance ambition and practicality to provide a meaningful direction. The type of transformation that is imagined through this vision for the Ivory Street Corridor has occurred recently near other MBTA stations. The opportunities for Braintree are similar in scale and potential to those at Station Landing at the Wellington Orange Line Station and Assembly Row at the Assembly Orange Line Station. This vision is the first step to creating those opportunities by providing a framework to guide short and long term improvements toward a future that focuses a densely active node around transit and walkability and offers new opportunities for economic development, living, commuting and creating community in Braintree.

WHY LOOK TO CHANGE THIS AREA?

Thinking about the future also invites an important question, why change? The Ivory Street Corridor is managing to remain successful with places to shop, work and eat. Inevitably the future will bring change. Ivory Street has been slow to make other changes to respond to land use and market demand conditions. The district has a number of buildings that are currently vacant. The context for how we all shop, work and eat has changed dramatically over the past 50 years and will continue to change just as dramatically again. The Ivory Street Corridor is better positioned than many other places to respond to changing preferences for what residents and visitors consider a desirable place to shop, work, eat, and live. Changes that enhance walkability, increase efficient land use, and strengthen transit access benefit the Town's residents, businesses, transit commuters, as well as its tax base. This project is about maximizing the economic potential of an area that has evolved over the past 100 plus years in response to changes in employment and transportation opportunities. Through this project, Braintree is planning to manage future change.

BARRIERS TO THE VISION

This vision has several significant hurdles which must be overcome in order for it to be implemented over time. The district is not currently a pedestrian-friendly environment. The fundamental organization of the district, with long and disconnected blocks where vehicular circulation dominates all other modes of travel, is not conducive to walking or biking. Connectivity to adjacent neighborhoods is lacking.

A fundamental restructuring of the land through its block size, street types, building types, and open spaces needs to occur to realize this future vision.

Major traffic volumes will remain and must continue to travel through the district, but should be accommodated in a manner that provides safe and comfortable pedestrian experiences. The transformation of these fundamental elements or land use patterns will not happen simultaneously, but can be incrementally improved to build one upon another toward the vision.

The current development patterns will continue to have a momentum that can be difficult to adapt, particularly when current spaces are leased and generating revenue. The conversion of functioning strip retail into a mixed-use and walkable center can require decades of incremental improvements. New improvements and investments should transition away from vehicular-dominated models to more pedestrian-friendly models that provide buildings that define property frontages and street edges while concealing parking. Although a period of transition will occur, future investments should not follow older models of development and miss the opportunity to transition toward an improved vision.

The current location of the waste transfer station is directly across from the Red Line Station. This transit asset should be the heart of a pedestrian-friendly district. While the current location of the transfer station has significant benefits to the Town in terms of convenience and reduced waste management costs and fees, its current location may be inhibiting the potential of the Ivory Street district in several significant ways. First, the character and quality of the Ivory Street frontage near the rail station is limited by the transfer station. While the station itself has been improved in recent years, it cannot provide an active and pedestrian-oriented street frontage at the center of the district. Second, the transfer station generates heavy vehicle traffic that may not be consistent with creating an enhanced pedestrian environment. The transfer station's impacts may negatively affect the adjacent properties when considering the potential for redevelopment. The waste transfer station may be a part of the future vision for the district, but it does present challenges that must be considered.

The rail corridor and Route 3 both create boundaries on the west and east side of the district respectively. These infrastructure boundaries will exist in any foreseeable future and present challenges for pedestrian connectivity to surrounding neighborhoods. Creating connections to the surrounding areas is possible, but they must be made in strategic locations that provide safe and direct connections to as large a population as possible to justify the expense that may be associated with such connections.

SECTION V MARKET ANALYSIS

CONTEXT

A preliminary market assessment was completed as a component of the Braintree Ivory Street Corridor Study. The purpose of the assessment was to identify the potential for supportable office, retail and residential development in the study area and to better inform future planning decisions and development opportunities.

It is important to note that this preliminary assessment of market opportunities is not a prediction of what will occur on the site. It is a representation of what may be possible should policies and market interest align given current data, trends and projections for future household growth, spending potential and employment within and around the Town of Braintree over the next 5 to 10 years.

Office Analysis

KEY POINTS

NOTE: *This analysis was initially conducted by MAPC in 2015. A leasing professional reviewed this study and provided the following updated information. MAPC and the Ivory Street Steering Committee appreciate this professional's review.*

- The current office vacancy rate in Braintree is 7.8%; however after including known future vacancies for the next 12 months, the result is closer to 17% availability.

A typical vacancy rate in a given class of office space in a specific competitive office market needs to be between 5% to 8% to justify new office development.

- Class A Rents currently are between \$18.00 and \$19.00 per rentable square foot (rsf).
- Class C rents are at least \$15.00 per RSF

Assuming office sites that could be permitted and financed, office rental rates would need to sustain the higher cost of new construction. It is estimated that this would require rental rates above \$35.00 per RSF.

OFFICE ANALYSIS

There is currently about 267,500 SF of Office/Hotel development within the study area. In order to determine the potential *additional* office demand in Braintree, MAPC staff analyzed economic trends in Braintree, and regional trends in the office market.

ECONOMIC TRENDS

Jobs

Braintree had a total of 27,733 jobs in 2014 with about 12,322 people employed in jobs that are office-based (see Table below). Although Braintree saw a decrease in total number of jobs

between 2001 and 2008, there is about 3% job growth in more recent years (2008-2014). Between 2008 and 2014, Braintree gained about 681 jobs. The 3% overall job growth between 2008 and 2014 in Braintree is slightly less than the 4% growth that both the County and the State experienced during the same time period. Office based industries did not fare as well during this time period. As you can see in the table below, office based industries actually experienced a 1% decline in number of employees between 2008 and 2014. This compares with 6% growth in office based industries within Norfolk County and 9% growth in office based industries in the State.

However, there are individual office-based industries that have seen job growth in recent years. Notably, Management of Companies and Enterprises, which primarily includes companies overseeing or holding the securities of other companies, saw 252% growth between 2008 and 2014. However it is important to note that this industry still only makes up about 1% of total employment in Braintree with about 176 jobs in Braintree in 2014. Other office based industries that saw growth between 2008 and 2014 include Educational Services (9%), Administrative and Waste Services (8%), and Health Care and Social Assistance (5%). Health Care jobs employ about 12% of workers within Braintree and is the second largest industry behind Retail Trade. Administrative and Waste Services employs about 8% of workers and Educational Services employs around 5%.

SEE Comparative Employment Analysis Table following.

Comparative Employment Analysis

	Braintree					Norfolk County					Massachusetts				
	2001	2008	2001-2008 % Change	2014	2008-2014 % Change	2001	2008	2001-2008 % Change	2014	2008-2014 % Change	2001	2008	2001-2008 % Change	2014	2008-2014 % Change
51 - Information	1,218	853	-30%	611	-28%	12,636	12,130	-4%	10,814	-11%	117,751	95,197	-19%	92,060	-3%
52 - Finance and Insurance	1,563	1,387	-11%	1,341	-3%	29,257	26,115	-11%	23,047	-12%	183,989	179,999	-2%	166,469	-8%
53 - Real Estate and Rental and Leasing	1,136	1,336	18%	1,325	-1%	5,750	5,855	2%	5,769	-1%	44,899	42,454	-5%	43,060	1%
54 - Professional and Technical Services	1,661	2,113	27%	1,673	-21%	18,791	21,880	16%	22,223	2%	247,890	262,502	6%	287,943	10%
55 - Management of Companies and Enterprises	394	50	-87%	176	252%	10,841	10,892	0%	10,265	-6%	71,925	61,461	-15%	63,519	3%
56 - Administrative and Waste Services	2,201	2,106	-4%	2,278	8%	15,904	16,592	4%	18,223	10%	170,152	168,860	-1%	173,830	3%
61 - Educational Services	1,151	1,355	18%	1,477	9%	24,007	26,306	10%	29,911	14%	294,213	318,545	8%	346,140	9%
62 - Health Care and Social Assistance	4,157	3,275	-21%	3,441	5%	38,212	41,162	8%	51,050	24%	429,761	500,348	16%	600,253	20%
Office/Institutional Sectors-Building Type	13,481	12,475	-7%	12,322	-1%	8	2	4%	171,302	6%	1,560,580	6	4%	74	9%
44-45 - Retail Trade	6,459	5,429	-16%	5,983	10%	42,026	40,012	-5%	42,424	6%	359,024	348,176	-3%	350,186	1%
71 - Arts, Entertainment, and Recreation	254	246	-3%	191	-22%	4,502	6,614	47%	7,780	18%	46,961	54,391	16%	59,942	10%
72 - Accommodation and Food Services	2,579	2,278	-12%	2,414	6%	21,798	23,557	8%	27,646	17%	237,739	257,074	8%	288,985	12%
81 - Other Services, Ex. Public Admin	969	979	1%	1,011	3%	11,345	14,039	24%	11,688	-17%	113,608	129,707	14%	114,971	-11%
Retail/Commercial & Other Building Type	10,261	8,932	-13%	9,599	7%	79,671	84,222	6%	89,538	6%	757,332	789,348	4%	814,084	3%
23 - Construction	1,829	1,121	-39%	1,168	4%	19,525	19,162	-2%	18,459	-4%	151,270	144,233	-5%	140,314	-3%
31-33 - Manufacturing	1,981	1,955	-1%	1,931	-1%	32,747	24,038	-27%	22,690	-6%	389,232	286,458	-26%	250,534	-13%
42 - Wholesale Trade	1,800	1,116	-38%	955	-14%	19,054	18,418	-3%	16,465	-11%	141,086	136,527	-3%	124,109	-9%
48-49 - Transportation and Warehousing	729	559	-23%	704	26%	10,092	7,758	-23%	7,592	-2%	113,128	101,241	-11%	101,302	0%
Industrial/Warehousing-Building Type	6,339	4,751	-25%	4,758	0%	81,418	69,376	-15%	65,206	-6%	794,716	668,459	-16%	616,259	-8%
92 - Public Administration	695	659	-5%	773	11%	9,590	9,242	-4%	10,176	10%	140,511	137,140	-2%	136,808	0%
Total, All Industries	30,999	27,052	-13%	27,733	3%	327,06	324,55	-1%	337,209	4%	3,276,103	5	-1%	3,363,0	4%

Source: MA Department of Labor and Workforce Development

Table 1: Average Weekly Wage Comparison

	Braintree					Norfolk County					Massachusetts				
	2001	2008	2001-2008 % Change	2014	2008-2014 % Change	2001	2008	2001-2008 % Change	2014	2008-2014 % Change	2001	2008	2001-2008 % Change	2014	2008-2014 % Change
51 - Information	\$942	\$1,118	19%	\$1,575	41%	\$1,046	\$1,447	38%	\$1,587	10%	\$1,244	\$1,590	22%	\$1,898	19%
52 - Finance and Insurance	\$1,464	\$1,327	-9%	\$1,644	24%	\$1,249	\$1,561	25%	\$1,809	16%	\$1,682	\$2,286	26%	\$2,651	16%
53 - Real Estate and Rental and Leasing	\$736	\$1,041	41%	\$1,180	13%	\$787	\$966	23%	\$1,253	30%	\$831	\$1,086	23%	\$1,400	29%
54 - Professional and Technical Services	\$1,015	\$1,321	30%	\$1,706	29%	\$1,262	\$1,834	45%	\$2,033	11%	\$1,428	\$1,855	23%	\$2,185	18%
55 - Management of Companies and Enterprises	\$1,515	\$1,831	21%	\$1,889	3%	\$1,346	\$1,513	12%	\$1,789	18%	\$1,280	\$1,934	34%	\$2,433	26%
56 - Administrative and Waste Services	\$641	\$734	15%	\$678	-8%	\$615	\$786	28%	\$805	2%	\$585	\$744	21%	\$813	9%
61 - Educational Services	\$763	\$854	12%	\$921	8%	\$677	\$968	43%	\$1,016	5%	\$741	\$977	24%	\$1,094	12%
62 - Health Care and Social Assistance	\$594	\$817	38%	\$854	5%	\$658	\$899	37%	\$1,053	17%	\$698	\$958	27%	\$1,023	7%
44-45 - Retail Trade	\$426	\$482	13%	\$559	16%	\$534	\$564	6%	\$607	8%	\$477	\$532	10%	\$578	9%
71 - Arts, Entertainment, and Recreation	\$356	\$396	11%	\$390	-2%	\$701	\$895	28%	\$810	-9%	\$530	\$655	19%	\$679	4%
72 - Accommodation and Food Services	\$371	\$378	2%	\$388	3%	\$296	\$347	17%	\$378	9%	\$311	\$371	16%	\$408	10%
81 - Other Services, Ex. Public Admin	\$503	\$574	14%	\$768	34%	\$510	\$525	3%	\$643	22%	\$477	\$542	12%	\$660	22%
23 - Construction	\$1,215	\$1,298	7%	\$1,442	11%	\$1,050	\$1,254	19%	\$1,422	13%	\$963	\$1,178	18%	\$1,311	11%
31-33 - Manufacturing	\$1,052	\$1,482	41%	\$1,685	14%	\$1,106	\$1,349	22%	\$1,416	5%	\$1,047	\$1,327	21%	\$1,603	21%
42 - Wholesale Trade	\$1,185	\$1,282	8%	\$1,586	24%	\$1,188	\$1,384	16%	\$1,559	13%	\$1,190	\$1,479	20%	\$1,696	15%
48-49 - Transportation and Warehousing	\$653	\$785	20%	\$904	15%	\$707	\$894	26%	\$981	10%	\$750	\$899	17%	\$972	8%
92 - Public Administration	\$938	\$1,204	28%	\$1,386	48%	\$903	\$1,089	21%	\$1,305	20%	\$861	\$1,108	22%	\$1,342	21%
Total, All Industries	\$757	\$888	17%	\$997	12%	\$849	\$1,048	23%	\$1,141	9%	\$865	\$1,092	21%	\$1,233	13%

Source: MA Department of Labor and Workforce Development

Wages

When looking at job growth, it's also important to see how wages within particular industries are changing to ensure that residents and workers in Braintree have access to good jobs with wage growth potential. As illustrated above two of the office based industries that have seen job growth in Braintree between 2008 and 2014 (Health Care and Social Assistance, and Educational Services) have also seen wage growth during that time period at 5% and 8% growth respectively. However, Administrative and Waste Services actually saw wages decline 8% during this time period. The office based industry with the highest paying jobs in Braintree is actually Management of Companies and Enterprise with an average weekly wage of \$1,889. When compared with the County and the State, all three of these industries also pay lower average wages in Braintree. It will be important for the Town to continue to attract companies that provide strong job opportunities with competitive wages in order to most successfully compete with other communities throughout the County and the state. Health Care and Social Assistance and Educational Services may be good opportunities for the Town to pursue. Although Management of Companies and Enterprises only makes up a small percentage of total employment in Braintree, it may also be a good opportunity to pursue because of its recent exponential growth within Town, along with the high wages that the industry pays.

LARGEST EMPLOYERS

MAPC staff also analyzed data on the largest employers to determine which industries are the most represented amongst this group. Below are the 10 employers in Braintree that employ more than 250 people. As the table demonstrates, the three largest employers consist of the Town of Braintree along with a Health Care and Social Assistance business (Braintree Rehabilitation Hospital) and a Manufacturing business (Haemonetics Corp). The ten largest employers in Braintree represent a number of different industries including Wholesale Trade, Transportation and Warehousing, Arts, Entertainment, and Recreation, Retail Trade, Educational Services, Manufacturing, Health Care and Social Assistance, along with the Archdiocese of Boston. Amongst these largest employers, there is no real concentration within one particular industry.

Largest Employers in Braintree

Company Name	Address	Number of employees	NAICS
Braintree Town	JFK Memorial Dr.	1,000-4,999	9211
Archdiocese of Boston	Brooks Dr.	250-499	8131
Braintree Rehabilitation Hospital	Pond St	500-999	6243
Haemonetics Corp	Wood Rd	250-499	3391
Local Motion	Rocsam Park Rd	250-499	4855
Massachusetts State Lottery	Columbian St # 1	250-499	7132
Nordstrom	Granite St # 227	250-499	4521
St Coletta's Day School	Washington St	250-499	6111
Symmons Industries Inc	Brooks Dr.	250-499	3329

Source: MA Department of Labor and Workforce Development

EMPLOYMENT PROJECTIONS

Analyzing job projections at a more regional level demonstrates what industries have the most potential to grow in and around the town of Braintree and where there may be the greatest potential for Braintree to grow its office market.

The Massachusetts Department of Labor and Workforce Development (DLWD) projects job growth between 2010 and 2020 (+14.9% or 14,834 jobs for traditional office oriented industries) for the South Shore Workforce Investment Area (WIA). This area includes Braintree, Carver, Cohasset, Duxbury, Halifax, Hanover, Hingham, Holbrook, Hull, Kingston, Marshfield, Middleborough, Milton, Norwell, Pembroke, Plymouth, Quincy, Randolph, Rockland, Scituate, and Weymouth. Below is projected job growth in industries within the South Shore WIA that are most likely to locate in traditional office buildings. It is projected that 14,834 office-oriented jobs will be added within the WIA between 2012 and 2022. Businesses will require office space to house their workers and it is likely that more will be needed than is currently available. Industries expected to grow the most significantly include Professional, Scientific, and Technical Services (23%), Health Care and Social Assistance (22.2%), and Management of Companies and Enterprises (16.8%) Given the data above on historical growth of industries within the Town of Braintree, Health Care and Social Assistance and Management of Companies and Enterprises again represent good opportunities for the Town to pursue. It is important to note however that a number of municipalities are competing for these jobs and Braintree will have to be strategic in order to bring more jobs into Town. Table Data from MA DLWD.

Projected Job Growth in South Shore Workforce Investment Area

Industry	Employment 2012	Employment 2022	Change Level	Change Percent
Information	4,346	4,638	292	6.70%
Publishing Industries (except Internet)	882	1,021	139	15.80%
Telecommunications	1,951	1,690	-261	-13.40%
Data Processing, Hosting and Related Services	877	1,073	196	22.30%
Finance and Insurance	17,092	18,524	1,432	8.40%
Credit Intermediation and Related Activities	6,415	6,816	401	6.30%
Insurance Carriers and Related Activities	8,397	9,039	642	7.60%
Real Estate and Rental and Leasing	3,353	3,739	386	11.50%
Real Estate	2,743	3,090	347	12.70%
Professional, Scientific, and Technical Services	9,946	12,236	2,290	23.00%
Management of Companies and Enterprises	4,190	4,895	705	16.80%
Administrative/Support/Remediation	9,735	10,810	1,075	11.00%
Administrative and Support Services	8,318	9,351	1,033	12.40%
Waste Management and Remediation Service	1,417	1,459	42	3.00%
Educational Services	17,422	18,678	1,256	7.20%
Health Care and Social Assistance	33,360	40,758	7,398	22.20%
Total	99,444	114,278	14,834	14.92%

OFFICE MARKET CONDITIONS

MAPC staff also looked broadly at the Boston regional office market to identify the role of Braintree within the larger market. Overall the office market in the Greater Boston region continues to do very well with direct average asking rents reaching above the previous peak for the fifth quarter in a row to \$34.40, and total vacancy dipping to its lowest point since 2007 (13.8%). Boston's Downtown and Route 128/Mass Pike submarkets were the most active. The tightening market has led to speculative office developments across the Greater Boston region. Forecasts through 2020 project steady growth to continue at nearly 2% per year for the next two to three years.¹

Braintree is part of the South submarket as defined by Jones Lang LaSalle (now JLL).² Characteristics of the South submarket are compared with the 128/Mass Pike market (a thriving suburban market) and the overall suburb office market in the table below.

¹ Jones Lang LaSalle (now JLL), Q4 2015.

² The South submarket includes the communities of Abington, Acushnet, Braintree, Bridgewater, Brockton, Canton, Carver, Cohasset, Dedham, Duxbury, East Bridgewater, Easton, Fairhaven, Halifax, Hanover, Hanson, Hingham, Holbrook, Hull, Kingston, Marion, Marshfield, Mattapoisett, Milton, Norwell, Norwood, Pembroke, Plymouth, Plympton, Quincy, Randolph, Rochester, Rockland, Scituate, Sharon, Stoughton, Walpole, Wareham, West Bridgewater, Westwood, Weymouth, Whitman

Comparative Analysis of Regional Office Markets

	South	128/Mass Pike	Suburbs
Supply (million sf)	12.9 SF	20.6 SF	89.5 SF
% Class A	57.5%	60.1%	59.8%
Average Asking Rent	\$21.99	\$34.17	\$23.16
YoY Rent Growth	2.8%	15%	4%
Total Vacancy	13.3%	8.1%	14.4%
YoY Change (ppts)	5.5	.3	-1.7
Total Net Absorption 2015	849,348	221,586	1,842,675
as % stock	6.6%	1.1%	2.1%
Total Availability	17%	13.8%	20.3%
y/y Change (ppts)	-3.7	1	-1

Source: Jones Lang LaSalle, Office Outlook, Q4 2015

As shown in table above, the South submarket is lagging slightly behind the overall Boston suburbs market and the thriving suburban market of the 128/Mass Pike area with a lower average asking rent for office space. The vacancy percentage is now lower than it is for suburbs overall, although still higher than for the 128/Mass Pike market. The vacancy rate in the South submarket has decreased by about 5 percentage points since Q4 of 2014 which is a sign that demand is up in this submarket and office space is being filled. The Class A direct vacancy rate for the South submarket is even lower at 11.9% which is also down by about 5 percentage points from Q4 2014.

This has been a historically strong year for the South submarket with nine office leases of over 20,000 square feet signed in the second half of 2015. These leases helped to elevate year to date absorption to over 700,000 square feet which is the highest it has been in over 15 years. It is important to note though that the two largest deals were in Dedham and Westwood. Heritage Park in Quincy and University Station in Westwood have seen strong leasing activity which is indicative of the value of new Class A space in the overall South submarket. Notably Heritage Park and University Station both offer amenities, including many restaurants³. University Station is also nearby the Route 128 MBTA Commuter Rail station. Areas that offer amenities, transportation options, and walkable environments have been particularly attractive to companies looking to locate throughout the MAPC region.

As prices continue to rise in downtown Boston, Cambridge, and 128/Mass Pike, many tenants are looking for options to the South. The South market offers an opportunity to lease Class A space with amenities and transportation options that are much more affordable⁴. Braintree has an opportunity to create this kind of environment at Braintree station and should take advantage of this potential while the office market continues to trend positively. Related initiatives such as the

³ JLL Office Insight, Q4 2015

⁴ JLL, Q4 2015.

Red Line Life Sciences Corridor should be leveraged as well to increase Braintree's prospects to compete successfully within the South submarket.

BRAINTREE OFFICE MARKET

In Braintree, there are a number of existing office parks including Braintree Hill Office Park, Grossman Drive, Forbes Road, Granite Street, Braintree Business Park, and Tricon Park. Many of the existing office parks are clustered closer to I-93 and the South Shore Plaza, rather than near the Braintree MBTA Station. Braintree is included within the Quincy Economic Target Area (ETA). This designation includes financial incentives to attract new businesses and stimulate job creation.

In order to get an understanding of what kind of office space is currently on the market or has been recently leased, MAPC staff looked at local listings throughout the Town on Loopnet.com. Below is a summary of currently available listings and recently leased office properties in the Town of Braintree.

While there were a limited number of listings for office space in Braintree, the majority of those posted were closer to I-93 in existing office parks. Based on the below listings, rents range from about \$18-\$19/square foot for Class A office space in Braintree. There was only one listing with an associated price for Class B space which was leasing for \$18/SF and there were no listings for Class C space with associated rental rates. The majority of these leasing rates are lower than the overall average asking rent of \$21.99 in the JLL South Submarket and may be an indication of Braintree's relative competitive position within this submarket. It is however important to keep in mind that this is only a small sample of office listings that are available and listed on LoopNet. As such, it is not a comprehensive listing of all office properties available for lease. It does however allow us to see a range of leasing prices throughout Town.

Currently Available Office Properties in Braintree

Address	Space Available (SF)	Rental Rate	Building Size (SF)	Class
157-159 Bay State Drive	9,000	\$11.50/SF	188,680	A
157-159 Bay State Drive	14,000	\$11.50/SF	188,680	A
372 Washington Street	1916	\$18/SF	4,360	A
197 Bay State Drive	9419	\$5.50/SF	188,680	A
197 Quincy Avenue	600	\$18/SF	23,162	B
340 Wood Road	1600-3266	Negotiable	47,785	B
140 Wood Road	500-31215	Negotiable	53,000	B
14 Wood Road	11,220	Negotiable	11,220	C
150 Wood Road	892-6920	Negotiable	50,829	C
14 Storrs Avenue	1513-6920	\$12/SF	10366	N/A

Source: Loopnet.com (March 2016 listings)

OFFICE DEVELOPMENT POTENTIAL

The Town of Braintree likely has the potential to support new office development. The Town is situated within an improving office submarket, has a number of existing office parks that are located close to amenities and offers a number of public transportation options that can be leveraged. The growing health care industry and education sector within the South Shore Workforce Investment Area represent some opportunities for growth if space becomes available or if new development is added.

However, there are some challenges in terms of attracting office space to the study area site in particular. Currently the majority of existing office space is located in another area of Town and it is often beneficial to employers to locate in areas where several office buildings are clustered together. Braintree is also part of the Quincy economic target area and the Town also offers economic incentives in some of their other commercially zoned areas that do not include the study area. There are many assets within the study area, including an existing MBTA station, one large property owner, and existing retail stores. However, in order to become much more attractive for office development, this area would need a greater mix of uses. If the Town is interested in attracting office development to the study area, they must also address some physical issues with the site including walkability, creating better access to the MBTA station from the surrounding area and grappling with the long term location of the waste transfer station.

Retail Analysis

A retail opportunity gap analysis examines the “gap” or difference between actual retail sales figures and estimated spending of households on a variety of different types of retail goods and food establishments (both inside and outside of the trade area).

KEY POINTS

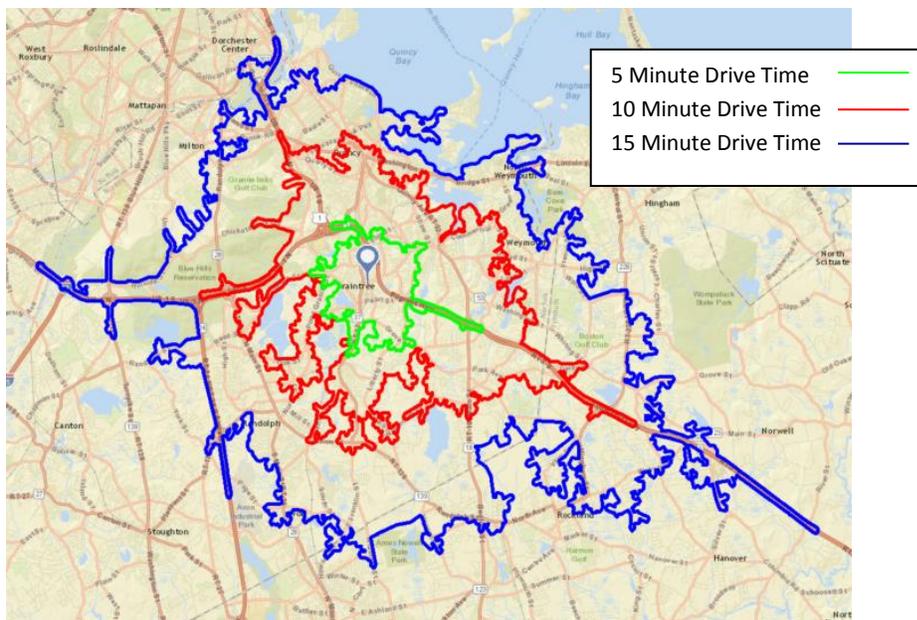
- Very limited retail opportunity; the market is already retail-saturated
- More residential could create a built-in market for new retail

TRADE AREA

There is currently approximately 760,500 SF of retail and restaurant development within the study area. In order to estimate the amount of *additional* retail the study area can support, it is important to first identify a trade area. The trade area is the geographic area from which a retail establishment generates sales. There are many factors to consider when determining a primary trade area including the distance and time that people may be willing to travel in order to reach a destination, any physical or geographic barriers as well as regional competition. For the Braintree study area, MAPC looked at three drive times to define the trade area.

The ten minute drive time is the primary market as it is reasonable to assume that people would be willing to travel this distance in order to attain goods and services within the study area. For comparison and to account for a more local and regional draw, MAPC staff also considered a secondary trade area of a fifteen minute drive time and a local trade area of a five minute drive time. Drive times are displayed in the map below. The map source is ESRI Business Analyst.

Retail Trade Area, Drive Times



RETAIL OPPORTUNITY GAP ANALYSIS

ESRI Business Analyst data within the defined trade areas was evaluated in order to conduct a retail gap analysis. A retail opportunity or gap analysis looks at the overall demand for retail goods and services within a designated trade area based on the spending potential of the households (demand), and the actual sales for those goods and services within the market area (supply). The difference between the demand and supply is called the retail “gap.” If the demand exceeds the supply, there is “leakage,” meaning that residents must travel outside the area to purchase those goods. In such cases, there is an opportunity to capture some of this spending within the market area to support new retail investment. When there is greater supply than demand, there is a “surplus,” meaning consumers from outside the market area are coming in to purchase these good and services. In such cases, there is limited or no opportunity for additional retail development. Thus, the retail gap analysis provides a snapshot of potential opportunities for retailers to locate within an area.

Below is a summary of the retail opportunity gap analysis by industry group and trade area. Figures in red are negative numbers that indicate there is a surplus of sales within the trade area. Figures in green are positive numbers that indicate a retail gap or leakage and represent potential opportunities for more retail in the area.

Industry Summary	NAICS	LOCAL TRADE AREA	PRIMARY TRADE AREA	SECONDARY TRADE AREA
		5 minute drive time	10 minute drive time	15 minute drive time
Total Retail Trade and Food & Drink		-\$70,606,307	-\$719,777,785	-\$232,413,962
Total Retail		-\$74,835,529	-\$693,576,213	-\$233,269,587
Total Food & Drink		\$4,229,221	-\$26,201,572	\$855,625
Downtown and Mixed-Use Oriented Industry Groups				
Furniture & Home Furnishings Stores	442	-\$2,627,345	-\$1,651,058	-\$2,955,230
Electronics & Appliance Stores	443	-\$4,961,247	\$28,376,844	-\$8,142,909
Building Materials, Garden Equip. & Supply	444	\$7,618,938	-\$24,650,870	-\$5,078,133
Food & Beverage Stores	445	-\$13,274,098	-\$80,651,164	-\$71,982,273
Health and Personal Care	446, 4461	\$799,653	-\$37,063,414	-\$10,629,284
Clothing & Clothing Accessories	448	\$7,636,219	-\$134,447,450	-\$54,824,303
Sporting Goods, Hobby, Book and Music Stores	451	-\$16,889,363	-\$21,810,983	\$6,575,821
Miscellaneous Store Retailers	453	-\$24,686,315	-\$240,090,049	-\$224,568,123
Food Services & Drinking Places	722	\$4,229,221	-\$26,201,572	\$855,625

The table above indicates that that all three trade areas present fairly limited opportunities for additional retail. The area is likely over-retailed and in need of additional residential spending power in order to increase the market potential for additional retail stores. The source of the information is *ESRI Business Analyst*

POTENTIAL SUPPORTABLE RETAIL SQUARE FOOTAGE

MAPC staff uses a conservative capture rate to analyze the retail gap and understand the potential for additional establishments. This capture rate acknowledges that any single retail district will never be able to re-capture the full amount of retail leakage. Competition from regional shopping areas such as well as other local districts and online shopping will always draw business away from the study area. When analyzing the market potential within the local trade area and primary trade area, MAPC uses a 15% and 10% capture rate respectively. When looking at market potential within the secondary trade area, MAPC uses a lower 5% capture rate. Using this methodology, the market within each of the trade areas could likely support the industries detailed below in the Market Potential Table.

It is important to note that the data below is not a prediction for what will occur within the study area, rather it is an opportunity or estimate of retail space that could be supported based on the gap analysis figure, average sales per square foot of different store types, average store sizes in downtown areas, and an estimated spending capture within each trade area.

MARKET POTENTIAL ESTIMATE

Trade Area	Supportable Square Footage	Total Establishments	Types
Local Trade Area (5 minute drive time)	16,700 sf	5	1 Building Materials, Garden Equipment, & Supply store, 1 Food & Beverage Store, 2 Clothing & Clothing Accessories Stores, 1 Food Service & Drinking Place
Primary Trade Area (10 minute drive time)	15,000 sf	4	2 Electronics & Home Furnishings Stores, 1 Food & Beverage Store, 1 Used Merchandise Store,
Secondary Trade Area (15 minute drive time)	29,000 sf	7	4 Electronics & Home Furnishings Stores, 2 Food & Beverage Stores, 1 Food Service & Drinking Place

Source: ESRI BAO and MAPC

The market within the three trade areas is currently limited but could be expanded if more residential units are introduced within the study area. The market within the primary trade area can support up to 4 total establishments with the best opportunities being Electronics & Home Furnishings Stores. The market within the secondary trade area could support 7 total

establishments with the greatest opportunities being Electronics & Home Furnishings Stores, and Food & Beverage Stores.

It is important to note that there are many factors that influence whether or not a retail store or restaurant may want to locate in a particular area. Some of the additional factors that impact the decision to locate a new retail establishment include:

- Availability and quality of the retail space
- Size of the spaces available
- Location of the space- is this a place where many people are passing by?
- Foot traffic
- Rents and terms
- Parking- is it available nearby or within a short walk?
- Product or service price points
- Marketing
- Business plan and acumen
- Zoning and other regulatory obstacles
- Permitting and inspection processes

Although the potential exists for a limited amount of more retail, based on the numbers, the amount captured may be less, dependent on the above factors.

WORKER RETAIL POTENTIAL

In addition to residents, workers in or near the Braintree MBTA Station can also support additional establishments with their spending power. According to the International Council of Shopping Centers (ICSC) workers spend approximately \$100 on food and convenience goods during the work week. Within the local trade area (5 minute drive time), there are approximately 9,012 employees and within the primary trade area (10 minute drive time), there are 69,118 employees. If retail establishments within the study area could capture the spending of some of these workers, they may be able to support additional establishments as seen below.

Worker Retail Potential Spending Table

	Local Worker Spending		Potential Supportable Retail	
	# of workers (rounded)	Annual Spending (estimated)	Square footage retail	Number of supportable stores
Workers within five minute drive time (25% capture rate)	2,253	\$2,253,000	7,769	4
Workers within ten minute drive time (10% capture rate)	6,912	\$3,456,000	11,917	6

Assumptions: 50 work weeks per year, \$20/week spending per Local Trade Area employee, \$10/week spending per Primary Area employee

There are also many people who pass through Town in order to access the commuter rail station and MBTA red line. If establishments within the study area can market themselves effectively to commuters, the town would have access to increased spending power that could support additional retail establishments and restaurants.

Residential Analysis

KEY POINTS

- Total population is projected to increase
- The population is aging
- Household size is declining
- Current housing stock will likely not meet needs
- Housing is becoming increasingly less affordable
- 624 multi-family units needed by 2020 to house Braintree's projected population
- The Ivory Street Corridor could likely accommodate around 411 new units of housing

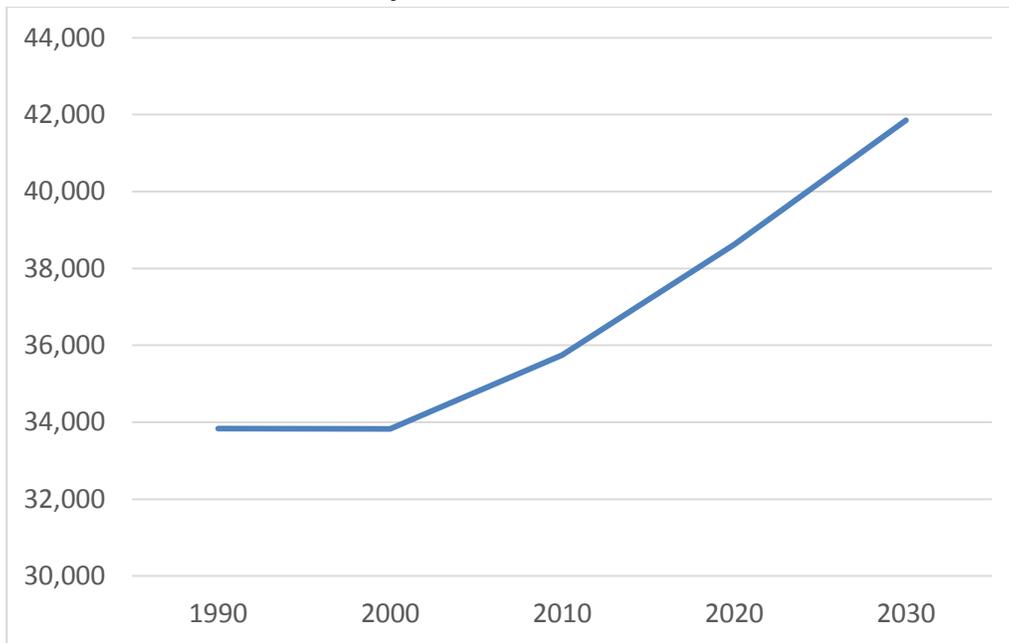
Age Cohort	Single Family		Multi-family	
	Own	Rent	Own	Rent
15-34	700	73	225	999
35-54	1,666	23	109	-446
55-74	-250	-79	141	7
75+	-1210	-55	-207	-204
TOTALS	906	-38	268	356

Source: 2010 US Census, MAPC Population Projections

POPULATION

Between 1990 and 2010, Braintree's population grew by 6% and is projected to grow another 8% between 2010 and 2020. The largest percentage growth is projected to occur within the population age 65 and over at 27% growth, followed by 12% growth in the population age 35-49.

Population Growth: 1990-2030



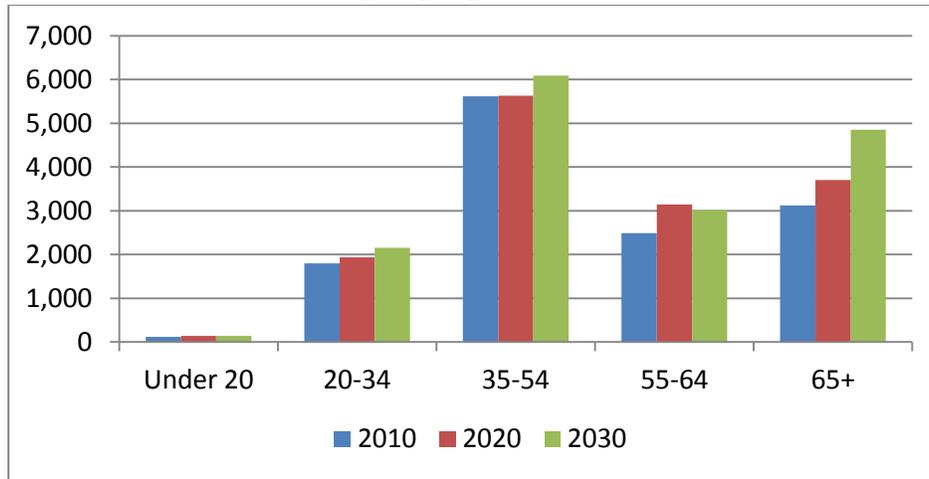
Source: 2010 US Census, MAPC Projections

HOUSEHOLDS

For the housing market analysis, understanding the household composition trends is more important than the overall population trends. Every household resides in one housing unit, no matter the number of people in that household. Thus, to better understand housing needs within a community, the projected number of households provides insight into the amount and type of housing that may be needed currently or in the future.

As shown in the chart below, over 3,100 additional households are projected by MAPC in the Town of Braintree over the next two decades. The majority of that growth is projected to be senior headed households (+56%) and young professional households between the ages of 20 and 34 (+20%). Housing preferences for these Baby Boomers and Millennials in many ways align. Both are increasingly interested in residing in urban, or urban-like pedestrian oriented environments that offer many amenities and transportation options. The Ivory Street Corridor has the potential to provide many of these amenities and transportation options.

Household Change by Age: 2010-2030



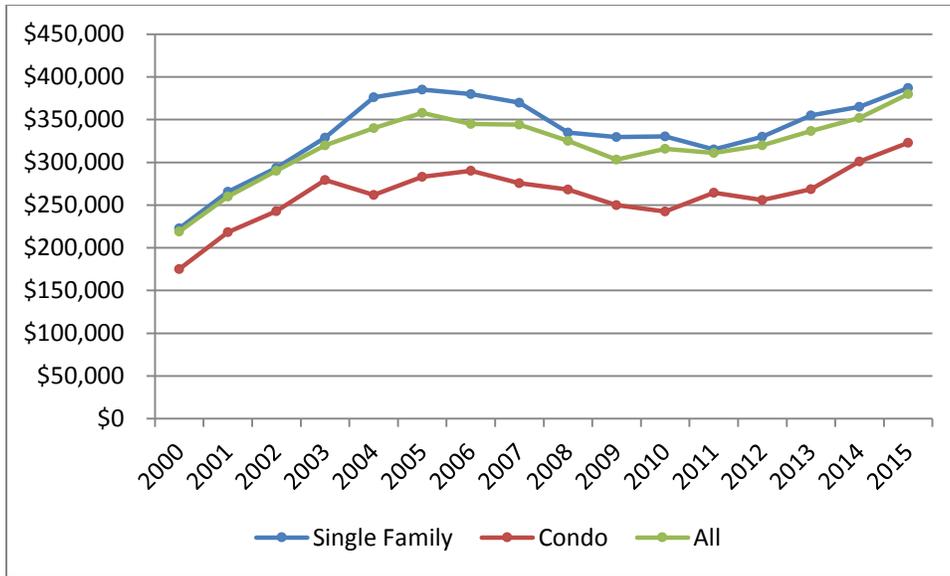
	2010	2020	2030	Change 2010-2030	% Change 2010- 2030
Under 20	117	140	137	20	17%
20-34	1797	1934	2157	360	20%
35-54	5616	5628	6086	470	8%
55-64	2488	3147	3010	522	21%
65+	3120	3703	4855	1735	56%
Total	13138	14552	16245	3107	24%

Source: 2010 US Census, MAPC Projections

HOUSING SALES AND PRICING

Across all unit types (single family and condos), Braintree’s median sales price has been growing steadily since 2011 indicating increasing demand for residential. The condo market in particular has taken off with a median sales price in 2015 of \$323,000. This compared with a median sales piece of \$255,900 just three years prior in 2012. Single Family prices have been slower to recover with 2015 being the first year that the median sales price for a single family house surpassed the most recent peak median sales price of \$385,000 in 2005 (pre-recession). Prices for single family homes have been steadily increasing since 2011 however, again indicating that demand for housing in Braintree is on the rise.

Median Sales Prices: Braintree 2000-2015

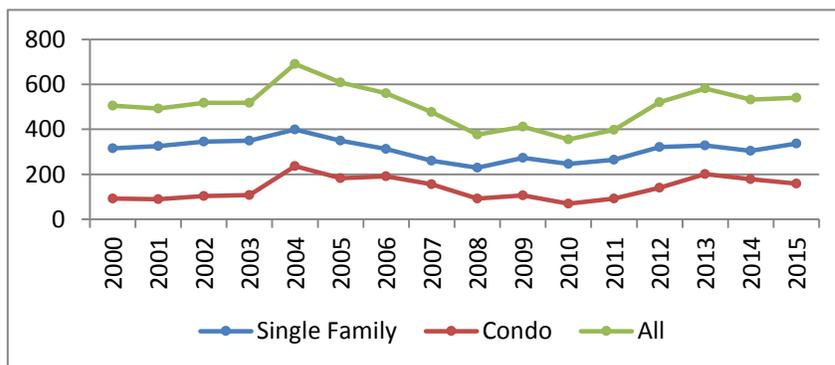


Source: Warren Group 2015

At Jonathan’s Landing, a 300 unit condominium complex adjacent to the study area, units go for anywhere between \$310,000 and \$485,000. Condos range in size from 935 square feet one bedroom units to over 1,700 square feet two bedrooms units. This development has been very popular and its success indicates that similarly priced condominiums in this area would be in high demand. At focus groups conducted for the study, tenants currently living within Jonathan’s Landing cited a number of reasons for choosing to live in the complex, including the proximity of the Red Line and Route 3. Some tenants had lived in Braintree for most of their lives and were looking for a place to downsize. Others were young professionals that wanted to be in close proximity to Boston, but found Braintree to be more affordable while offering urban amenities.

The number of sales in Braintree has actually been decreasing or staying about the same in recent years. This could indicate that there is a lack of inventory considering that prices have been increasing during the corresponding time period.

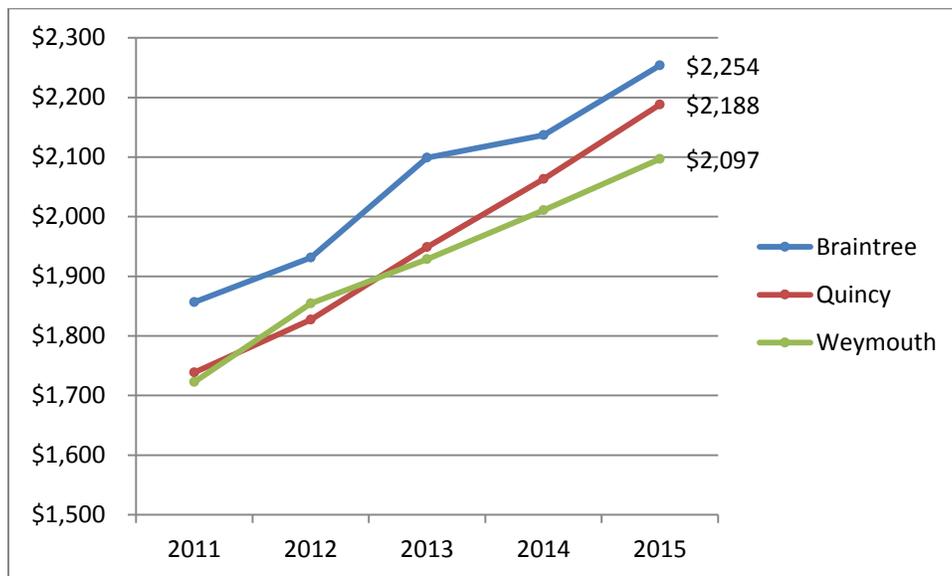
Number of Home Sales: Braintree 2000-2015



Source: Warren Group 2015

RENTAL HOUSING AND PRICING

Average Monthly Rent Comparisons, 2011-2015



Source: Zillow 2015

Braintree has seen a steady increase in rents over the last five years. The 2015 average rent of \$2,254 is about 21% higher than the average rent in 2011 of \$1,857. The adjacent City of Quincy and the Town of Weymouth have also seen similar increases in their average monthly rents over this time period. However, Braintree has the highest monthly rent overall.

HOUSING DEMAND

Given existing inventory and demographic changes there is potential to support additional housing units, particularly multi-family units, in the Town of Braintree. MAPC's housing projections represent how changing trends in births, deaths, migration, and housing occupancy might result in population growth and greater housing demand. In order to assess the market potential for housing within a community, MAPC staff compare these projections with the number of units that have actually been permitted over the past five years to understand how supply is aligning with demand. Because markets cross municipal boundaries, it is important to look at residential supply and demand across multiple communities. A community may actually experience more or less market demand if surrounding communities are either not producing enough or producing significantly more housing than the demand projections indicate. For example, if a community adjacent to Braintree is producing very limited housing, Braintree may capture more of the regional market demand and thereby lower the individual demand within that adjacent community.

MAPC staff first identified a broader regional focus area of housing markets that might reasonably compete with Braintree in attracting residents. The focus area identified included the communities of Holbrook, Milton, Quincy, Randolph, and Weymouth. MAPC staff then considered

projected housing unit demand through 2020 by combining the projected individual demand from each of these communities by both housing type and tenure. Based on MAPC demand projections, an estimated 8,916 units were projected to be needed by 2020 within the focus area.

In addition to the projected demand, it is also important to consider the supply, or the number of units that have been permitted between 2011 and 2014, and that have begun to fulfill projected demand. Based on available building permit data, Braintree has captured 28% of permitted multi-family units within the focus area since 2011. Within the focus area, only Quincy has permitted more multi-family units within this time frame. This is indicative of the strong demand for multi-family housing within town.

If the town can continue to capture multi-family development at this rate, it could likely support between 822 (20% of the additional expected demand for the focus area) and 1,233 (30% of the additional expected demand for the focus area) additional multi-family units in town through 2020. It is more likely that the Town could support the number of units represented by the lower 20% projection as residential development is moving at a rapid pace in neighboring Quincy with a predicted 250 residential units permitted in 2015.⁵ The additional units being produced in Quincy will lower the market demand in Braintree.

Within the Holbrook, Milton, Quincy, Randolph, and Weymouth focus area there is currently unmet demand for 4,110 multi-family units.⁶ The Ivory Street Corridor study area is a particularly well suited area for multi-family because of its proximity to transit. There certainly are some challenges within the study area, including the transfer station site, but the former Armstrong Cork mill site at the southern end of the study area could be made even more attractive for future development by creating better connections to the MBTA. The study area could likely support around 411 units of housing.

In terms of single family housing, the Town of Braintree has captured about 10% of the single family building permits within the focus area between 2011 and 2014 based on permit data. If Braintree can capture a similar amount of the additional expected demand for the focus area through 2020, it could likely support between 267 (2.5% capture) and 400 (5% capture) single family units town-wide. Some existing single family housing is likely to be freed up by older generations who are looking to downsize however so there may not be a need to actually construct this much new single family housing if existing units are being freed up to meet the market demand. There is unlikely to be a significant amount of single family housing developed near the Braintree Commuter Rail station. However, single family alternatives such as townhouses could be feasible and may offer a nice transition between existing single family residential neighborhoods and more dense multi-family development. Unmet demand for single family housing within the broader focus area is for 3,341 units. The study area may be able to support between 40 and 60 single family alternatives (townhomes) that could serve families looking for a little more space than a unit in a multi-family building might offer, combined with convenient access to public transit.

⁵ Greater Boston Housing Report Card, 2015.

⁶ Based on 2011 through 2014 building permit data.

Potential Unit Demand, Town of Braintree

	Unit Demand (Subregion)	Units Added (Subregion)	Remaining Demand	Capture Rates	
				20%	30%
Multifamily	5159	1049	4110	822	1233
				2.5%	5%
Single-family	3757	416	3341	267	400

Source: MAPC Analysis

UNIT DEMAND MIX

Given the diversity of households interested in urban styles of living, it is crucial that new residential development include a mix of unit types, including one-, two-, and three-bedroom options. One- and two-bedroom units in larger apartment and condominium developments will be most attractive to smaller households, including downsizing seniors and younger singles and couples, many of whom may wish to access the commuter rail to job opportunities in Boston/Cambridge. Three-bedroom units, either in larger multifamily developments or in townhouse-style properties, would be most appealing to slightly larger households, such as those with children and downsizing households interested in smaller living spaces that still offer guest bedrooms for family visitors (e.g. grandchildren).

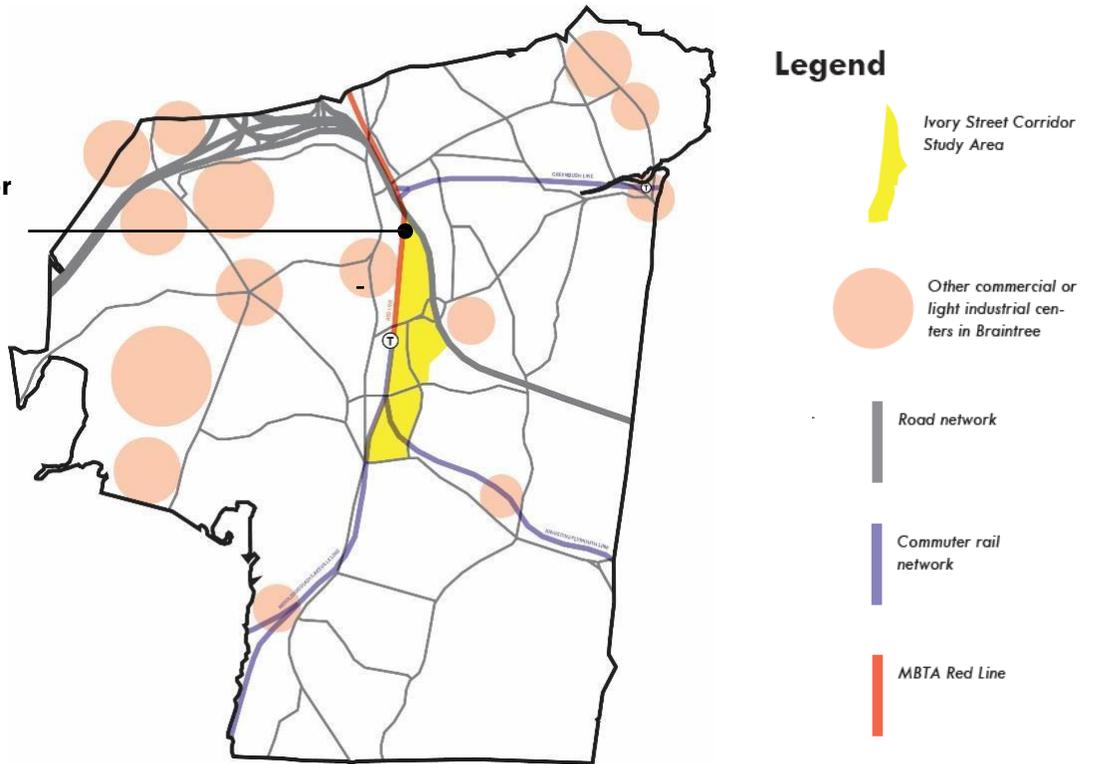
SECTION VI SCENARIOS TO ACHIEVE THE VISION

The vision for the Ivory Street corridor begins to provide a framework for how to transform the area. The vision invites reconsideration of the Ivory Street Corridor as a more densely used, walkable and transit-oriented node that will better leverage the multi-modal access advantages that this location provides. Based on the vision statement, MAPC explored the future of the Ivory Street Corridor with two potential district-wide development scenarios. These included an “*Optimize and Revitalize*” Scenario, characterized by enhancing existing nodes and subareas and adding connectivity between existing nodes, retaining as many buildings and larger uses as possible. Alternatively, the “*Create New Patterns*” Scenario was a bolder district-wide development scenario that reoriented subareas to be internally focused on a new street where possible and linked subareas to create new development and placemaking opportunities, truly a transformed district. The scenarios are used as a tool to better understand the potential for redevelopment, the nature of future change, and the conditions that would need to be part of a potential transformation to leverage the district’s assets. The details for the two scenarios are included in **Appendix B**. This report section summarizes the details of how the vision statement could be applied to create positive changes district-wide and specific to each subarea. The nature of the opportunity and the incremental steps that could be taken to transform the area are outlined, but it is too early in the planning process for this vision to assign specific figures to the amount of square feet or number of housing units that may be developed in the district. This level of detail will certainly be a part of subsequent planning, design, and permitting should development activity proceed toward this vision. The private property owners will make the development decisions that hopefully will be informed by this project.

The diagram below highlights the Ivory Street corridor district in yellow within the boundaries of the Town of Braintree. Its location is at the geographic center of the Town. The main vehicular circulation is shown in grey lines with Route 3 traveling along the east edge of the Ivory Street Corridor and connecting to I-93 at the northern boundary of the Town. The rail infrastructure for the Red Line and commuter rail are shown in red and purple lines with the Braintree station shown at the center of the district along its western edge. The red circles are locations of other commercial concentrations within the Town of Braintree including the South Shore Plaza, Braintree Hill, Five Corners, East Braintree/Weymouth Landing, Washington Street, Granite Plaza, Braintree Commerce Center, Bay State Industrial Park, Roc Sam Park Road Industrial Park, and Messina Industrial Park. From an economic development perspective, the Ivory Street corridor is set within this context of commercial centers. Relative to these other areas in the Town, the competitive advantage of Ivory Street is the transit access to the Red Line and Commuter Rail, the and its central positioning within the Town. It is the only area in Town supported by this unique transit access with the potential to be a walkable heart of the community and a multi-modal gateway. This unique potential requires an ambitious approach to consideration of this district’s future that is focused on economic development for the Town, positioning the Town for the future based on the community vision, and utilizing this district more productively than is occurring today.

It is worthwhile to highlight that the Ivory Street Corridor exhibits characteristics of overarching trends in land use and development characteristics. In the planning work that MAPC has performed in the greater Boston metropolitan area and in national trends, two important patterns have emerged that are a part of the dynamic for long term planning in the Ivory Street Corridor. The overarching trend is a reconsideration of the value and positioning of land that is adjacent to rail infrastructure. This is not a new trend, it has been several decades in the making, but the land value and uses near transit stations have changed dramatically so that rail access is viewed as a tremendous asset. Land that was once isolated by rail infrastructure with land

Ivory Street Corridor

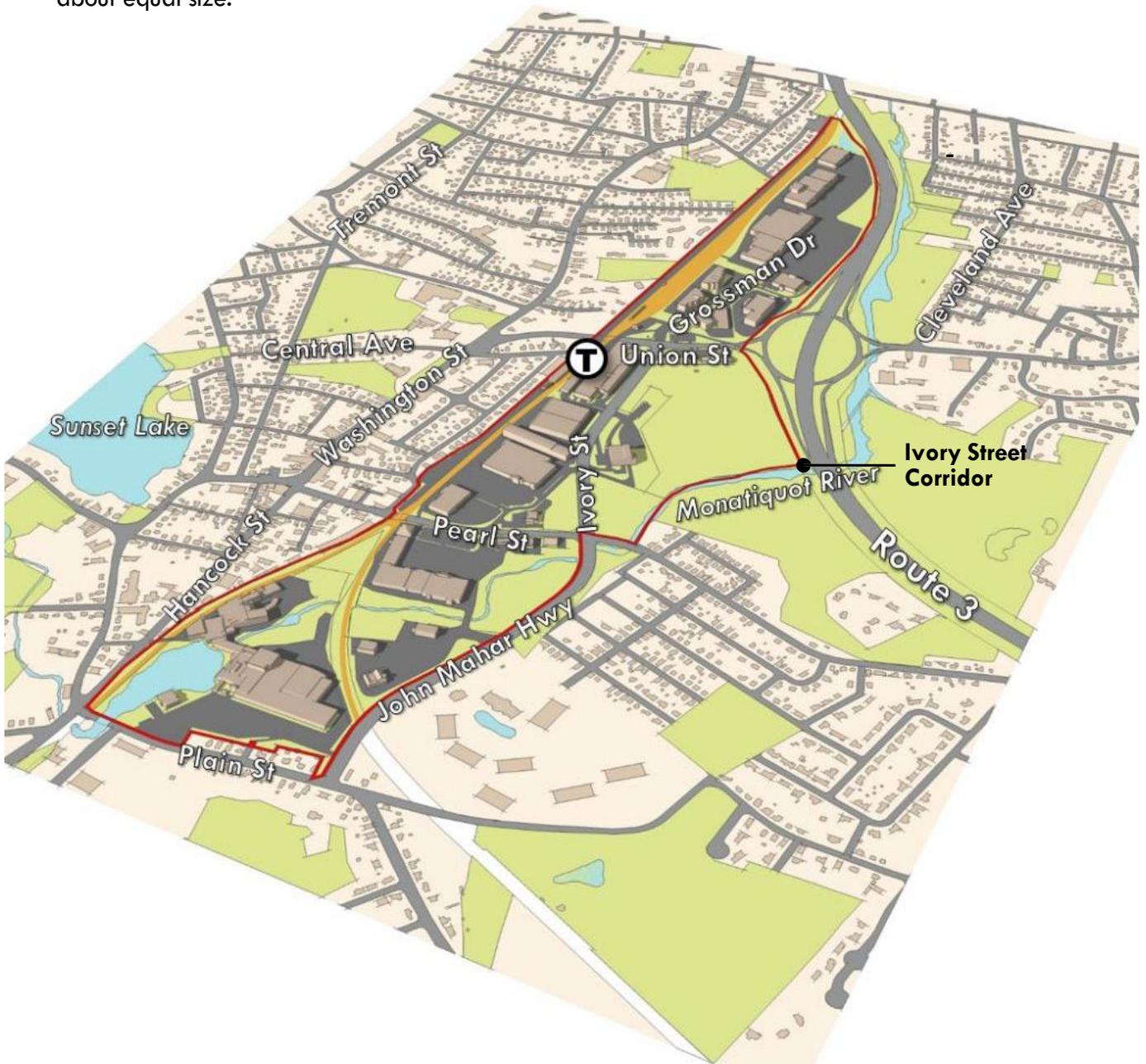


uses, typically light industrial, manufacturing, or commercial use, which turned away from the infrastructure edges (photo below, left) is now being reconsidered as land that is now highly connected with land uses that turn toward infrastructure edges and place access and mobility at the front door of new development (photo below, middle left). This turn toward rail infrastructure as a highly valued asset is at the center of so-called transit-oriented development (TOD). The images below capture this fundamental change in the use of the land near rail infrastructure. Similarly, in retail and commercial land uses, a previous era of development placed all emphasis on access by car with highly visible and abundant free parking as the most important part of a retail or commercial development site (photo below, middle right). This era of development pre-dated many of the everyday conveniences that are now taken for granted, such as the internet and e-commerce. Retail and commercial properties must now compete in new ways to remain popular destinations that attract consumers, dollars, and economic development for communities. Today cars are not the focus of these properties, but are just part of getting to them and parking is not the central feature. The focus of these properties is now the creation of a memorable place and experience that is enough of an attraction to get people to visit often, hang out, and spend money (photo below, right).

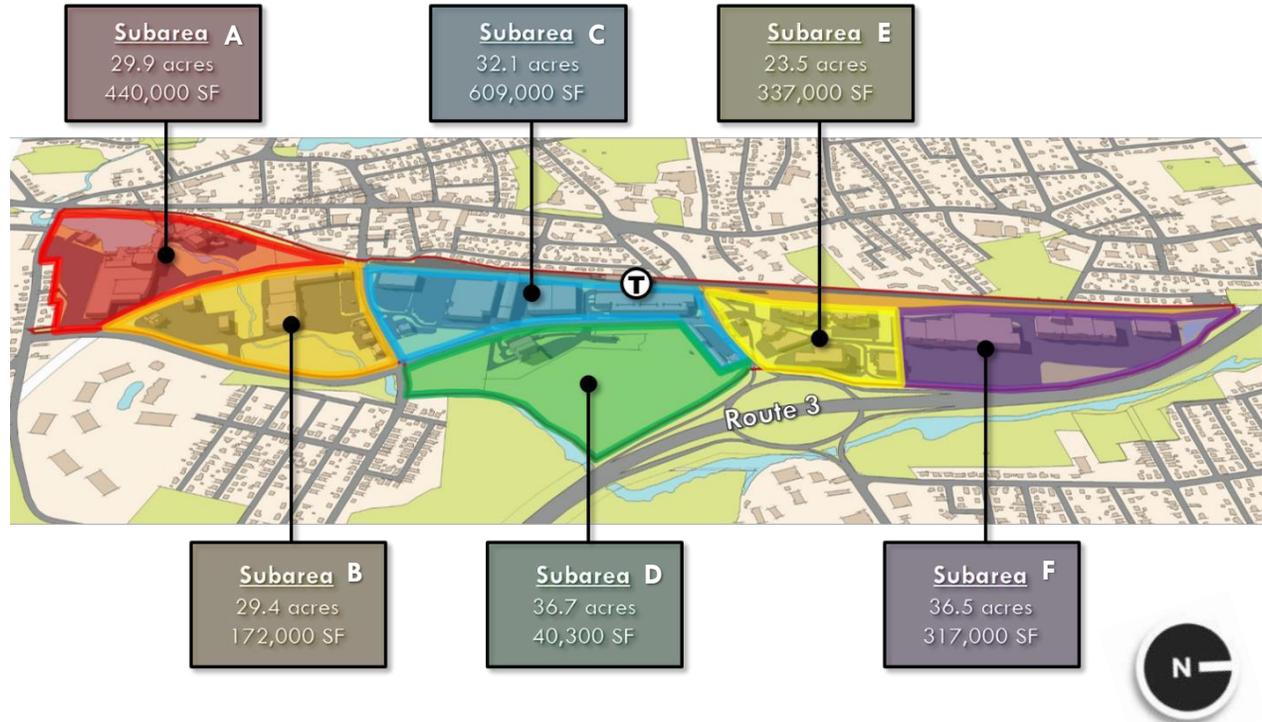


This history and legacy of land use patterns and overarching trends is evident today in the Ivory Street corridor, such as light industrial uses that are isolated and turning away from the rail infrastructure, and low density uses that are not fully taking advantage of the tremendous benefits of access and mobility that connect directly to the larger regional economy. Also, retail and commercial uses where the car is king and surface parking are filling up the valuable properties, but the turnover for stores is frequent and each vacancy gets harder to fill.

The Ivory Street Corridor as it exists today is shown in the diagram below. North of Union Street are commercial offices, medical offices, an auto dealership, and mid-format retail boxes. South of Union Street are the Red Line station at Braintree, station parking garage, waste transfer station, landfill, retail, and commercial uses. South of Pearl Street are retail, commercial, restaurant uses, and a vacant mill building. The surrounding areas are predominantly residential. This is a large area, approximately 188 acres of land. The study area has been divided into (6) six subareas of about equal size.



The division of the Ivory Street Corridor subareas is shown below and follows boundaries generally formed by existing roadway and rail infrastructure. Each subarea is distinct as characterized by unique buildings and uses that exist on the properties within the subarea. A brief description of each of the subareas is below, moving from south to north, or left to right across the diagram.



Subarea A is at the southern end of the Ivory Street Corridor, just north of Plain Street. The subarea is 29.9 acres and includes the former Armstrong Cork mill building, the Hollingsworth Pond, the Registry of Motor Vehicles, and a health and fitness club.

Subarea B is the next subarea to the north of the commuter rail line and south of Pearl Street. It includes a strip retail building with a supermarket and several smaller pad restaurant and commercial buildings. The subarea includes large surface parking areas and is bisected by the Monatiquot River. The subarea is 29.4 acres.

Subarea C is at the center of the district on the west side of Ivory Street south of Union Street and includes the Braintree station and parking garage. It also includes large format retail, commercial, and warehouse uses, portions of which are vacant today. The subarea includes 32.1 acres of land, a sizeable portion of which is surface parking lots. This subarea is terraced from north to south, as the overall topography of the district slopes down toward the Monatiquot River.

Subarea D is also at the center of the district, but on the east side of Ivory Street south of Union Street and includes the Town's capped landfill. This subarea is approximately 36.7 acres and also includes the Covanta waste transfer station, edges of the Monatiquot River and a motel. This subarea is effectively fully utilized by its current occupants, unless a major change to Town waste removal services occurs.

Subarea E is the next subarea north of Union Street. It is a subarea that consists of mostly commercial space for office and medical offices, and also includes an automobile dealership. The subarea is 23.5 acres and centered on Grossman Drive. The existing uses are largely built-out, offering little room for expansion or adaptation. One of the properties has already built structured parking to support the parking needs of their use.

Subarea F is a retail subarea and exists at the northern end of the Ivory Street Corridor. The subarea is 36.5 acres and includes large-format and mid-format retail box stores. The subarea includes the large scale single story retail buildings with expansive surface parking in front of the buildings. The subarea is oriented to provide visibility to the retail, signage, and parking from Route 3.

IDEAS FOR ACHIEVING THE VISION SUBAREA BY SUBAREA

For each subarea described above in the Ivory Street Corridor, this vision statement may be applied or focused in different ways. Below is a discussion of how the focus may shift from subarea to subarea, based on the existing assets, configuration and needs of the subarea, but still contribute to the overall vision of the Ivory Street Corridor that has been articulated. The photographs provided are examples of projects of a similar scale and character as may be appropriate to the application of the vision within each subarea. Due to the long term nature of the vision, each of the subarea's potential is described, but the specifics of potential projects would be the subject of further design and definition. This work would be performed by the private land owners and developers that would be responsible for future redevelopment investments.

Subarea A

The southernmost subarea of 29.9 acres that includes the Armstrong Cork Building, the Hollingsworth Pond and the Registry of Motor Vehicles, is a largely underutilized subarea. The existing buildings and property are largely vacant with large surface parking areas. This subarea presents an opportunity for redevelopment that is focused on residential uses, similar to Jonathan's Landing on the other side of Ivory Street. Modest ground floor commercial or retail uses may be able to be supported, but the focus should be on strengthening a residential population for the district and reinventing this property to provide more productive uses and better economic development opportunities for the Town. Enhanced river and pond edges should be integrated with the redevelopment to provide opportunities for recreation and amenity.



Subarea A Location and Existing Condition Diagram



Subarea A Potential Scale and Type of Redevelopment

Subarea B

The subarea south of Pearl Street of 29.4 acres including a strip retail building with a supermarket and several smaller pad restaurant and commercial buildings, could be more efficiently redeveloped in the future. The subarea includes large surface parking areas and is bisected by the Monaquot River. This subarea could accommodate a higher density of uses and a stronger mix of uses. The application of the vision in this subarea could be mixed-use redevelopment at a scale and density to support district-wide activity, with active ground floor retail or commercial uses; upper level uses could be commercial or residential. The public realm should be improved with attractive sidewalks and plazas that connect to the river edges. Riverfront edges should also be enhanced as an opportunity for subarea recreation and amenity.



Subarea B Location and Existing Condition Diagram



Subarea B Potential Scale and Type of Redevelopment

Subarea C

The west side of Ivory Street south of Union Street subarea of 32.1 acres includes the Braintree MBTA Red Line and Commuter Rail stations and large format retail and warehouse uses, portions of which are vacant today. This subarea could be completely transformed over the long term and defined by a new block structure that is more walkable and internally oriented between Ivory Street and the commuter rail line right-of-way. The redevelopment would be mixed-use and at a scale and density to support district-wide activity with active ground floor retail or commercial uses and an attractive public realm. While the redevelopment has the potential to be comprehensive within this subarea, it would be likely to occur incrementally over time. Upper floor uses could be commercial or residential. Generous and attractive sidewalks and modest plazas near building entries would provide a level of public realm/pedestrian amenity that is missing in the area today.



Subarea C Location and Existing Condition Diagram



Subarea C Potential Scale and Type of Redevelopment

Subarea C also includes the Braintree station and parking garage. In terms of the Braintree T and Commuter Rail station facilities, the structured parking and station infrastructures are aging. Future investment could combine the two stations, enhance station amenities, and provide a more attractive front door to the district. Potential improvements could involve façade enhancements to the prominent façades of the MBTA parking structure, plaza improvements to the bus transfer, pick-up and drop-off area, and improved pedestrian links to abutting properties. In order to better leverage and highlight the transit access of the district connectivity for pedestrians and bicyclists must be improved in and around the station.



Subarea C Location and Existing Condition Diagram



Subarea C Potential Scale and Type of Redevelopment

Subarea D

The south of Union Street, east side of Ivory Street subarea of 36.7 acres includes the capped Town land fill, solar array on the capped land fill, the Covanta waste transfer station, edges of the Monatiquot River and a motel. This subarea is effectively fully utilized by its current occupants, unless a major change to Town waste removal services occurs. The subarea could provide great benefit to the Ivory Street Corridor by improving the pedestrian and recreational environment, particularly along Ivory Street and the Monatiquot River. Street edges could be improved with landscaping and enhanced pedestrian and bicycle connections. Monatiquot edges should be made accessible and enhanced as a recreational open space that makes stronger regional connections to other nearby trails. Trails could also be expanded around the capped land fill and solar array. A multi-use path along the Monatiquot has the potential to make regional connections to other nearby trails and enhance recreational open space connections throughout the Town. The path would need to be designed to consider flood conditions along the Monatiquot.



Subarea D Location and Existing Condition Diagram



Subarea D Potential Character of Improvements

Subarea E

The 23.5 acre subarea north of Union Street centered on Grossman Drive is comprised of commercial space for office, medical office, and an automobile dealership. The subarea is largely built-out, offering little room for expansion or adaptation. The vision would be applied in this subarea primarily through the improvement of the pedestrian environment with enhancements to the public realm, plazas and parking areas. If redevelopment of any of the properties were to occur, an expansion of the mix of uses in the subdistrict would be beneficial along with the continued consolidation of surface parking into structures. The integration of improved plazas, landscape parking areas, or other amenities surrounding existing buildings and sites will reinforce the subarea as an attractive district for economic development and active commercial uses.



Subarea E Location and Existing Condition Diagram



Subarea E Potential Character of Improvements

Subarea F

The northernmost retail subarea of 36.5 acres currently includes large-format and mid-format retail box stores. One strategy to increase value and leverage this retail location over the long term would be to add density and expand the mix of uses. The other uses would include a focus on the addition of upper level space that could be occupied by housing or offices. The overall organization of the property would benefit from consolidation of surface parking into structured parking over time with a reorientation of the circulation to define an interior street with retail storefronts and small plaza spaces. Application of this vision would require shared buy-in from all current tenants and would require reframing the value of the site from a high visibility retail site with stores, parking and signage that can be seen from Route 3 to a mixed-use site where the active interior street is a high quality “destination” environment, allowing the overall development to place its back to Route 3 and become less visible from passing windshields. Enhancing the walkability and amenities would better connect this subarea to other portions of the Ivory Street Corridor to the south.



Subarea F Location and Existing Condition Diagram

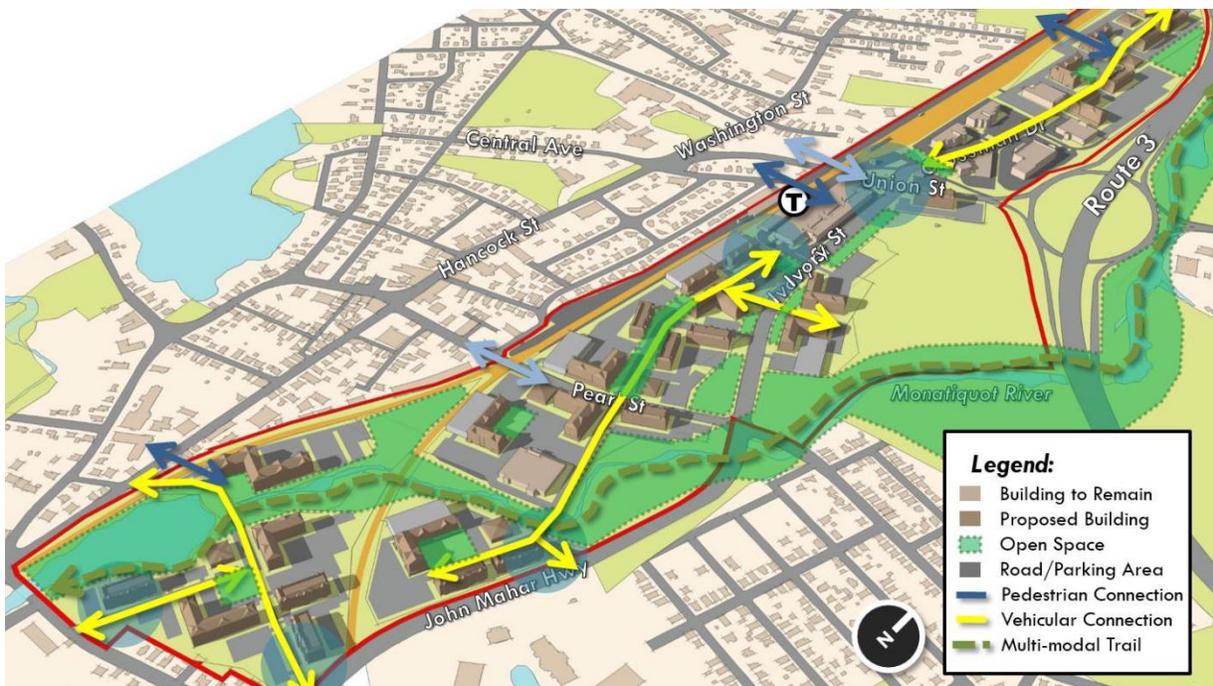


Subarea F Potential Scale and Type of Redevelopment

APPLYING THE VISION TO THE IVORY STREET CORRIDOR

Redevelopment and improvements as described above for each of the subareas would enable the Ivory Street Corridor to adapt to the evolving circumstances of transit-oriented districts and keep pace with the next iteration of economic development. Each subarea improvement is also adding to a larger vision and overall improvement to the Ivory Street Corridor. The following diagram illustrates an overall vision that puts each of the subareas together to show one possible application of the vision to each of the subarea in a manner that is consistent with the detailed subarea descriptions above. The diagram below is not a Master Plan or even an accurate depiction of what is likely to occur, but instead it is a conceptual diagram that represents one of the possible outcomes of private investment that increases the intensity of use and leverages transit and walking around Braintree Station. It shows that the Ivory Street Corridor could be a much more vibrant place and truly function as a heart of activity in the community. Although the diagram below has considered development constraints conceptually. A detailed analysis, design, and engineering will be required to account for existing grades, wetlands, current and long term leases, and underground utilities.

To create a gateway district that is oriented to transit access and pedestrian circulation, several fundamental changes in the pattern of development need to occur. A fundamental restructuring of the land through its block size, street types, buildings types, parking, and open spaces. The diagram reflects the vision statement with improvements to intersections, site access, and T station access that is attractive for pedestrians, bicyclists, and vehicles. For example: Enhanced pedestrian connections to the surrounding neighborhoods leverage existing households for local spending and access to the transit on foot. These may be in the form of pedestrian bridges that make connections at strategic locations over the rail corridor. Also, expanding and completing Monatiquot River pathways for recreation and connectivity will link north and south. Opportunities exist to expand the district's prominent role as a transit center and center of economic development activity with additional jobs, office uses, retail uses, restaurants, and housing, all in a walkable environment. Each new investment integrates safe and attractive amenities such as generous sidewalks, outdoor seating, and small plazas. Finally, each new investment frames new opportunities for connections and mobility with a focus on walkable blocks and streets to bring all investments together to reach a new level of activity, connectivity, and economy in the district.



INCREMENTAL APPROACHES TO ACHIEVING THE VISION

As discussed, applying the vision to the Ivory Street Corridor would occur differently in each subarea depending on the current assets and conditions of the subarea. Investments in each subarea are likely to be done incrementally as well. It is important that each investment be done in such a manner as to build each piece to enable a larger whole. Each investment is an opportunity to advance the reorganization and transformation of the Ivory Street Corridor.

Each investment should improve the fundamental organizational structure of the district – the block sizes, street types, building types and open spaces.

The current block sizes today are overly large and framed by a street network that is designed for higher speed vehicular travel. The current block size should be reduced through the addition of new streets that are also designed for slower vehicular travel speeds and improved pedestrian and bicycle amenities. Reducing the block size improves the walkability of the district by providing more structured and flexible pedestrian routes and experiences. The existing streets should be reconsidered as per Complete Street approaches to balance use of the street for all modes of transportation. New streets that are added to enhance the block structure should be more pedestrian-oriented than the existing streets and focus on providing a safe and attractive pedestrian environment. Building types should be converted from single-story single-use structures, to more dense and efficient, multi-story and mixed-use structures. These new building types should be used to frame streets and define block edges and to further enhance and define the street as an attractive pedestrian environment. Open spaces should be integrated throughout this new network of streets and blocks and provide plazas and greenery that can flexibly accommodate the needs of a more active and attractive district. Open spaces should link to trails and access to the Monaquot River and the larger regional open space network. Through these changes the fundamental organizational structure of the district can be transformed and build toward the vision.

Each investment should proceed under current conditions, but anticipate and enable an incremental approach to transformation.

The entire district is nearly built-out in its current pattern of use and is active and economically productive. However, new opportunities for redevelopment or reconsideration of properties emerge and new opportunities for investment in the district should be welcomed. As new buildings, renovation or demolition of portions of existing buildings or other site or building improvements are planned they should consider the possibilities for the next investment and anticipate the future intensification and increased density of uses. Aligning buildings so that they could form the frontage of a future street internal to an existing block would be an example of this incremental approach. The future street may not be built as part of the current investments, but the positioning of the new building would make investment in a future street possible and not prevent the future investment from occurring. Each investment should be master planned in order to provide the opportunity to increase density and walkability over time. The intensity in use and increase in density would likely be linked to an increase in structured parking in the district to support those uses in the future. This structured parking can also be introduced incrementally and integrated within the overall pattern of redevelopment as investments occur.

The following diagrammatic example shows the potential steps of an incremental, yet transformational, change on the properties just south of the Braintree Station on the west side of Ivory Street. Each potential step in the incremental process of change is diagrammed and described as it could possibly occur. This type of implementation and the specific details of how it may occur would be determined by private investments in the future.



1

Existing conditions today in area immediately south of Braintree Station and west of Ivory Street. Including a sizeable volume of vacant space and underutilized surface parking.



2

The **near future** could include positive investments that would increase utilization of this area, such as an infill building that could provide a new mid-size box retailer.



3

Other **near future** improvements could include approaches, such as "addition by subtraction" - the removal of underutilized square footage to provide additional surface parking and align retail boxes.



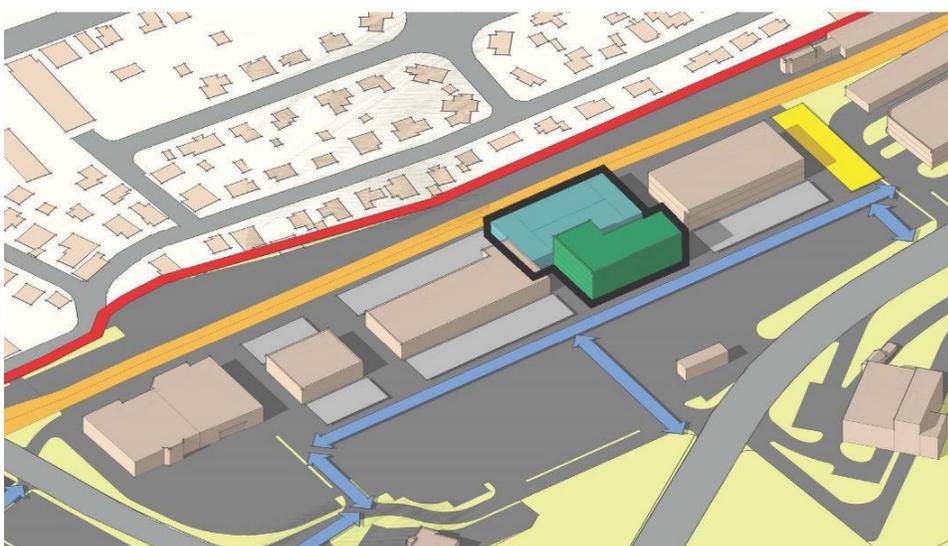
4

The **near future** may also include more substantial redevelopment investments that reconfigure much of the buildings on a site. These investments may continue to be supported by surface parking and have a relatively low density relative to other transit-oriented development.



5

Each investment in the near future should be master planned in order to provide the opportunity to increase density and walkability over time. This is achieved by structuring a new block and internal street system (shown in blue).



6

With this plan in place, and rising land values over time, future investments can align to future internal streets and provide more efficient structured parking to increase density with mixed-use development near transit.



7

Future investments build on this pattern and develop new blocks that are oriented away from Ivory Street, defining a new walkable Main Street connected to Braintree Station.



8

Over the long term, a new walkable, mixed-use district is completed, a new center of activity and transit-oriented destination for Braintree.



9

This same pattern could extend to other blocks in the Ivory Street Corridor.

VISION TO ACTION: AN EXAMPLE OF INCREMENTAL TRANSFORMATION

A vision must balance ambition and practicality to provide a meaningful direction. The type of transformation that is imagined through this vision for the Ivory Street Corridor is currently being realized near other MBTA stations; one prominent example is Assembly Row. Assembly Row is a district in Somerville that has been transformed from its past as a light industrial and commercial site that was dominated by surface parking lots. While the position of Assembly Row relative to downtown Boston or the height and scale of the some buildings may be dissimilar to Braintree, the overall lessons of transformation and incremental change are a great example for the Ivory Street Corridor. The redevelopment also provides important lessons in terms of process and the complexity of this type of transformation. In the case of Assembly Row, the planning and evolution of the redevelopment has been over about a 30 year period. The Assembly Row area is about 145 acres, it has benefited from public funding for new infrastructure, and is significantly expanding the tax base, local jobs, and the creation of public amenities such as riverfront parks and plazas.

This vision is the first step in articulating that transformation and guiding current improvements toward a future that focuses a densely active node around transit and walkability providing new opportunities for living, working, commuting and creating community in Braintree. Imagery from Assembly Row is a compelling example of the type of transformation and vision that can be accomplished when enhancing the walkability, density and mix of uses in a district.



Assembly Row is a district in Somerville that has transformed. The image on the upper left is an aerial photograph of the existing conditions in 2009. The image on the lower left is a plan for the development that is nearly built-out today. The image on the lower right is a photograph of the district.



SECTION VII ZONING: IMPLEMENTING CHANGE

Zoning provides the legal framework for what can and what cannot be developed on every parcel of land within a community. Zoning is the mechanism that allows communities to implement a plan and achieve changes in land use. Modifying the existing zoning in the Ivory Street Corridor is a key step to realizing the vision for the area.

Braintree's zoning bylaw can be amended by a vote of the Town Council after a public hearing, so it is a locally-created body of land use regulations. The different sections of the zoning bylaw regulate the uses that are allowed within specific zoning districts, the massing and siting of structures, parking, signage, open space/lot coverage, etc. This section of the report evaluates the existing zoning, and provides recommendations for adjusting the zoning to align with the vision.

CURRENT IVORY STREET CORRIDOR ZONING

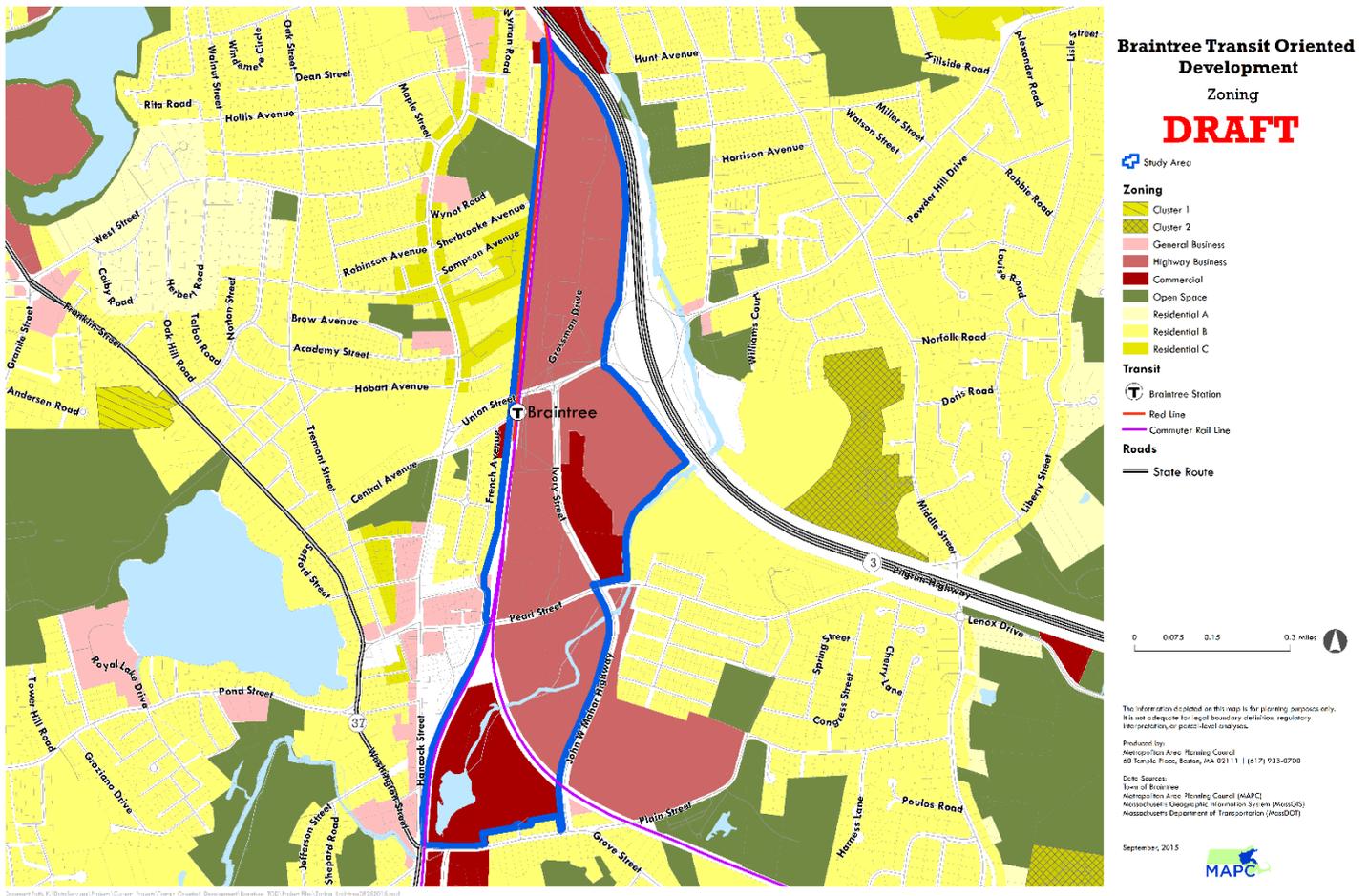
The Ivory Street corridor currently has two zoning districts: Highway Business (HB) and Commercial (C). The Highway Business covers the majority of the study area from the Best Buy all the way to Plain Street. There is a small area west of Ivory Street carved out of the former landfill site that is zoned Commercial, and the south-westerly portion of the study area, between Pearl and Plain Street is also zoned Commercial. The map on the next page shows the current zoning for the Corridor.

Highway Business zones became popular in the 1960s as a way to acknowledge changes in the retail environments brought about by "big box" stores located near major roadways. These zones are characterized by large frontages and a paved parking supply adequate to meet peak demands, typically a few days a year around the holidays. Restaurant use is often allowed; housing and/or offices are not. In Braintree, the Highway Business zoning district has predictably high parking requirements for commercial uses and also allows up to 75 percent of the parcel to be covered by the building and parking. This results in buildings being surrounded by large parking lots creating issues for pedestrians and vehicles, and a very disjointed building pattern. It could be characterized as "anti-pedestrian". The Commercial Area includes a portion of the former landfill. A portion of the zone includes the transfer station. At the southern end of the corridor, the commercial zone includes the Registry of Motor Vehicles site, Hollingsworth Pond and the former mill complex.

The following table is a snapshot of the parcels in the HB zone. The development in the HB zone conforms if not exceeds the required regulations, thus demonstrating that a community "gets what it zones for".

	Required	Existing Buildings (Average)
Lot Size	25,000 sf	234,491sf
Front Setback	50 ft.	58 ft.
Side Setback	30 ft.	43 ft.
Rear Setback	50 ft.	43 ft.
Frontage	100 ft.	412 ft.
Lot Depth	150 ft.	428 ft.
Max. Bldg. Coverage	25%	26%

The existing zoning district boundaries for the Ivory Street Corridor are shown below.



Note that most of the area is zoned for Highway Business; the darker red denotes the Commercial zoning district.

ZONING CHANGES FOR CONSIDERATION

The Ivory Street Corridor should be rezoned to reflect uses, dimensions, and parking requirements that begin to guide the vision toward a more walkable, connected, and densely developed district. Braintree is currently in the midst of a comprehensive zoning review and recodification. It is recommended that new zoning for the Ivory Street Corridor be developed as part of the zoning recodification project. In the meantime, the Town might consider amending some of the existing requirements as a first step to implementing the vision. Note that as the HB and C zones exist elsewhere in the Town, any changes made to these districts in support of the study area would apply town-wide.

The following Use Table summarizes the current requirements in the Highway Business and Commercial zones, and proposes an entirely new zone applicable to the Ivory Street Corridor area, with recommended uses. Other tables suggest changes to dimensional and parking requirements more aligned to the vision for the Corridor in both zoning districts. This analysis could also provide the fundamental structure for a new zone for the area.

Principal Uses	Highway Business (HB) Current Uses	Commercial (C) Current Uses	New Zone Proposed Uses
Residence Above First Story Business Use	N	N	Y
Hospital	SP	SP	SP*
Institution of Historic, Philanthropic or Charitable Character	SP	SP	SP
Museum	Y	Y	Y
Agricultural Uses (under 2 acres, ADDED)	Y	Y	N
Business Uses			
Amusement or Assembly	SP	SP	SP
Animal Clinic/Hospital	Y	Y	SP
Automotive Repair Service	Y	Y	N
Bank	Y	SP	Y
Body Art Establishment	SP	N	SP
Business/Professional offices	Y	SP	Y
Catering Service	Y	Y	SP
Commercial Recreation	SP	SP	Y
Data Center/Communications Facility	Y	Y	SP
Day Care, Commercial	Y	Y	SP
Essential Services	Y	Y	Y
Factory Outlet Store	SP	SP	N
Fast-Food Establishment	Y	SP	SP
Funeral Home	Y	SP	N
Garage, Nonresidential	Y	Y	SP
Garden Center	Y	Y	SP
Hotel or Motel	SP	SP	Y
Freestanding, Exterior Kiosks	SP	SP	SP

Medical Center/Clinic	Y	Y	Y
Motor Vehicle Lease and Sales	Y	Y	N
Office Park	SP	SP	Y
Restaurant	Y	SP	Y
Retail Store(s) and Service(s) Not Elsewhere Classified			
Less than 30,000 SF	Y	SP	Y
30,000 SF or greater	SP	SP	Y
Service Station	Y	Y	N
Shopping Center	SP	N	SP
Training Schools	Y	Y	N
Commercial Uses: All Listed Uses N Except as Follows			
Research Facility	Y	Y	Y
Transportation Terminal	SP	SP	SP
<i>Any uses not listed herein are deemed not allowed. Including:</i>			
Mixed-use Development	N	N	Y
Multifamily Housing	N	N	Y

DIMENSIONS

Dimensional Regulations to Revise	Highway Business (HB)	Commercial (C)	NEW ZONE
In feet	Current	Current	Proposed
Minimum Setbacks/Yard – Front	50	35	5
ADD: Maximum Front Yard Setbacks	None	None	15
Minimum Setbacks/Yard – Side	30	20	10
Minimum Setbacks/Yard – Rear	50	35	10

Maximum Building Height (feet) – Non-habitable Buildings	45	45	None
Maximum Building Height (feet) – Habitable Buildings	50	50	75
ADD: Ground Story Height Minimum (feet)	None	None	14
Maximum Stories	4	4	6
Maximum Building Coverage	25%	40%	None
Maximum Lot Coverage	75%	75%	85%
Minimum Open Space	25%	25%	15%
ADD: Minimum Publicly Accessible Civic Space	None	None	10%

Parking Requirements to Reconsider	Highway Business (HB)	Commercial (C)	NEW ZONE
	Current	Current	Proposed
Decrease in parking requirements	Allowed	Allowed	Allowed
Reserved Area for any amount of parking decrease	Required	Required	Not Required
Multiple Uses reduction for SF of nonretail uses	1/1000	1/1000	Increase Reduction
All parking located on same site that it serves	Required	Required	Not Required
Multifamily requirement – per unit	2.0	2.0	.75 to 1.5 based on unit size
Hotel, motel – per unit	1.25	1.25	1.0
General office, professional or public building – per Gross SF	1/250	1/250	1/900
Restaurant – per seat	1/3.5	1/3.5	1/300 GSF
General business, retail – per Gross SF	1/200	1/200	1/1500
Personal Service – per Gross SF	1/200	1/200	1/750
Amusement/place of assembly – per Gross SF	1/250	1/250	1/6 seats
Medical office/clinic – per Gross SF	1/150	1/150	1/500

Summary Characteristics of Existing Zoning

- Two existing zoning districts – Highway Business and Commercial
- Building Height – currently limited to 50'
- Lot Coverage – currently limited to 75%
- Uses – currently limits multi-family and mixed-uses
- Parking Requirements – 2 per multi-family unit

RECOMMENDATIONS

Ensure that the current zoning recodification considers the recommendations in this report

- **Revised zoning should be flexible to enable property owners to respond to the market**
For example, zoning for this area should avoid mandating specific amounts of retail that may not be supportable.
- **Include robust definitions for mixed use and retail uses**

Mixed Use definition:

A combination of Permitted (Y) or Special Permit (SP) Business/Residential Uses as listed in the Table of Principal Uses for a particular district, located on the same lot and arranged vertically in multiple stories of a structure or horizontally adjacent to one another in one or more buildings.

The mix of uses shall be balanced and compatible and shall contribute to a vibrant downtown atmosphere, including a combination of ground floor street front uses such as retail or restaurant.

Ground floors of buildings fronting streets or public access ways shall be reserved for non-residential uses, except as specified below:

Dwelling units shall be allowed on ground floors of buildings if:

- a) The building is set behind another building that has commercial uses on the ground floor, OR
- b) The residential portion of the ground floor if a building is set behind street-front non-residential uses within the same building

Retail Sales and Services

Establishments offering goods and services, not specifically listed in the Table of Principal Uses, to the public. Sales of a wide variety of goods and services include, but are not limited to: antiques, apparel, books, food, drugstore, sporting goods, and similar; custom services such as tailoring, photography, framing and similar; and services such as insurance, optometry, banks; dry-cleaning and laundry drop-off stations; hairdressers and barbers; health clubs, gyms, dance or yoga studios; repair services for appliances, shoes, etc.; catering and similar. Retail Sales and Services do not include Adult Entertainment, check cashing services, pawn shops, gold exchange shops, medical marijuana facilities or drug treatment facilities.

- **Provide reduced parking for developments near transit**
Recognize the advantage of the MBTA Red line and commuter rail transit and include both reduced parking requirements for commercial, residential and mixed use development, as well as techniques for reducing the amount of land devoted to parking. One example is allowing for shared vehicle parking.

- **Review housing definitions**

Clarify the difference between the definitions of Apartment House (A multiunit dwelling consisting of three or more families living independently of each other) and Dwelling, Multifamily (A building designed and used for the living quarters of more than two families). The former use item is included in the Table of Principal Uses; the latter is not.

Braintree is working with RKG Associates on a comprehensive zoning review and recodification. It will be efficient if the rezoning incorporates the recommendations in this report for the Ivory Street Corridor Study Area.

Consider re-zoning the southern portion of the study area near the former Armstrong Cork mill facility

Allow as-of-right multi-family housing, and/or multi-family housing with retail/office components (mixed use). Provide flexibility to address market demand, while signaling the type of redevelopment desired by the Town.

Consider Planned Unit Development (PUD) zoning. Alternatively, create a new transit-oriented incentive zone with the characteristics included in the three tables above.

Discuss this option as part of the current zoning recodification. PUD maximizes flexibility while providing for appropriate oversight of coordinated, often phased, development. Braintree has a PUD bylaw § 135- 612. This is an optional zoning designation that required Town Meeting (now Town Council) approval of a concept plan. The requirements are not onerous: three acre minimum land area, 25% open space. It is unclear whether the lot coverage must exceed or must not exceed 25%. In addition there must be at least two of the following uses: residential, open space, business or commercial. The Town should review the existing bylaw and adjust the permitting process, and clarify the requirements.

Develop Design Standards and Guidelines for the Ivory Street Corridor

Design standards can be incorporated into the zoning, and must be met as part of site plan and/or special permit review. These set the baseline for the building and open space design and relationships to other structures and open spaces. The Guidelines further describe the intent of the standards, offering specific examples for property developers. The diagrams and scenarios presented in Section VI could form the foundation of the design standards and guidelines for the Ivory Street Corridor.

Streamline the Permitting Processes

Consider Administrative Site Plan Review for smaller projects. This mechanism is authorized in the Braintree-Weymouth Landing Zoning approved in 2010. With appropriate guidance in the zoning for site planning and building design, a properly designed project should not require months of public review. Also consider a combined review and public hearing process when project approvals from multiple boards and commissions are required. Guaranteeing a streamlined approval process is a competitive advantage. Design Guidelines can provide confidence that a streamlined review will still result in development that is desirable and compatible with the community's goals.

Continue the planning process with the property owners

Encourage them to work on a master plan for their property, particularly FX Messina Enterprises as the owner of the major land assemblage in the corridor.

Consider the Recommendations in MAPC's Climate Vulnerability Assessment

The Metropolitan Area Planning Council is also partnering with the Town of Braintree on a Climate Vulnerability Assessment. The draft report notes the history of land filling around Monatiquot River as the Town developed, leaving several areas vulnerable to riverine flooding. The Ivory Street/Union Street interchange is considered particularly important because it is an evacuation route; this intersection and the Union Street Rotary have both been subject to flooding, most recently in the March 2010 storms. At the southern end of the Corridor, the Hancock/Washington Street area is subject to flooding.

Planned work to remove the Monatiquot River damn, at the former mill site, should alleviate some of the flooding. There is also a project to create a walking path adjacent to the river, providing pedestrian/bicycle connectivity. Extreme precipitation events, such as occurred in 2010, are projected to increase over the course of this century. Transformation of the study area provides an opportunity to redress current and future flooding. All new development and redevelopment in the Corridor should incorporate measures to keep stormwater on site. Low Impact Development techniques should be maximized in this area.

SECTION VIII TRANSPORTATION: CONNECTING THE CORRIDOR

How can we make walking, biking, transit, and driving safer and easier for all users?

Greenman-Pedersen, Inc. (GPI) transportation consultants assisted MAPC with identifying multi-model transportation challenges and associated solutions (See Appendix A). Despite the need for a walkable and bikeable network within the district, the area functions primarily to serve automobiles. The majority of issues identified, therefore, focus on improving the environment for pedestrians and cyclists.

Several major issues include:

- **Intersection of Union Street at Ivory Street/Grossman Drive.** This large intersection experiences congestion during the PM peak period and operates at a Level of Service D. The intersection lacks any sort of pedestrian accommodation from the hotel parcel on the southeast quadrant.
- **Ivory Street.** Ivory Street to the MBTA garage lacks adequate pedestrian facilities (e.g., the roadway lacks a sidewalk along the eastern side) and bicycle infrastructure (none present, despite an obvious demand based upon the number of bicycles parked in the garage).
- **Intersection of Pearl Street at Ivory Street.** During the PM peak period this intersection experiences heavy congestion and queuing, and operates at a Level of Service F. There are a number of issues for pedestrians, bicyclists, and drivers that would improve safety and efficiency.
- **Intersection of Jonathan's Landing at John Mahar Highway.** This is an important crossing point for pedestrians that could be improved to increase safety.

TRANSPORTATION CONNECTIVITY IMPROVEMENTS

Short Term

A number of short-term improvements would greatly improve the safety, comfort, and accessibility for all users of the road, especially for pedestrians and cyclists. Many of these recommendations are relatively low cost and would provide a significant benefit.

On Ivory Street at Union Street/Grossman Drive, as well as on Ivory Street at Pearl Street/John Mahar Highway, recommendations include a crosswalk across northbound Ivory Street approach, signal improvements such as shortening the cycle and repairing/upgrading pedestrian displays, introducing bicycle accommodations, and reducing the western crossing by closing the southbound right-turn channel.

On Ivory Street at the MBTA garage, recommendations include reducing the entrance width to shorten pedestrian crossing distance, providing ADA compliant features (curb cuts/ramps), installing pedestrian displays and push buttons, providing pedestrian/bike accommodations to access the platform and bike parking area, and restricting the southbound right-turn-on-red.

On Pearl Street at Ivory Plaza, the southern driveway entrance could be narrowed significantly to shorten pedestrian crossing distance. In addition, converting the hybrid exclusive pedestrian phasing to concurrent phasing would reduce delays. A crossing on the east leg should be installed.

On Jonathan's Landing, MAPC/GPI recommends installing a rapid flashing beacon or pedestrian hybrid beacon to accommodate safe crossing at the site driveway.

Along Ivory Street in the short term travel lane width could be reduced to allow for installation of bicycle lanes. This could be an interim step towards a more comprehensive solution described below.

Finally, a critical strategy to both fund these improvements and encourage development that generates fewer auto trips is to establish a robust transportation mitigation and transportation demand management program (TDM) through the regulatory process. As new development occurs in the study area, the town should work with developers on contributing to these improvements and to support efforts such as on-site bicycle parking or storage, employer subsidized T passes, limiting parking or charging for parking for residential or office uses, establishing a Transportation Management Association, and even funding shuttle bus service to and from the T station.

Long Term

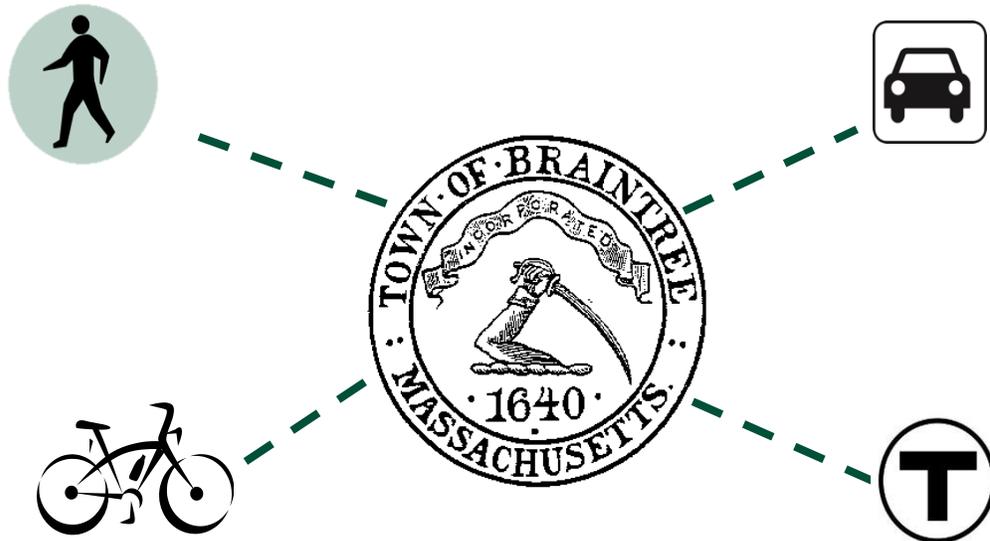
As planning for this area continues, a priority should be to establish strengthen pedestrian connections. Connecting the MBTA station and bus routes with the existing neighborhoods, particularly Washington Street, will allow residents easier access to the station. The feasibility of a pedestrian bridge from the end of Union Place or another location off of French Avenue, over the train tracks into or next to Braintree Station, should be analyzed. This could be looked at as a standalone pedestrian project or incorporated into the site access plan of any major redevelopment plans.

Over the longer term, Ivory Street has the opportunity to become a true complete street by applying a "road diet," i.e., reducing four travel lanes to three (two driving lanes and a center turn lane). Based upon the average daily traffic, Ivory Street has enough existing capacity to be evaluated for such a roadway conversion. This would allow a buffered or separated bicycle lane, greatly improving the comfort of cyclists traveling to the station.

In addition, as new development occurs in the future, there is the potential to reimagine the future development in a way that better encourages walkability. Smaller blocks created through additional streets can help foster an environment more conducive to a walkable, transit-oriented site. As growth occurs in the study area, traffic will likely increase and impact auto access off of Route 3. The amount of traffic will depend on the size, scale, design, and type of land uses. This area has great potential to experience growth with lower auto trip generation due to its proximity to the train station. Nonetheless, as specific development proposals come forward, the town should begin discussions with MassDOT regarding traffic impacts to the Route 3 rotary and Union Street intersections.

For additional details regarding connectivity issues and recommendations please see **Appendix A**, the Greenman-Pedersen report.

APPENDIX A GREENMAN-PEDERSEN BRAINTREE RED LINE STUDY



Greenman-Pedersen, Inc. (GPI) has prepared this technical memorandum to assist the Metropolitan Area Planning Council (MAPC) in its planning to support transit-orientated development within proximity of the MBTA Braintree Station. It provides a summary of existing transportation conditions, traffic data and analysis as well as short and long-term transportation recommendations.

The potential of transit orientated development associated with the MBTA Braintree Station is a tangible yet challenging prospect. Over the long term the opportunity exists to position the area to support the land use density needed for effective transit-orientated development and by virtue a vibrant, livable district, should municipal stakeholders choose to pursue it. In the short term however a host of infrastructure improvements need to be considered to set the foundation for long term goals. Additionally it will be difficult for the Town to make transformative decisions without a clear vision for the future of the Braintree Station from the MBTA and state level stakeholders. Partnerships need to be forged, and a concerted effort to promote a vision by all stakeholders is critical for success.

EXISTING CONTEXT

Transportation systems shape land use. Land use form follows transportation function. If the desire is to densify the area with vibrant, residentially driven mixed use development the “form” around the Braintree Station needs to evolve notably. Today this area welcomes only one transportation use, vehicles. Investments need to be made to welcome pedestrians, bicyclists and better integrate transit users in order to promote a more holistic environment.



Small, incremental investments are the starting point. As identified subsequently by GPI there is no shortage of investment opportunities to support human scale transportation. These are improvements needed to accomodate existing users, most notably residents of Jonathan’s Landing. This large residential development, which promotes its proximity to the MBTA station as an amenity, is driving a notably amount of pedestrian activity in the area which is not currently supported by the municipal public infrastructure and promotes safety concerns. In addition to opportunities, consideration should be given to the damage inaction may have on the vitality of this residential community.

To assess the area GPI conducted traffic counts during the month of June 2015 prior to the end of the Braintree school calendar year. These counts consisted of automatic traffic recorder counts, collecting continuous traffic volume data over a 48 hour period. This data includes volumes, vehicle classification and speed. Counts were collected at five locations along Union Street, Ivory Street, Grossman Drive, John Mahr Highway and Pearl Street.

In addition peak hour turning movement counts were collected at key intersections during both the AM (7-9 AM) and PM (4-6 PM) commuting periods. These counts collected both vehicle volumes as well as pedestrian and bicycle usage. Count locations include Union Street at Ivory Street/Grossman Drive, Ivory Street at MBTA Driveway/Transfer Station, Ivory Street at Pearl Street and Pearl Street at the Commercial Driveways.

In addition a review of MassDOT crash records was conducted of each of the intersections listed above. Of those locations the intersection of Ivory Street at Pearl Street/John Mahar Highway was found to have an elevated crash rate above both the statewide and MassDOT district average.

The following pages document the traffic data which was collected. It should be noted that in our basement of existing conditions GPI reviewed a December 2012 Boston MPO study which assessed the pedestrian and bicycle infrastructure adjacent to the Braintree station as well as the June, 2011 and February, 2014 traffic impact studies for the transfer station.

**ATR Summary
Braintree TOD Study :: Braintree, MA**

Weekday

Location	Direction	ADT ^a	Weekday Morning Peak Hour			Weekday Evening Peak Hour		
			Volume ^b	K Factor ^c	Dir. Dist. ^d	Volume	K Factor	Dir. Dist.
Union Street, west of intersection	EB	7,720	350	4.5%	40%	588	7.6%	58%
	WB	<u>7,727</u>	<u>524</u>	<u>6.8%</u>	<u>60%</u>	<u>427</u>	<u>5.5%</u>	<u>42%</u>
	Total	15,447	874	5.7%	100%	1,015	6.6%	100%
Grossman Drive, north of intersection	NB	6,757	634	9.4%	52%	685	10.1%	52%
	SB	<u>6,742</u>	<u>583</u>	<u>8.6%</u>	<u>48%</u>	<u>620</u>	<u>9.2%</u>	<u>48%</u>
	Total	13,499	1,217	9.0%	100%	1,305	9.7%	100%
Ivory Street, north of entrance	NB	13,368	1,161	8.7%	72%	991	7.4%	53%
	SB	<u>11,243</u>	<u>450</u>	<u>4.0%</u>	<u>28%</u>	<u>886</u>	<u>7.9%</u>	<u>47%</u>
	Total	24,611	1,611	6.5%	100%	1,877	7.6%	100%
John Mahr Highway, south of Pearl Street	NB	8,427	797	9.5%	72%	502	6.0%	40%
	SB	<u>8,587</u>	<u>313</u>	<u>3.6%</u>	<u>28%</u>	<u>741</u>	<u>8.6%</u>	<u>60%</u>
	Total	17,014	1,110	6.5%	100%	1,243	7.3%	100%
Pearl Street, west of Shaw's	EB	6,510	353	5.4%	45%	479	7.4%	47%
	WB	<u>7,491</u>	<u>433</u>	<u>5.8%</u>	<u>55%</u>	<u>550</u>	<u>7.3%</u>	<u>53%</u>
	Total	14,001	786	5.6%	100%	1,029	7.3%	100%

Source: GPI. Based on automatic traffic recorder counts conducted in June and July 2015 by TSI

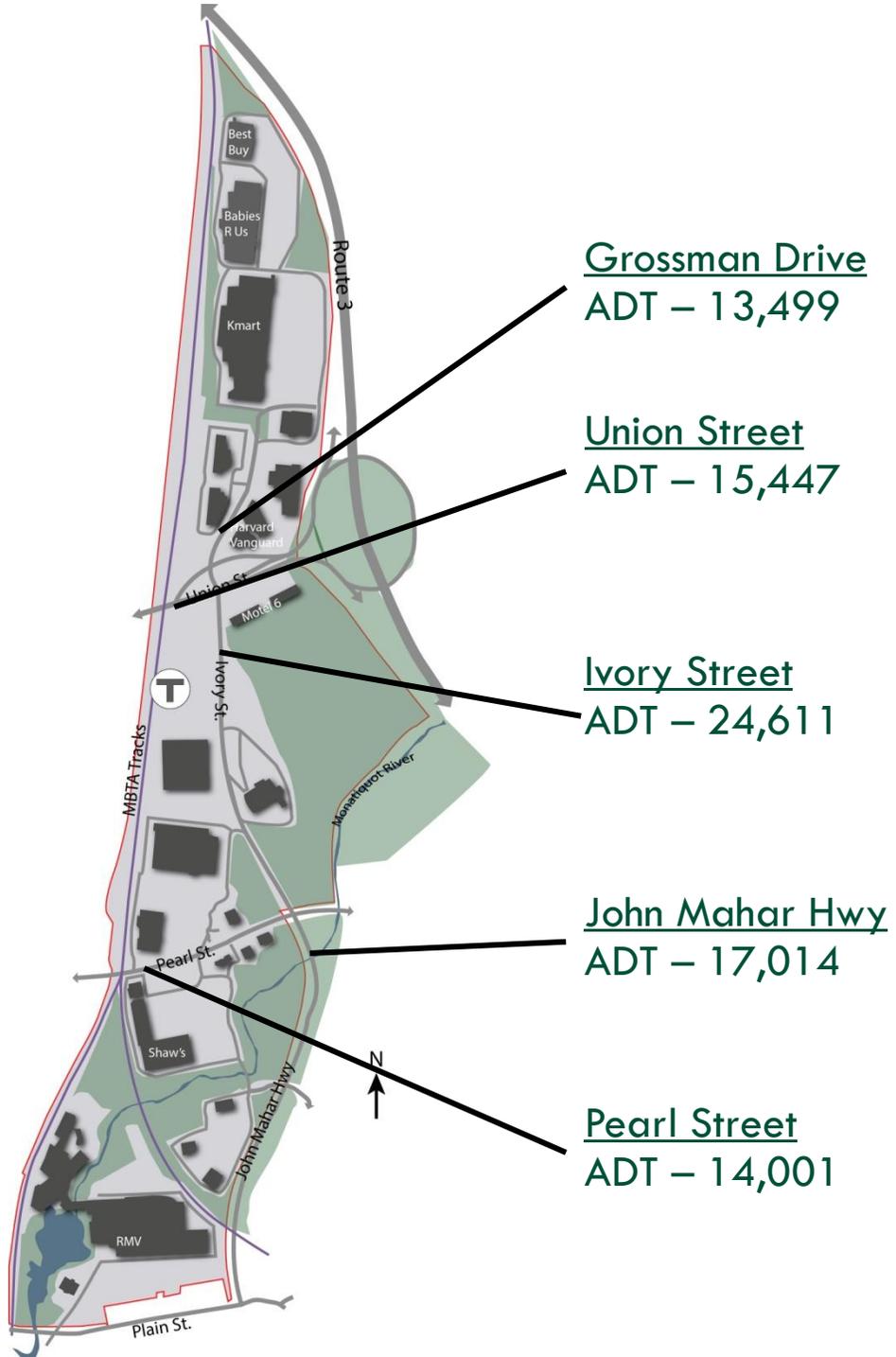
a Average Daily Traffic volume expressed in vehicles per day

b vehicles per hour

c percent of daily traffic that occurs during the peak hour

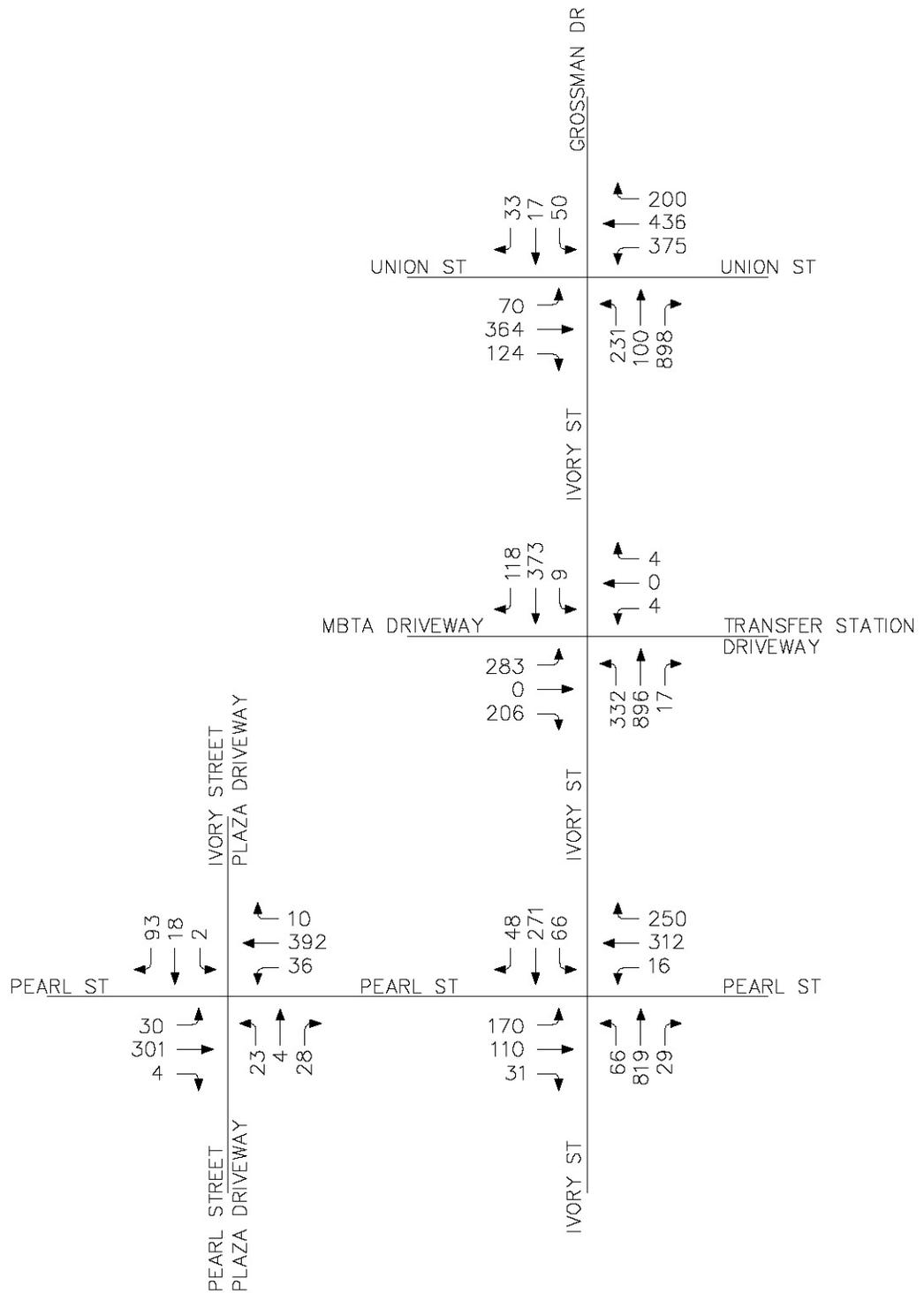
d directional distribution of peak hour traffic

Note: peak hours do not necessarily coincide with the peak hours of the individual intersection turning movement counts



TRANSIT-ORIENTED DEVELOPMENT STUDY

MBTA Red Line - Braintree, Massachusetts



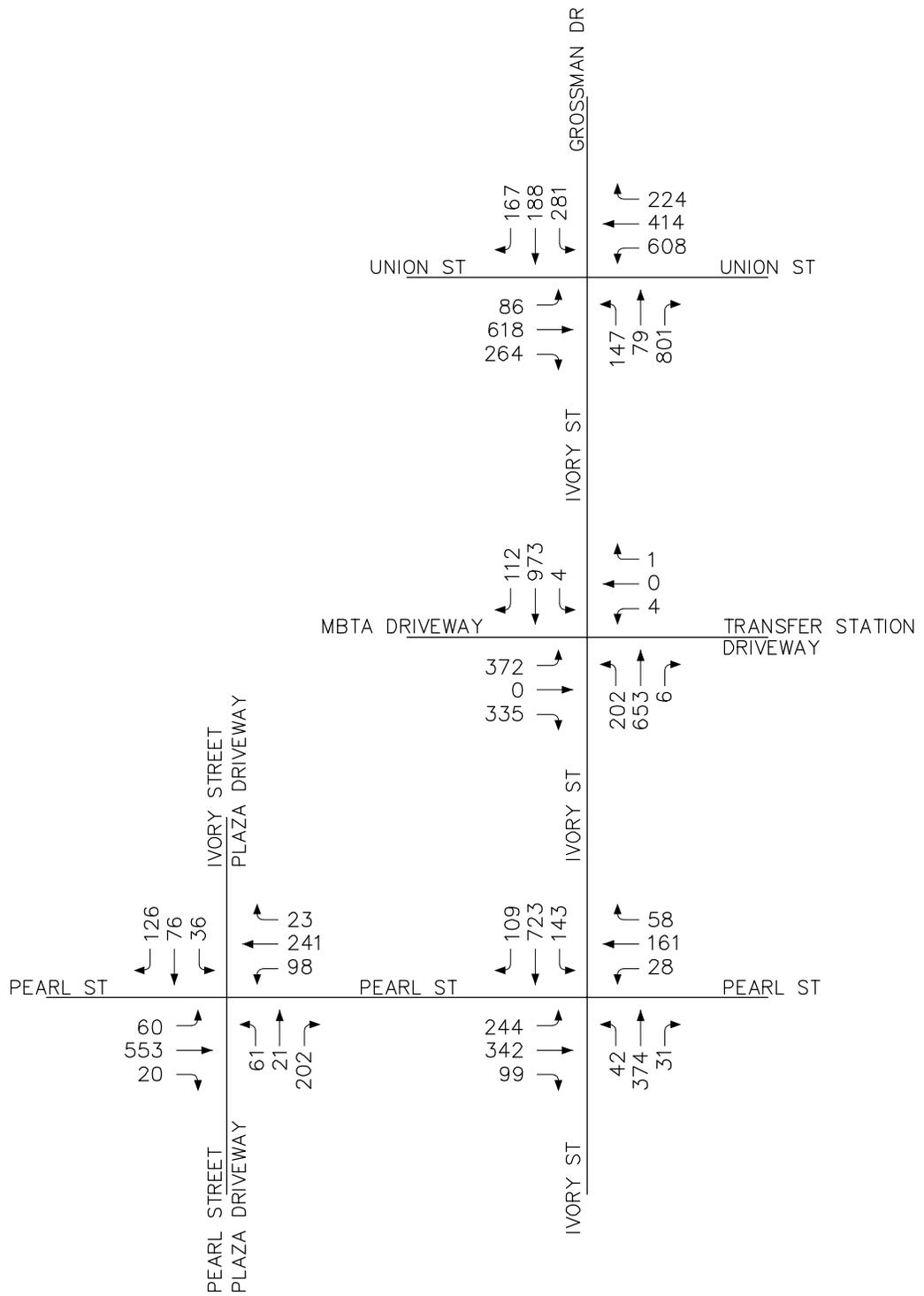
NOT TO SCALE

Figure 1

2015 Existing
Weekday AM
Peak Hour Traffic Volumes

TRANSIT-ORIENTED DEVELOPMENT STUDY

MBTA Red Line - Braintree, Massachusetts



NOT TO SCALE

Figure 2

2015 Existing
Weekday PM
Peak Hour Traffic Volumes

TRANSIT-ORIENTATED DEVELOPMENT STUDY

MBTA Red Line – Braintree, Massachusetts

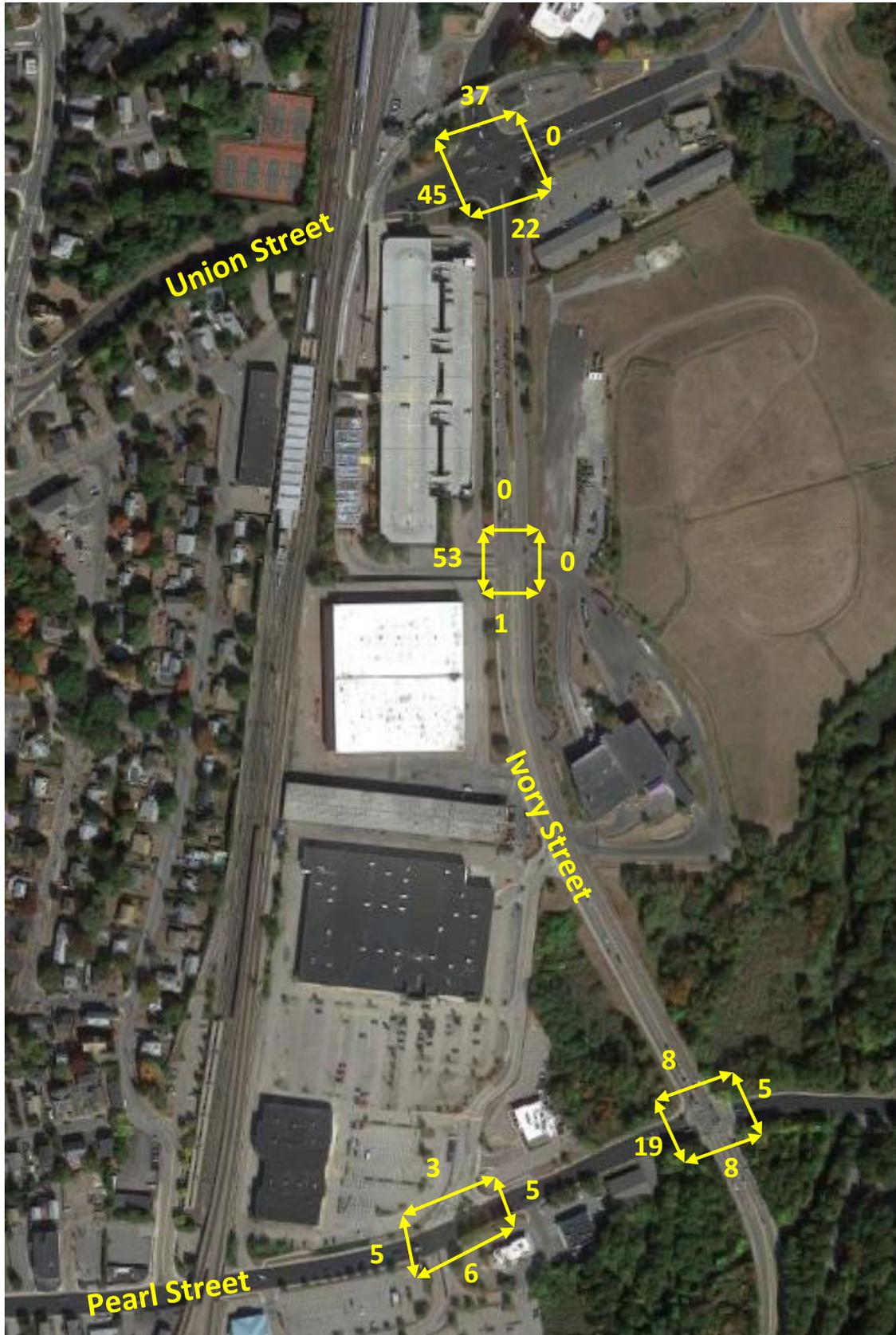
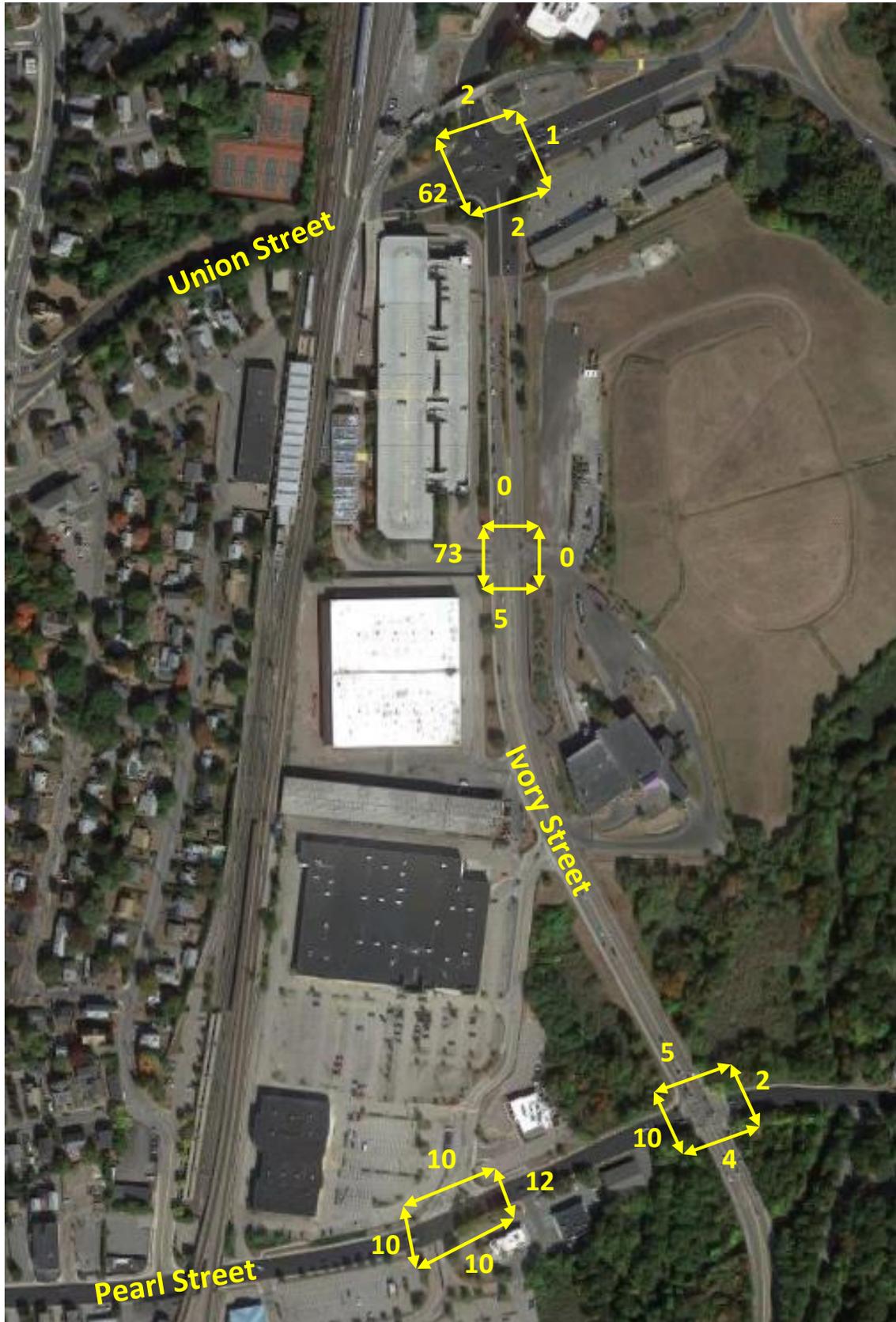


Figure 3
Weekday 7-9 AM (2 hours)
Pedestrian Volumes

TRANSIT-ORIENTATED DEVELOPMENT STUDY

MBTA Red Line – Braintree, Massachusetts



CRASH SUMMARY

Location	Number of Crashes			Severity ^a			Percent During	
	Total	Avg./ Year	Crash Rate ^c	PD	PI	F	Peak Hours	Wet/Icy Condition
Union Street at Grossman Drive and Ivory Street	22	4.4	0.28	13	9	0	18%	-
Ivory Street at MBTA Garage Driveway and Transfer Station Driveway	2	0.4	0.04	1	1	0	0%	-
Pearl Street at Ivory Street and John Mahar Highway	43	8.6	0.90	25	17	0	14%	-
Pearl Street at Pearl Street Plaza and Ivory Street Plaza	8	1.6	0.26	7	1	0	0%	-

Source: MassDOT Statewide Crash Data (2009-2013).

^a PD = property damage only; PI = personal injury; F = fatality.

^c Crashes per million vehicle miles travelled.

Statewide Average crash rate for signals = 0.80

District Average crash rate for signals = 0.76

Boston Regional MPO study in December 2012 queried crashes from 2005-2009 and found:

- Union at Ivory: 62 crashes total – involving one pedestrian
- Ivory at Pearl/Mahar: 47 crashes total – involving one pedestrian

DEFICIENCIES

GPI also conducted field visits and identified deficiencies in the transportation system as they pertained to all users, but with a noted focus on the pedestrian and bicycle infrastructure.

These deficiencies are noted in detail on the following pages. Generally speaking they consist of the need to add or repair pedestrian connections and accessibility concerns and the general wide open nature of the intersection. Of particular note is the intersection of Union Street at Ivory Street/Grossman Drive. This intersection has a very large footprint, and clearly prioritizes vehicle users. The hotel parcel on the south east quadrants is completely land-locked in terms of pedestrian amenities but generates noted pedestrian activity. These pedestrians cross Ivory Street where no accommodation is present, this should be remedied.

Also noteworthy is the lack of pedestrian and bicycle connections along Ivory Street to the MBTA garage, particularly the lack of a sidewalk along the eastern side of Ivory Street and crossing to the MBTA station. This is a route that exhibits a strong desire line as exhibited by the footpath on this side of the roadway. No bicycle infrastructure is present even though the width and capacity along Ivory Street affords opportunity.



The intersection of Pearl Street at Ivory Street also has noted concerns. Outside of pedestrian and bicycle infrastructure needs, there is also room for improvement for vehicle users. Many complaints from users note the need for a southbound left-turn lane. This need is promoted by the elevated crash rate which may be attributable to turning movements.

Finally the intersection of Jonathan's Landing at John Mahar Highway is a strong pedestrian crossing point. Additional amenities appear warranted to support this crossing activity including additional warning devices such as a rapid flashing beacon or HAWK signal.



Braintree MBTA Red Line Station

IVORY STREET AT UNION STREET



Eastbound Approach:
Circuitous elongated
pedestrian crossing with
two refuge islands –
creating a three-step
crossing.



Overall Intersection: Ramps
exist but lack of detectable
warning pads.



Braintree MBTA Red Line Station



**Eastbound Approach:
Broken Pedestrian Signal
Display walking
northbound.**



**Southbound Approach:
Crosswalk with no
pedestrian signals or
displays - ~75 feet of
unprotected crossing.**



Braintree MBTA Red Line Station



Northbound Approach: No pedestrian accommodations – no crosswalk, signals or displays. Same on Westbound approach.



Transit Access from North: Not fully accessible steep staircase with limited signage.



Braintree MBTA Red Line Station

IVORY STREET AT MBTA GARAGE



Eastbound Approach:
 Approximately 90 foot crossing with no pedestrian signals or displays. Median interrupts crosswalk/lacks proper ramps. No detectable warning pads.



Overall Intersection:
 Missing crosswalks along east side of Ivory Street. No crosswalks or pedestrian signals across Ivory on either approach. No ramps exist across Ivory and no detectable warning pads.



Braintree MBTA Red Line Station



Eastbound Approach: No delineation or lane assignment pavement markings. No sidewalks or bike lanes accessing the entrance to the MBTA platform.



Garage: Bicycles are encouraged, unsafely to travel against vehicular exiting traffic in order to access the Pedal & Park Bike Parking Cage within the Parking Garage.

Overall: Overcapacity parking garage at the station pushes vehicles to nearby parking center lots which are not pedestrian friendly to access platform.





Braintree MBTA Red Line Station



Overall Intersection: Missing sidewalk along the east side of Ivory Street along the segment between Union Street and Pearl Street encourages pedestrians to walk along the grassed median or pavement edge.

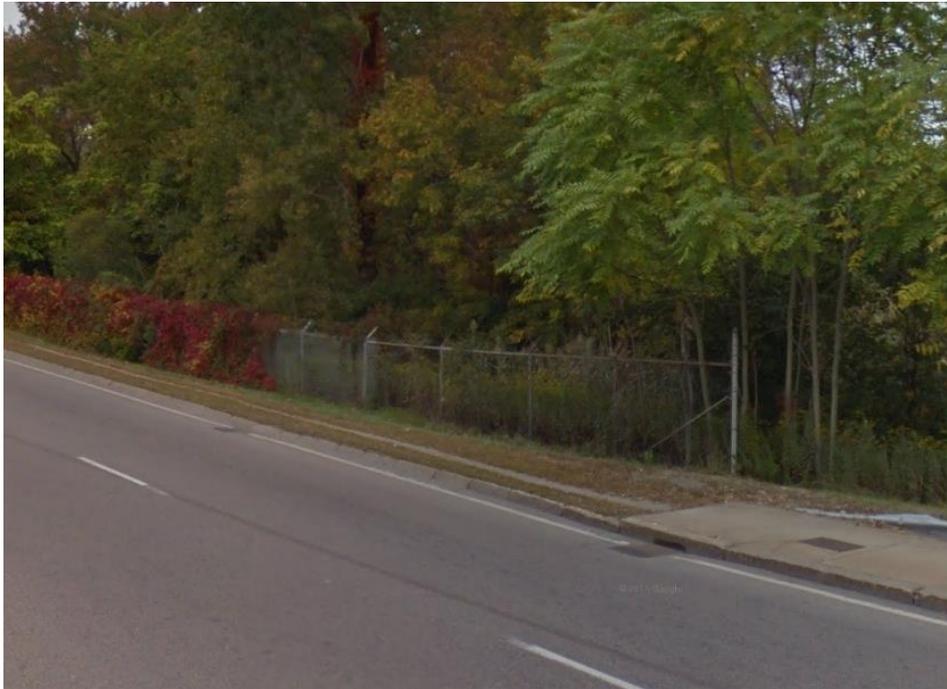


Overall Intersection: Sidewalk accommodations connecting the station platform to the neighborhoods and retail to the south lack comfort (shade trees/buffers) or amenities (benches/garbage cans).



Braintree MBTA Red Line Station

IVORY STREET AT PEARL STREET



Overall Intersection:
Missing sidewalk along the east side of Ivory Street, north of Pearl Street displays worn pedestrian desire line along pavement edge.



Overall Intersection:
Missing crosswalks along east side of Ivory Street. No crosswalks or pedestrian signal across Ivory on either approach. No ramps exist across Ivory and no detectable warning pads.



IMPROVEMENTS & ANALYSIS

The following pages identify short and long-term recommendations. Following the short term recommendations is a summary of the signalized capacity analysis of the study area intersections which incorporates GPI's short term recommendations.



SHORT-TERM IMPROVEMENTS

IVORY STREET AT UNION STREET/GROSSMAN DRIVE

- Add crosswalk across northbound Ivory Street approach
- Close southbound right-turn channel – shorten western crossing
- Shorten cycle length – reduce pedestrian delays
- Repair broken pedestrian displays
- Upgrade to countdown displays
- Introduce bicycle accommodations at signal and along corridors
- Install ADA-compliant detectable warning pads

IVORY STREET AT MBTA GARAGE

- Narrow MBTA garage driveway entrance from two (35 feet) to one (15 feet) lane – shorten crossing
- Provide curb cuts/ramps through median
- Install pedestrian displays and push buttons
- Provide sidewalks/bike accommodations for safe access to platform and Pedal and Park at station
- Restrict southbound RTOR
- Potentially provide crossing across northbound approach of Ivory Street for future planning
- Introduce bicycle accommodations at signalS and along corridors
- Install ADA-compliant detectable warning pads

IVORY STREET AT PEARL STREET/JOHN MAHAR

- Convert exclusive pedestrian phasing to concurrent phasing – reduce delays
- Restrict RTOR in all directions but northbound
- Decrease cycle length – increase minimums to provide adequate concurrent crossing time
- Increase westbound green time in the evening
- Potentially provide sidewalk along east side of Ivory Street, north of intersection to meet demand for future planning
- Repair broken pedestrian displays
- Upgrade to countdown displays
- Provide advance MBTA signage at intersection for safe crossing
- Introduce bicycle accommodations at signal and along corridors
- Install ADA-compliant detectable warning pads
- Investigate installing southbound left-turn lane



PEARL STREET AT IVORY PLAZA

- Convert hybrid exclusive pedestrian phasing to concurrent phasing – reduce delays
- Narrow southern driveway entrance from two (30 feet) to one (15 feet) lane – shorten crossing
- Provide crossing on east leg
- Introduce bicycle accommodations at signal and along corridors
- Install ADA-compliant detectable warning pads

JONATHAN'S LANDING

- Install rapid flashing beacon or pedestrian hybrid beacon (HAWK) to accommodate safe crossing of John Mahar Highway at site driveway

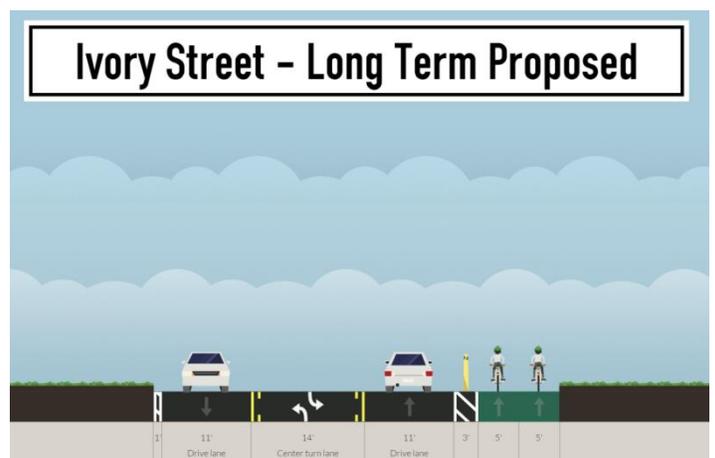
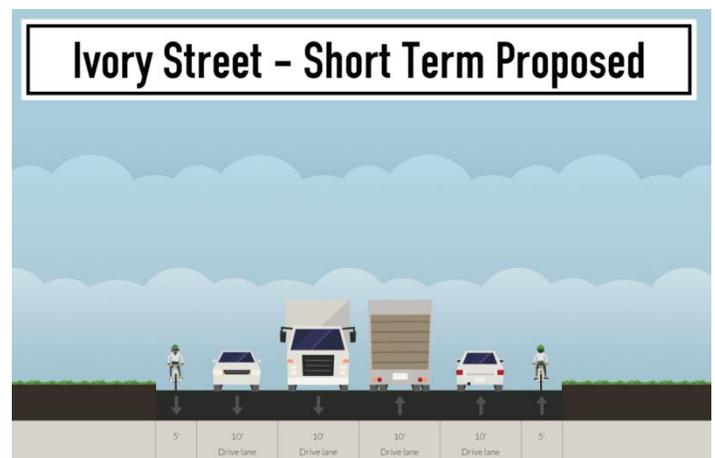
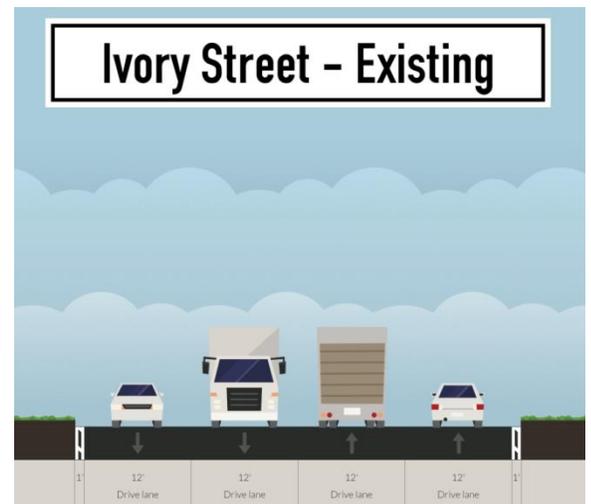
In addition to short term recommendations, long term recommendations include consideration to future changes to the roadway cross section of Ivory Street and the potential for more porous pedestrian connections to neighborhood to the west.

IVORY STREET

The opportunity appears to exist to appropriate pavement width along Ivory Street to develop bicycle accommodations and possibly traffic calming measures. The existing width of Ivory Street is approximately 50'. Today that space is utilized as four, twelve foot travel lanes and one foot shoulders against the curbline.

MassDOT now endorses travel lanes as narrow as 10 feet for roadways of this type. If the vehicle travel lanes width were to be reduced to ten feet sufficient width would be available to stripe five foot bike lanes in the shoulder. This would provide a noted amenity for roadway users that currently have no accommodation. If the demand is in doubt one only need look to the bike garage at the Braintree Station as justification for the demand.

In the long term consideration should be given to converting Ivory Street south of the MBTA driveway to a conventional road diet configuration. A road diet is a term applied when reducing a typical four lane roadway cross-section to three lanes, inclusive of a single travel lane in each direction and a center left turn lane to accommodate left turns in both directions. Studies have shown that this change generally does not result in a loss of vehicle capacity give the complications left-turns experience in a standard four lane configuration. FHWA suggest they could be considered along corridor with an ADT less than 20,000 vehicles per day (and upwards of 25,000 vpd if modeling indicates appropriate). Ivory Street south of the MBTA driveway appears to be a candidate. In this scenario the 50' of pavement width could be converted to two 11 foot travel lanes, a 14 foot center left turn lane, a 10 foot two way separated bicycle facility with 3 foot buffer and one foot shoulder on the opposite side. This level of bicycle facility would strongly promote bicycle use and compliment a TOD district.



SIGNALIZED LEVEL OF SERVICE AND QUEUE ANALYSIS SUMMARY

Peak Hour/Lane Group	2015 Existing Conditions				2015 Proposed Conditions			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue
Union Street at Ivory Street/Grossman Drive								
<i>Weekday AM:</i>								
Union EB left	0.23	32.4	C	88	0.23	31.5	C	83
Union EB thru	0.62	36.4	D	184	0.61	35.2	D	174
Union EB right	0.10	17.6	B	30	0.09	16.9	B	21
Union WB left	0.65	30.4	C	275	0.67	31.6	C	310
Union WB thru	0.67	29.6	C	264	0.70	30.4	C	297
Union WB right	0.15	18.0	B	17	0.15	18.2	B	20
Ivory NB left	0.69	38.1	D	#315	0.68	37.2	D	251
Ivory NB thru	0.28	30.2	C	123	0.28	29.5	C	114
Ivory NB right	0.63	1.9	A	0	0.63	1.9	A	0
Grossman SB left	0.27	39.6	D	64	0.27	38.7	D	63
Grossman SB thru/right	0.15	38.4	D	36	0.15	37.6	D	35
Overall Intersection	0.81	21.8	C		0.81	21.8	C	
<i>Weekday PM:</i>								
Union EB left	0.26	40.5	D	131	0.23	35.0	D	109
Union EB thru	0.91	62.4	E	#483	0.83	47.4	D	339
Union EB right	0.35	30.6	C	85	0.42	26.8	C	94
Union WB left	0.80	49.7	D	#542	0.85	53.0	D	#502
Union WB thru	0.84	48.5	D	#523	0.90	51.7	D	#482
Union WB right	0.15	16.6	B	20	0.15	17.9	B	25
Ivory NB left	0.71	60.3	E	219	0.67	52.5	D	190
Ivory NB thru	0.36	49.2	D	127	0.34	44.2	D	110
Ivory NB right	0.56	1.4	A	0	0.56	1.4	A	0
Grossman SB left	0.67	48.2	D	293	0.77	53.6	D	#309
Grossman SB thru/right	0.57	43.7	D	207	0.65	44.3	D	205
Overall Intersection	0.80	38.0	D		0.82	36.1	D	
Ivory Street at MBTA Garage/Transfer Station								
<i>Weekday AM:</i>								
MBTA EB left	0.54	22.1	C	126	0.55	22.7	C	126
MBTA EB left/thru	0.54	22.1	C	126	0.55	22.7	C	126
MBTA EB right	0.11	11.4	B	37	0.11	11.8	B	37
Transfer WB left	0.05	18.0	B	9	0.05	18.3	B	9
Transfer WB thru/right	0.01	17.7	B	0	0.01	18.0	B	0
Ivory NB left	0.64	8.2	A	#128	0.63	8.1	A	127
Ivory NB thru/right	0.59	10.1	B	241	0.58	9.9	A	241
Ivory SB left	0.07	11.6	B	7	0.07	11.4	B	7
Ivory SB thru/right	0.40	13.9	B	109	0.42	13.9	B	123
Overall Intersection	0.66	12.2	B		0.66	12.3	B	

Synchro 8/2000 HCM Methodology

^a Volume-to-capacity ratio.

^b Average control delay, in seconds per vehicle.

^c Level of service.

^d Maximum queue length in feet per lane during 50th/95th percentile cycle.

95th percentile volume exceeds capacity, queue may be longer.

SIGNALIZED LEVEL OF SERVICE AND QUEUE ANALYSIS SUMMARY

Peak Hour/Lane Group	2015 Existing Conditions				2015 Proposed Conditions			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue
Ivory Street at MBTA Garage/Transfer Station								
<i>Weekday PM:</i>								
MBTA EB left	0.74	38.5	D	#194	0.74	39.0	D	#194
MBTA EB left/thru	0.74	38.9	D	#195	0.75	39.2	D	#195
MBTA EB right	0.53	22.1	C	225	0.53	22.2	C	225
Transfer WB left	0.09	25.0	C	8	0.09	25.2	C	8
Transfer WB thru/right	0.00	24.2	C	0	0.00	24.4	C	0
Ivory NB left	0.61	12.7	B	#121	0.61	12.6	B	#120
Ivory NB thru/right	0.34	8.2	A	149	0.34	8.2	A	149
Ivory SB left	0.02	10.0	B	4	0.02	10.0	A	4
Ivory SB thru/right	0.68	16.5	B	304	0.68	16.5	B	310
Overall Intersection	0.70	18.1	B		0.71	18.2	B	
Ivory Street at John Mahar Hwy/Pearl Street								
<i>Weekday AM:</i>								
Pearl EB left	0.48	26.9	C	157	0.42	20.1	C	98
Pearl EB thru/right	0.20	16.7	B	124	0.19	12.8	B	82
Pearl WB left/thru	0.73	36.7	D	#401	0.69	29.6	C	252
Pearl WB right	0.29	27.0	C	123	0.60	27.3	C	197
John Mahar NB	0.77	26.7	C	#520	0.74	21.6	C	301
Ivory SB	0.47	20.4	C	185	0.44	16.6	B	122
Overall Intersection	0.69	26.4	C		0.69	21.8	C	
<i>Weekday PM:</i>								
Pearl EB left	0.66	22.7	C	#276	0.56	16.5	B	114
Pearl EB thru/right	0.76	24.3	C	#450	0.64	17.0	B	223
Pearl WB left/thru	3.50	1186.4	F	#319	0.78	33.9	C	127
Pearl WB right	0.05	23.2	C	5	0.18	17.9	B	42
John Mahar NB	0.47	14.1	B	167	0.43	12.9	B	106
Ivory SB	0.98	39.8	D	#509	0.93	30.7	C	#343
Overall Intersection	1.36	136.3	F		0.89	23.3	C	
Pearl Street at Pearl Plaza/Ivory Plaza								
<i>Weekday AM:</i>								
Pearl EB left	0.40	20.2	C	31	0.40	20.2	C	31
Pearl EB thru	0.39	7.9	A	126	0.39	7.9	A	126
Pearl EB right	0.00	6.3	A	0	0.00	6.3	A	0
Pearl WB left	0.47	20.6	C	35	0.47	20.6	C	35
Pearl WB thru/right	0.54	8.9	A	176	0.54	8.9	A	176
Plaza NB left	0.17	15.8	B	23	0.17	15.8	B	23
Plaza NB thru/right	0.05	15.4	B	17	0.05	15.4	B	17
Plaza SB left	0.02	15.3	B	6	0.02	15.3	B	6
Plaza SB thru/right	0.18	15.8	B	34	0.18	15.8	B	34
Overall Intersection	0.46	10.8	B		0.46	10.8	B	

Synchro 8/2000 HCM Methodology

^a Volume-to-capacity ratio.

^b Average control delay, in seconds per vehicle.

^c Level of service.

^d Maximum queue length in feet per lane during 50th/95th percentile cycle.

95th percentile volume exceeds capacity, queue may be longer.

SIGNALIZED LEVEL OF SERVICE AND QUEUE ANALYSIS SUMMARY

Peak Hour/Lane Group	2015 Existing Conditions				2015 Proposed Conditions			
	V/C ^a	Del. ^b	LOS ^c	Queue ^d	V/C	Del.	LOS	Queue
Pearl Street at Pearl Plaza/Ivory Plaza								
<i>Weekday PM:</i>								
Pearl EB left	0.52	26.1	C	60	0.52	26.2	C	60
Pearl EB thru	0.76	17.2	B	#345	0.76	17.3	B	#345
Pearl EB right	0.01	8.9	A	0	0.01	8.9	A	0
Pearl WB left	0.55	25.2	C	89	0.56	25.3	C	89
Pearl WB thru/right	0.33	9.3	A	135	0.33	9.4	A	135
Plaza NB left	0.39	20.5	C	57	0.39	20.4	C	57
Plaza NB thru/right	0.20	19.3	B	61	0.21	19.3	B	61
Plaza SB left	0.25	19.6	B	38	0.25	19.6	B	38
Plaza SB thru/right	0.51	20.8	C	100	0.52	21.0	C	100
Overall Intersection	0.66	17.6	B		0.67	17.7	B	

Synchro 8/2000 HCM Methodology

^a Volume-to-capacity ratio.

^b Average control delay, in seconds per vehicle.

^c Level of service.

^d Maximum queue length in feet per lane during 50th/95th percentile cycle.

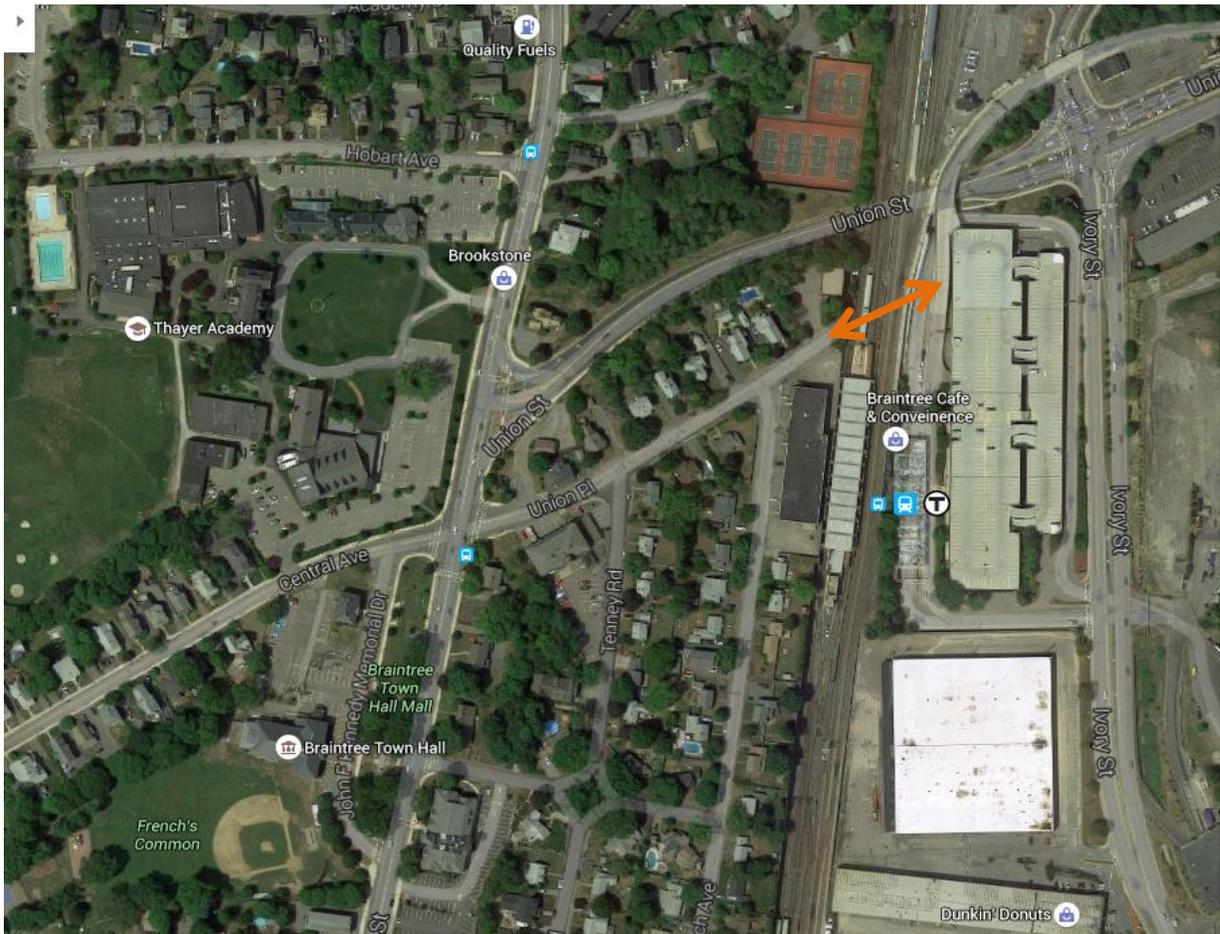
95th percentile volume exceeds capacity, queue may be longer.

UNION PLACE CONNECTION

In some respect the ability to convert the area to a TOD could be as simple opening pedestrian connections to the neighborhoods to the west, Braintree Center. Today the rail line itself acts as a barrier to the broader Braintree community. This was potentially by design during the period of public transportation expansion in the past and the classic resistance these efforts met with. Today however connecting the station to the Braintree residents could be looked at as an amenity to the residents.

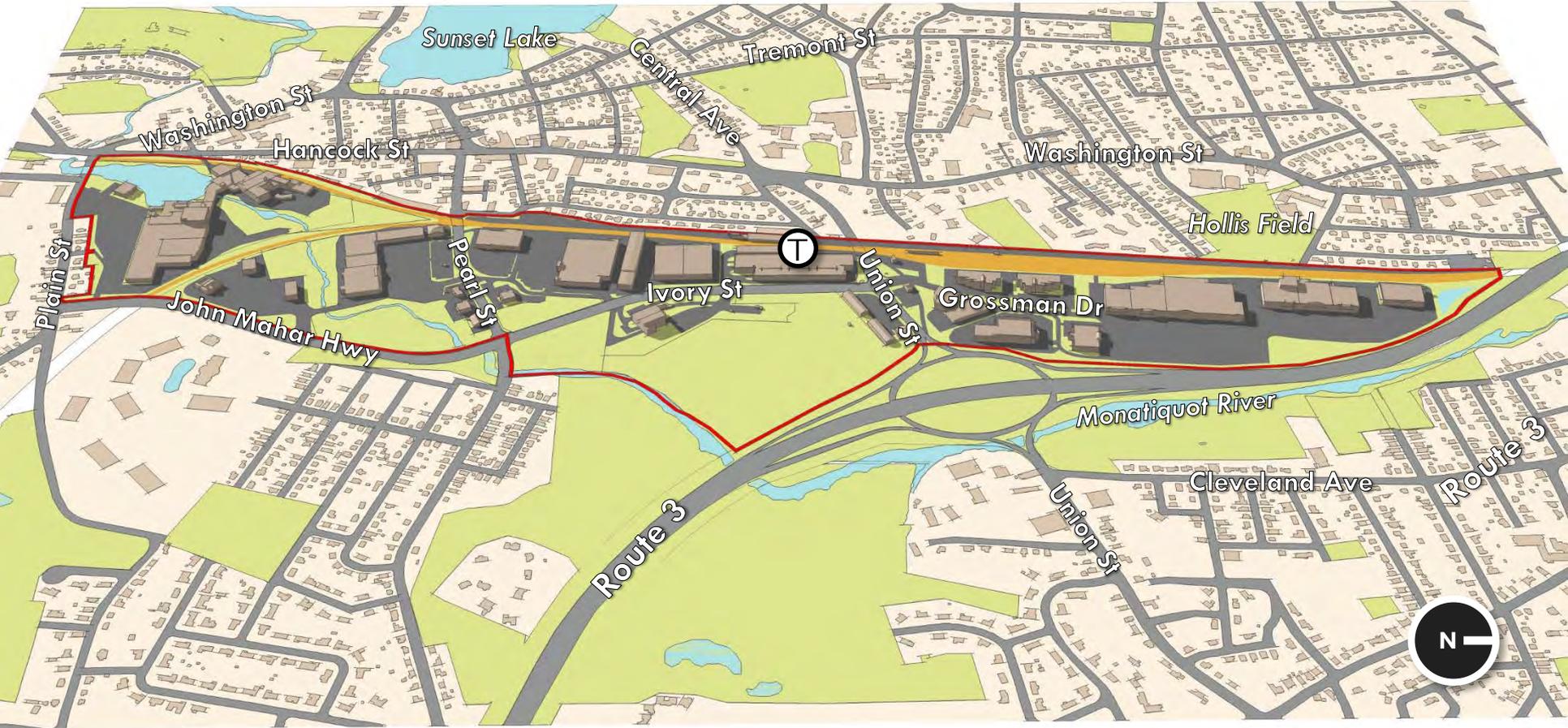


A connection from Union Place would greatly reduce the walking time and barriers to many residents to the station and should be discussed moving forward. This connection would better integrate the station to all of Braintree and enhance the viability of transit orientated place. Concerns about parking can be mitigated through a host of permitting, pricing and enforcement strategies.

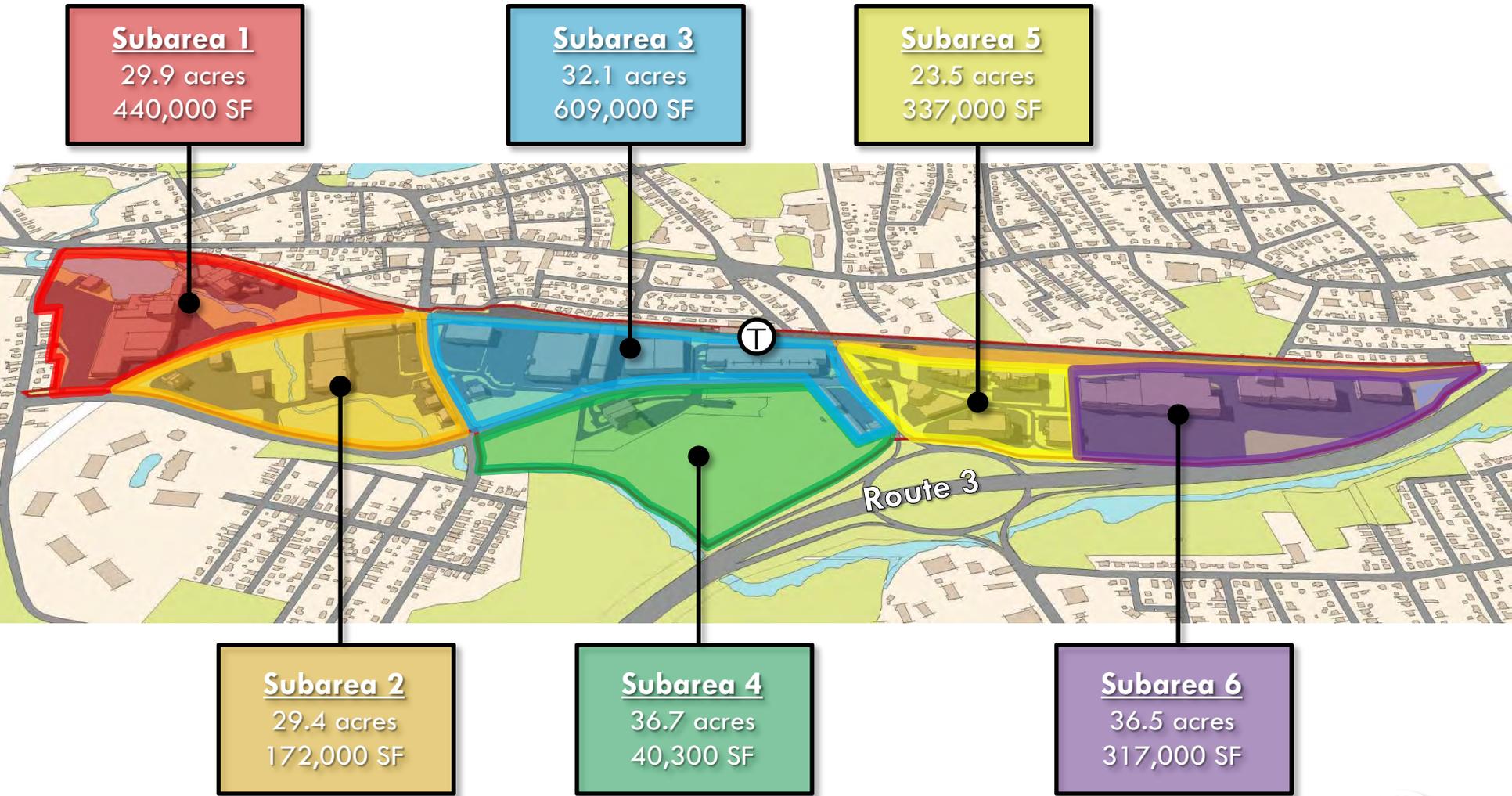


APPENDIX B DEVELOPMENT SCENARIOS

Ivory Street District Existing Uses



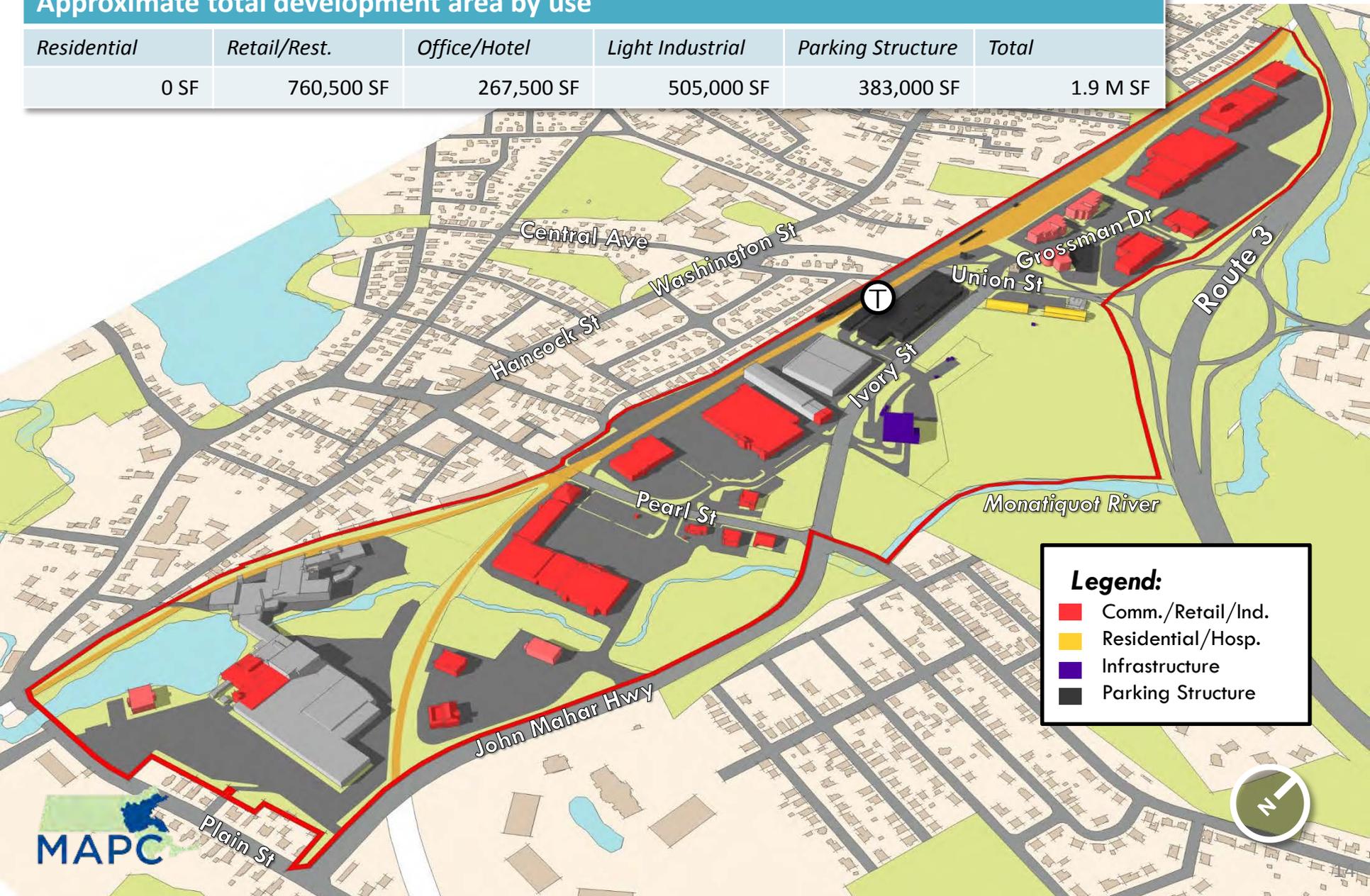
Ivory Street District Existing Uses



Ivory Street District Existing Uses

Approximate total development area by use

Residential	Retail/Rest.	Office/Hotel	Light Industrial	Parking Structure	Total
0 SF	760,500 SF	267,500 SF	505,000 SF	383,000 SF	1.9 M SF



Ivory Street Corridor Vision Scenarios

Future Growth

Braintree is projected to grow by about 5,000 people by the year 2030.

Where should that growth be focused?

- Projected market opportunities over next 5 to 10 years
- Not a prediction of what may occur on a particular site
- Residential, retail and office

Ivory Street Corridor Vision Scenarios

Overview of Market Projections/Assumptions

- Consideration of market context, but longer time horizon – **20 to 30 years**
- **Realistic development assumptions** and physical dimensions (building sizes, parking sizes, building efficiency, parking requirements)
- Composition of **walkable nodes** with enhanced continuity and sense of place
- Responsive to **community vision**

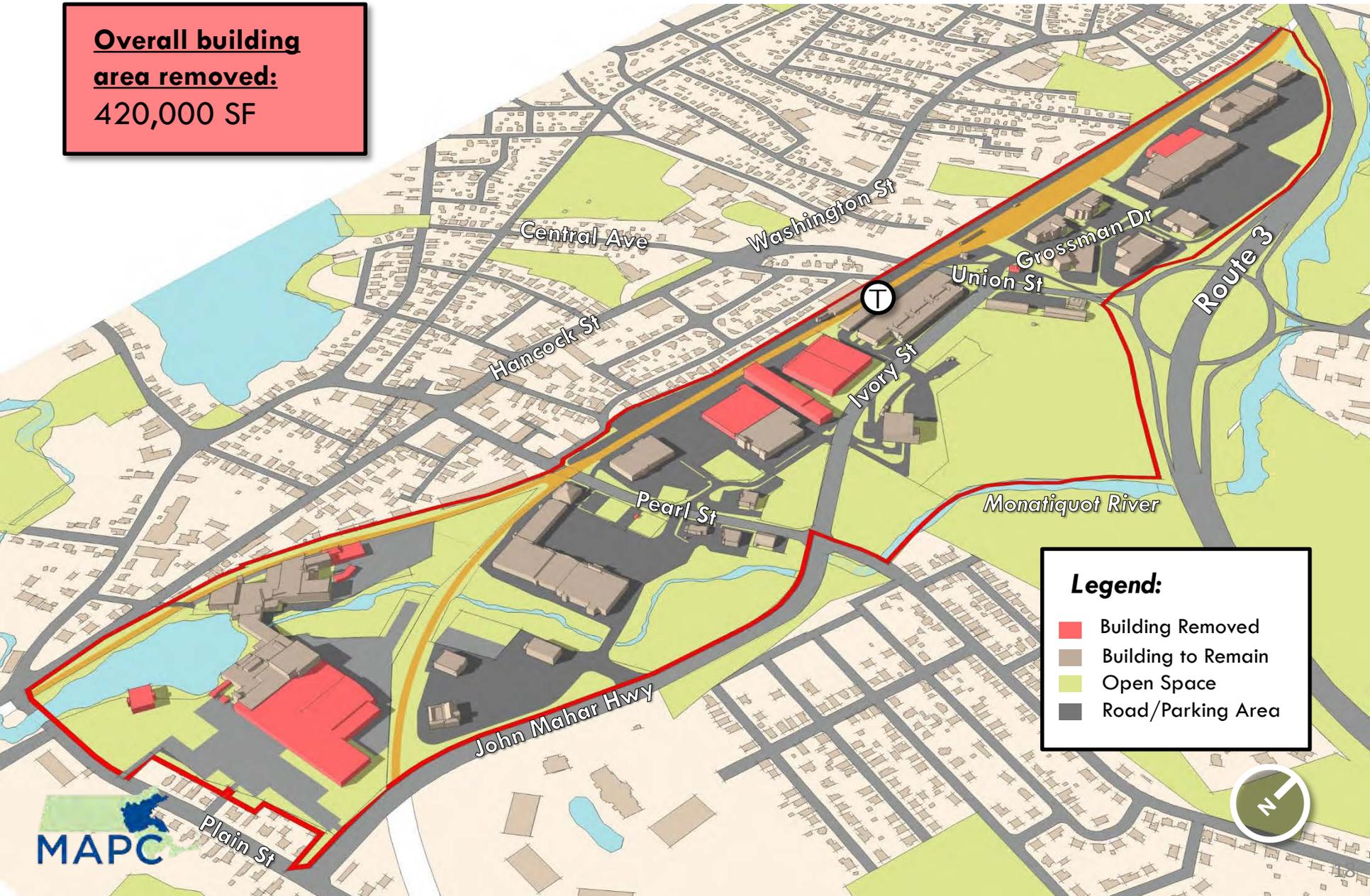
Vision Scenario 1

“Optimize and Revitalize”

- Enhance existing nodes and subareas, add connectivity between nodes
- Retain as many buildings and larger uses as possible

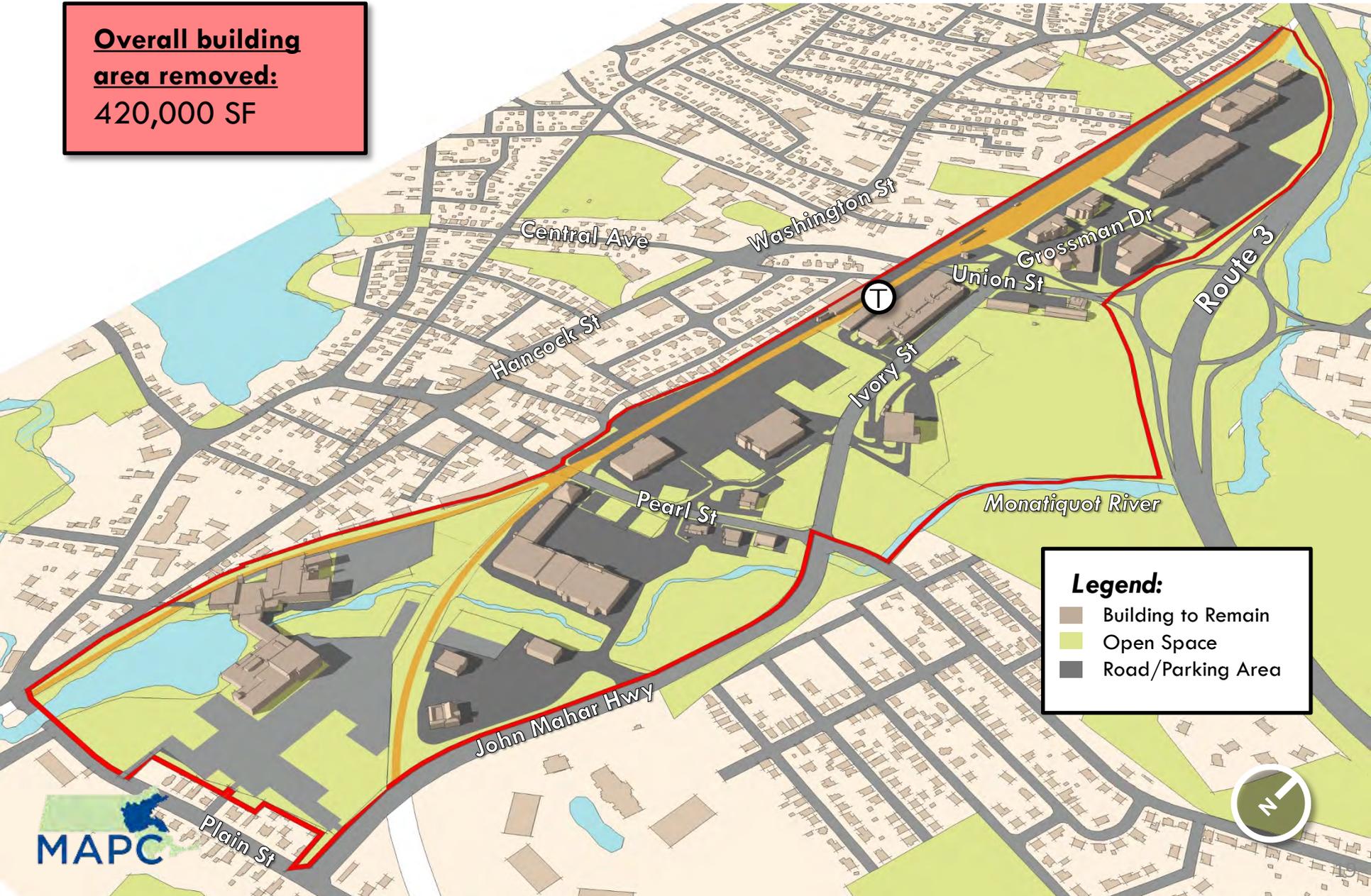
Ivory Street District Vision Scenario 1

**Overall building
area removed:
420,000 SF**



Ivory Street District Vision Scenario 1

**Overall building
area removed:
420,000 SF**



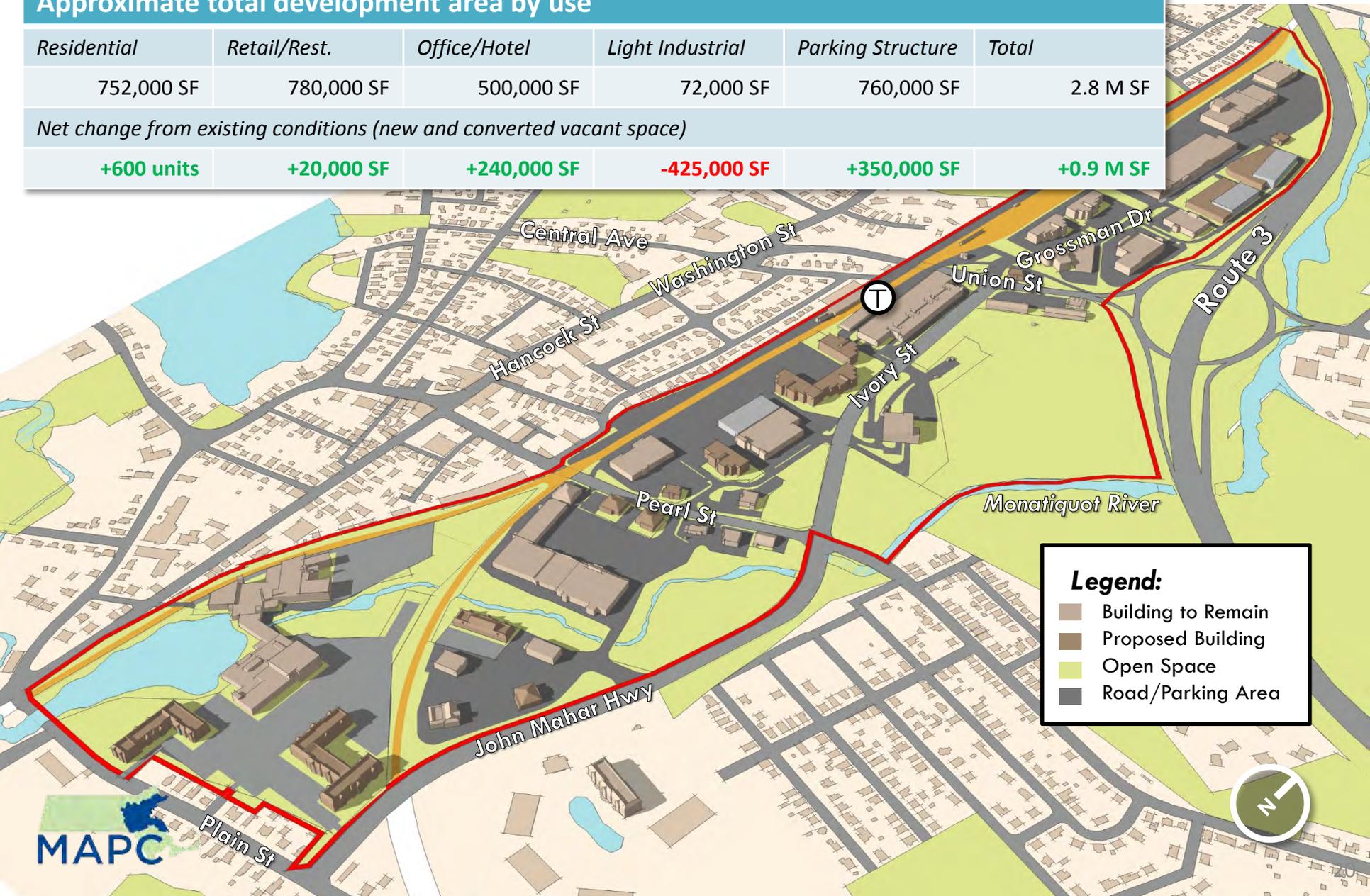
Legend:

- Building to Remain
- Open Space
- Road/Parking Area

Ivory Street District Vision Scenario 1

Approximate total development area by use

Residential	Retail/Rest.	Office/Hotel	Light Industrial	Parking Structure	Total
752,000 SF	780,000 SF	500,000 SF	72,000 SF	760,000 SF	2.8 M SF
<i>Net change from existing conditions (new and converted vacant space)</i>					
+600 units	+20,000 SF	+240,000 SF	-425,000 SF	+350,000 SF	+0.9 M SF



Legend:

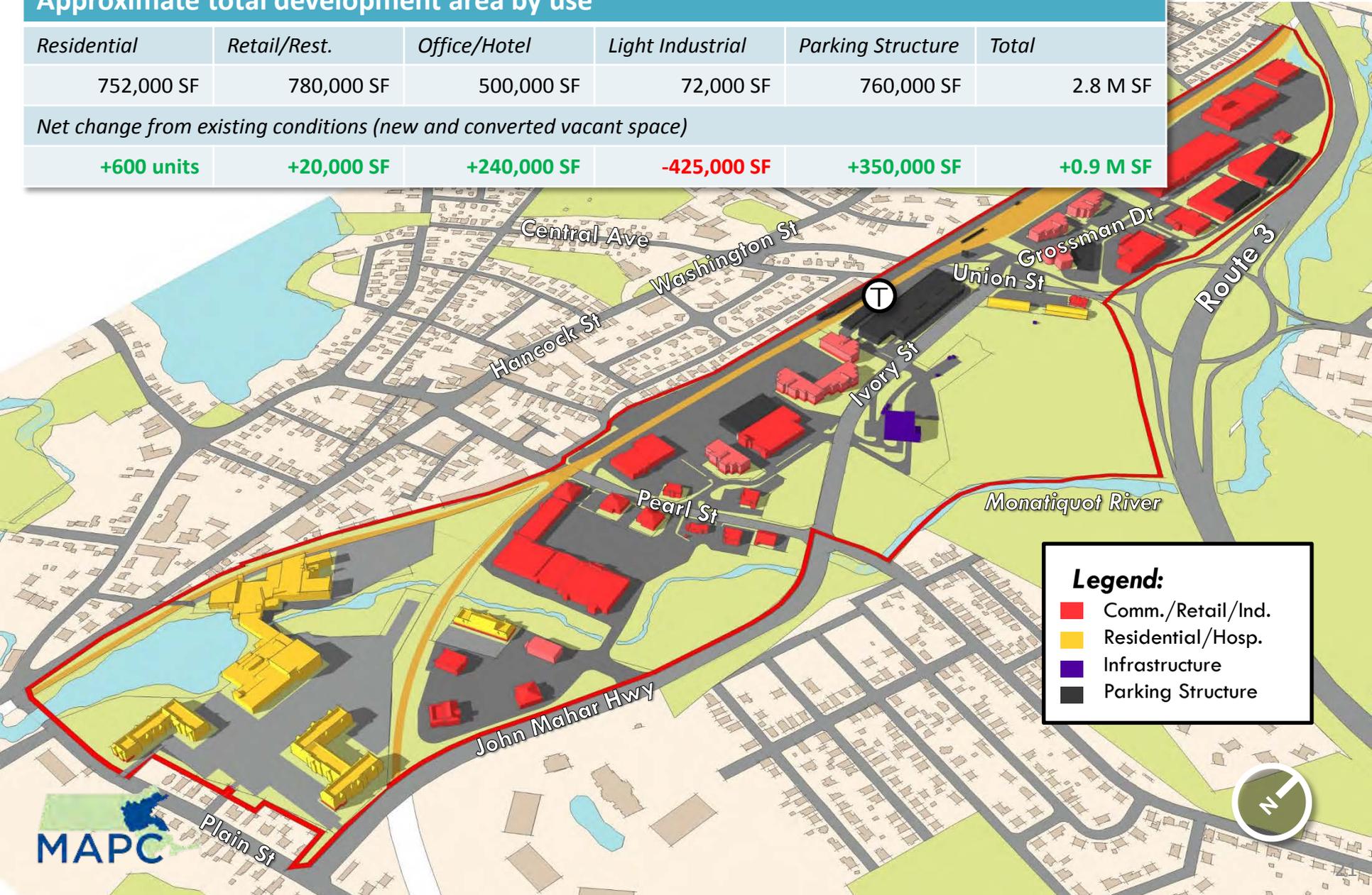
- Building to Remain
- Proposed Building
- Open Space
- Road/Parking Area



Ivory Street District Vision Scenario 1

Approximate total development area by use

Residential	Retail/Rest.	Office/Hotel	Light Industrial	Parking Structure	Total
752,000 SF	780,000 SF	500,000 SF	72,000 SF	760,000 SF	2.8 M SF
<i>Net change from existing conditions (new and converted vacant space)</i>					
+600 units	+20,000 SF	+240,000 SF	-425,000 SF	+350,000 SF	+0.9 M SF



Legend:

- Comm./Retail/Ind.
- Residential/Hosp.
- Infrastructure
- Parking Structure



Ivory Street District Vision Scenario 1



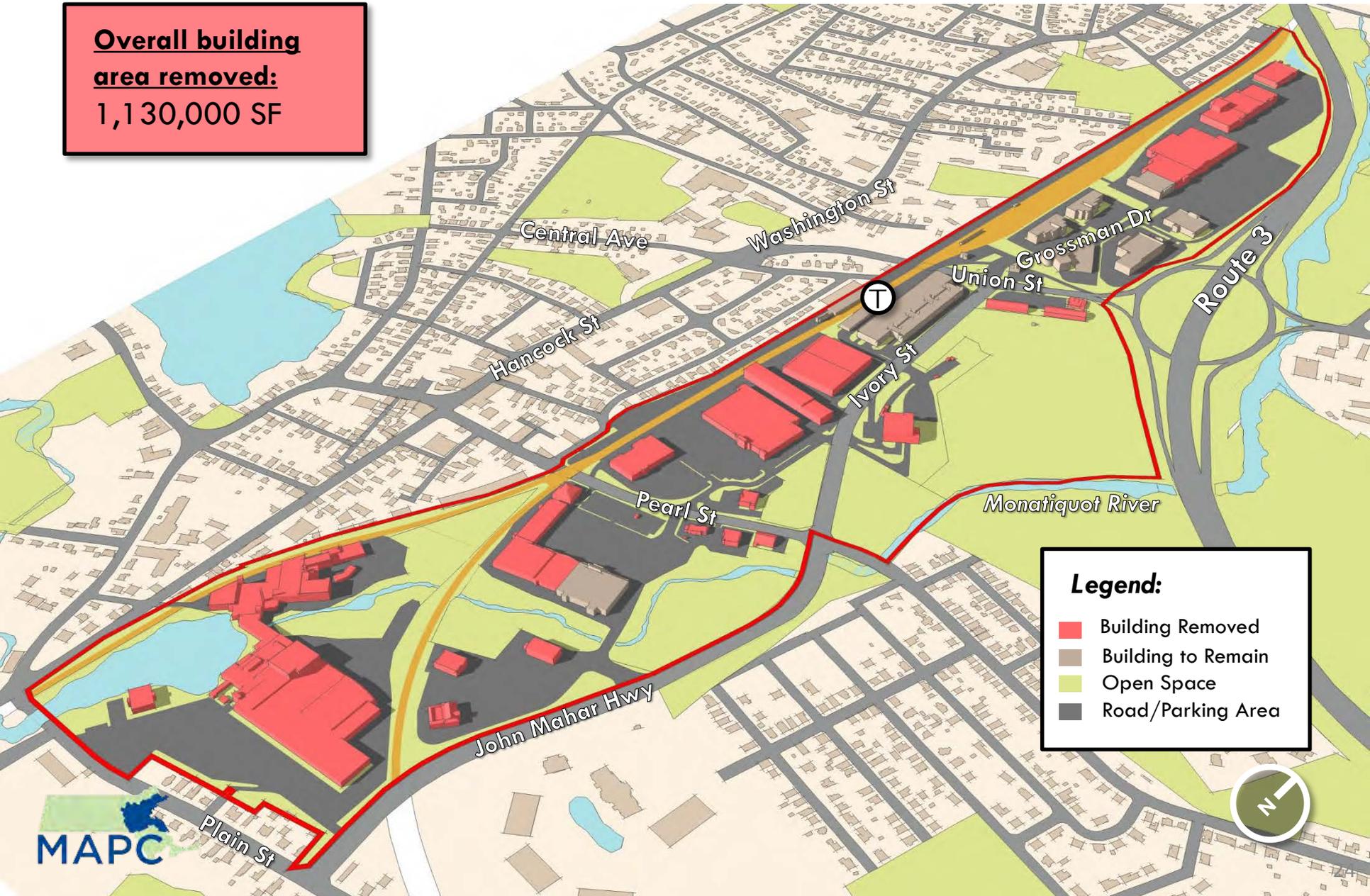
Vision Scenario 2

“Create New Patterns”

- Reorient subareas to be internally focused on a new street where possible
- Link across subareas and create new development and placemaking opportunities

Ivory Street District Vision Scenario 2

**Overall building
area removed:
1,130,000 SF**



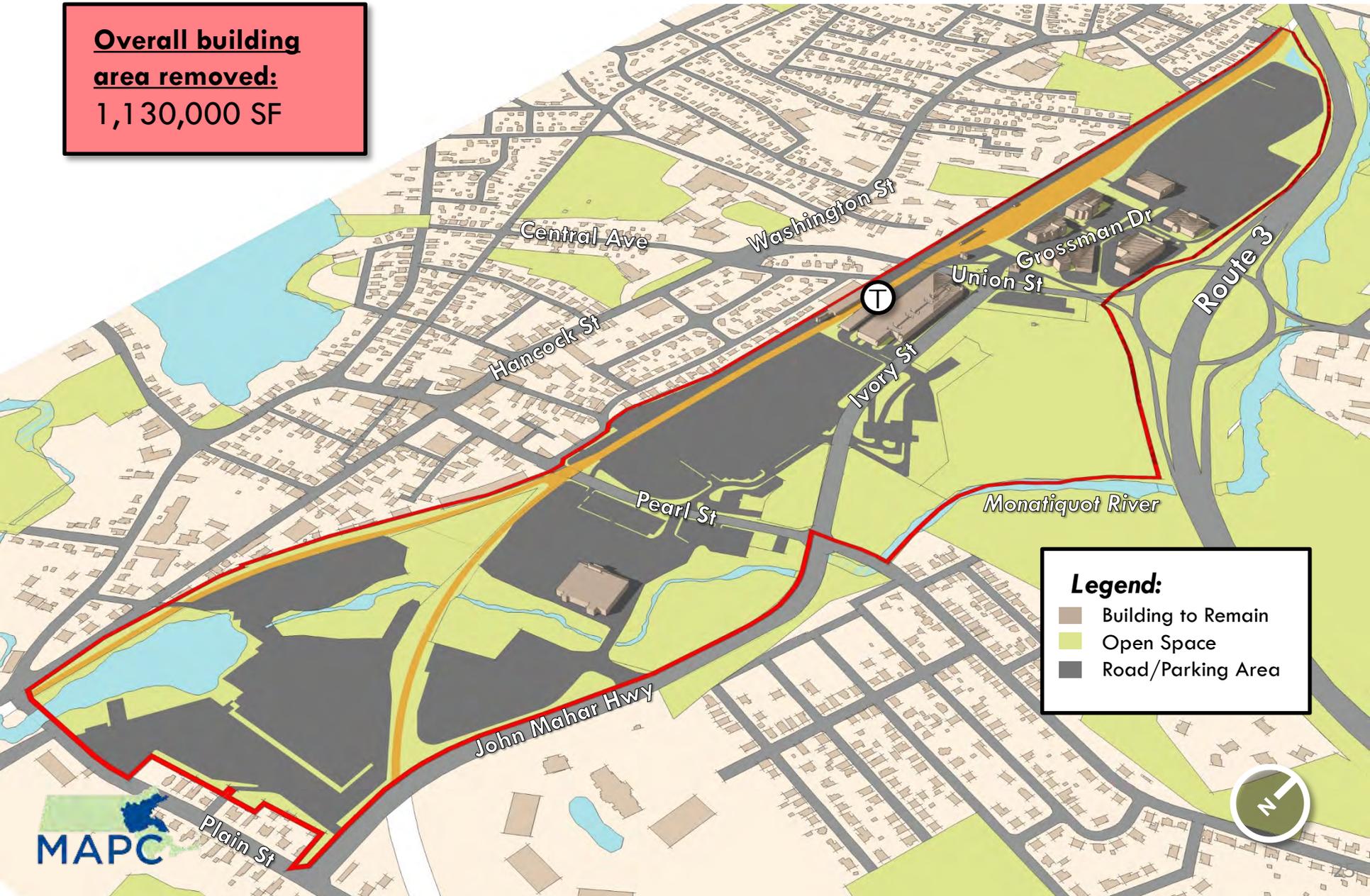
Legend:

- Building Removed
- Building to Remain
- Open Space
- Road/Parking Area



Ivory Street District Vision Scenario 2

**Overall building
area removed:
1,130,000 SF**



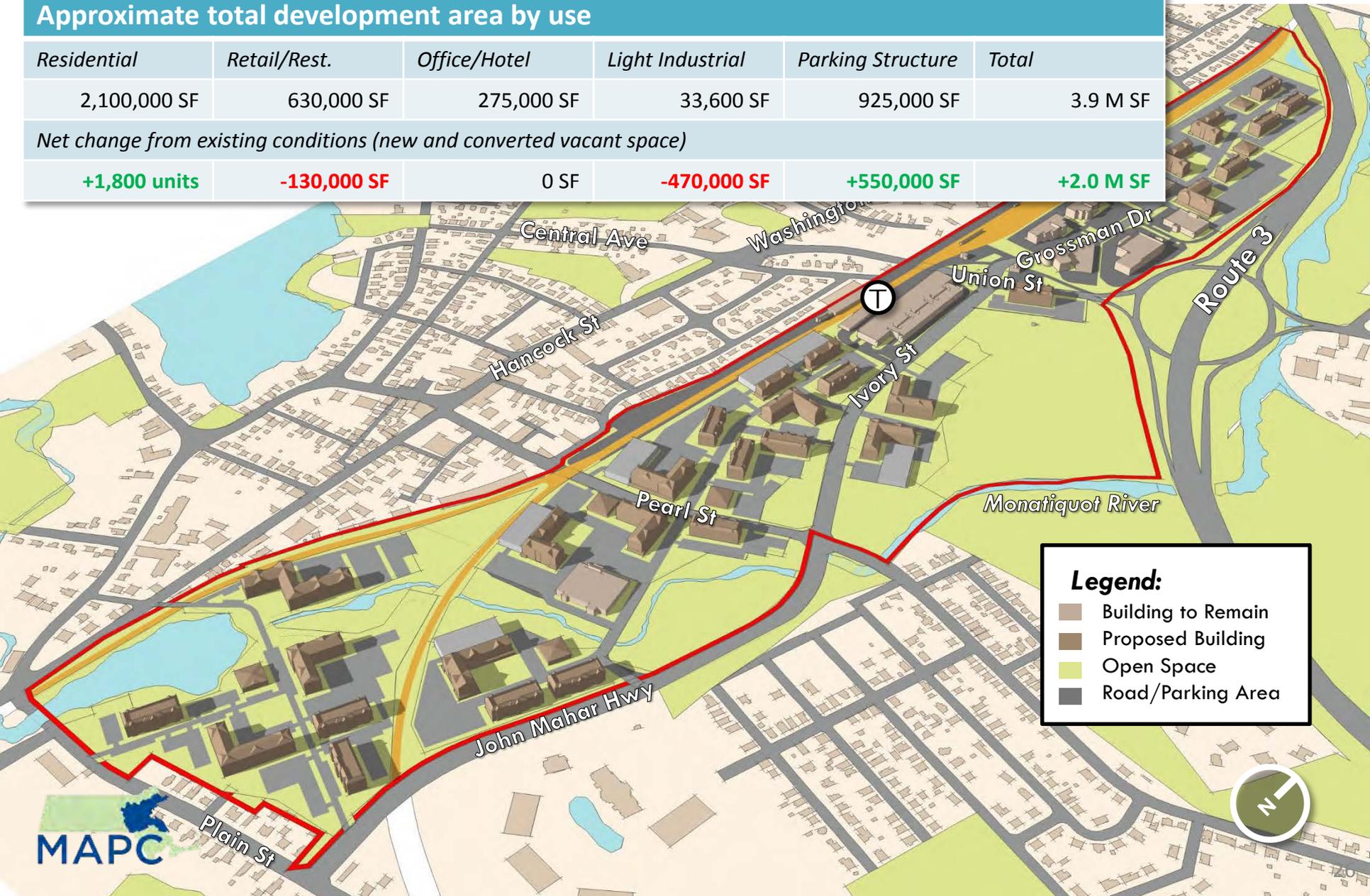
Legend:

- Building to Remain
- Open Space
- Road/Parking Area

Ivory Street District Vision Scenario 2

Approximate total development area by use

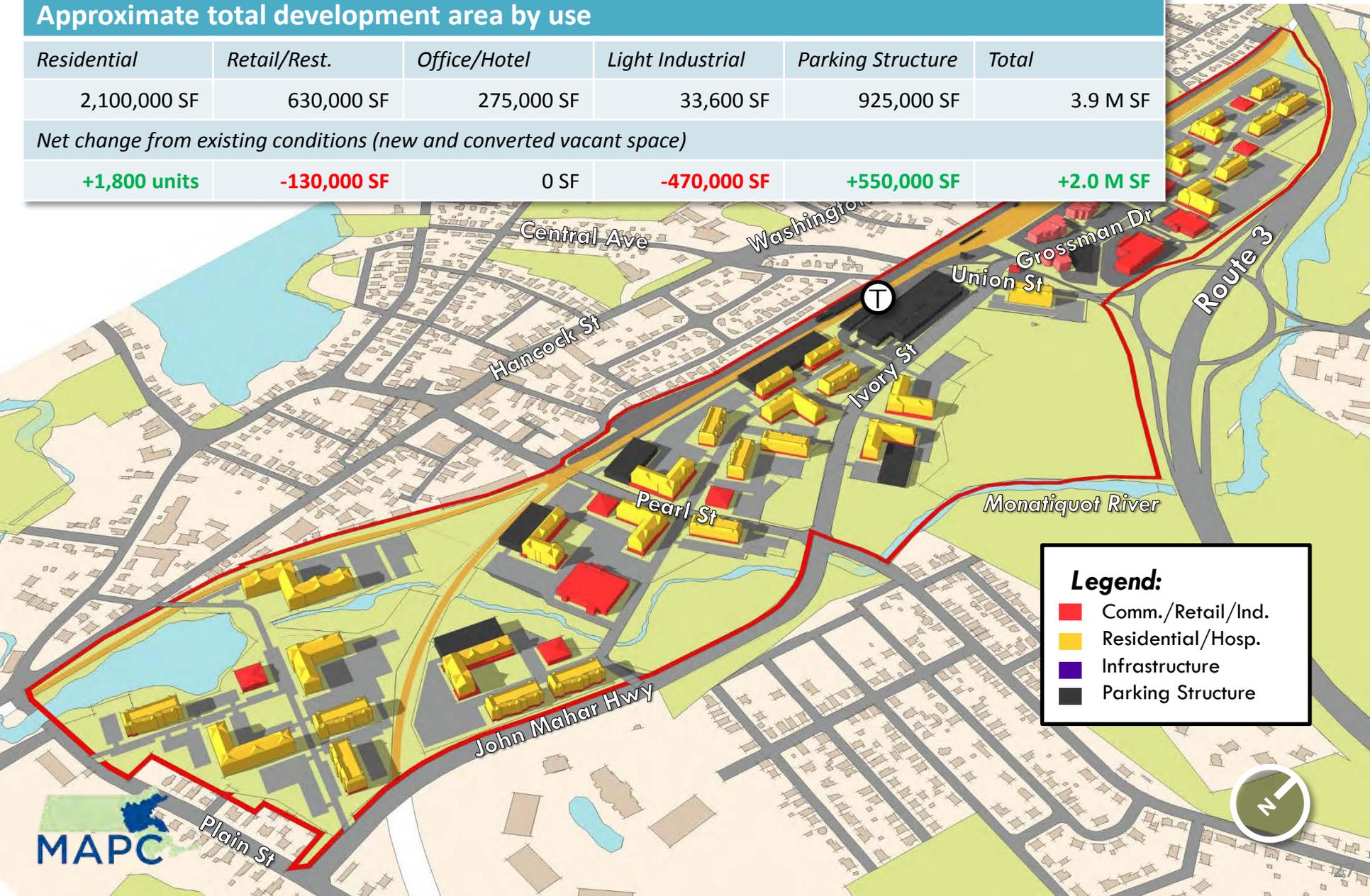
Residential	Retail/Rest.	Office/Hotel	Light Industrial	Parking Structure	Total
2,100,000 SF	630,000 SF	275,000 SF	33,600 SF	925,000 SF	3.9 M SF
<i>Net change from existing conditions (new and converted vacant space)</i>					
+1,800 units	-130,000 SF	0 SF	-470,000 SF	+550,000 SF	+2.0 M SF



Ivory Street District Vision Scenario 2

Approximate total development area by use

Residential	Retail/Rest.	Office/Hotel	Light Industrial	Parking Structure	Total
2,100,000 SF	630,000 SF	275,000 SF	33,600 SF	925,000 SF	3.9 M SF
<i>Net change from existing conditions (new and converted vacant space)</i>					
+1,800 units	-130,000 SF	0 SF	-470,000 SF	+550,000 SF	+2.0 M SF



Legend:

- Comm./Retail/Ind.
- Residential/Hosp.
- Infrastructure
- Parking Structure



Ivory Street District Vision Scenario 2



Scenario Summary and Comparison

Approximate total development area by use

	<i>Residential</i>	<i>Retail/Rest.</i>	<i>Office/Motel</i>	<i>Light Industrial</i>	<i>Parking Structure</i>	<i>Total</i>
Existing	0 SF	760,500 SF	267,500 SF	505,000 SF	383,000 SF	1.9 M SF
Market	+550,000 SF	+22,500 SF	0 SF	0 SF	As needed	+0.6 M SF
Scenario 1	752,000 SF	780,000 SF	500,000 SF	72,000 SF	760,000 SF	2.8 M SF
Scenario 2	2,100,000 SF	630,000 SF	275,000 SF	33,600 SF	925,000 SF	3.9 M SF

