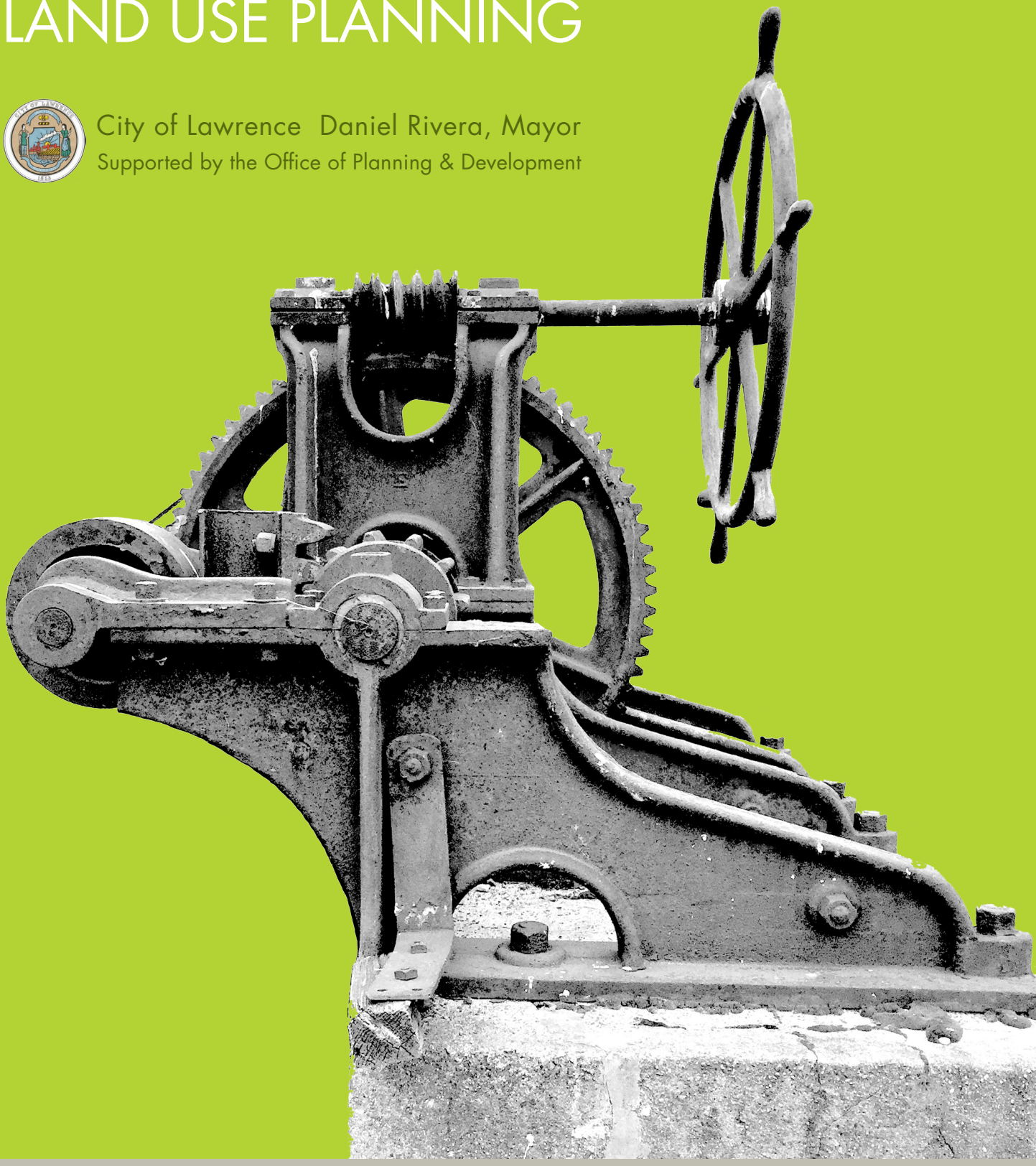
MERRIMACK STREET LAND USE PLANNING

City of Lawrence Daniel Rivera, Mayor

Supported by the Office of Planning & Development



The McCabe Enterprises Team

McCabe Enterprises | CRJA - IBI Group | Pare Corporation

Acknowledgments

Merrimack Street Land Use Planning Study

The Honorable Daniel Rivera, Mayor, City of Lawrence

Therese Park, Director, Office of Planning & Development
James Barnes, Community Development Director
Abel Vargas, Economic Development Director
Daniel McCarthy, Land Use Planner

Mayor Rivera, the Office of Planning & Development and consultant team thank the many residents and business-people who took time from their busy schedules to participate in the community workshops and contribute their suggestions and ideas on the future of Merrimack Street.

Consultant Team:

McCabe Enterprises
Carol R Johnson Associates | IBI Group
Pare Corporation

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1. Introduction & Overview

Introduction and Overview

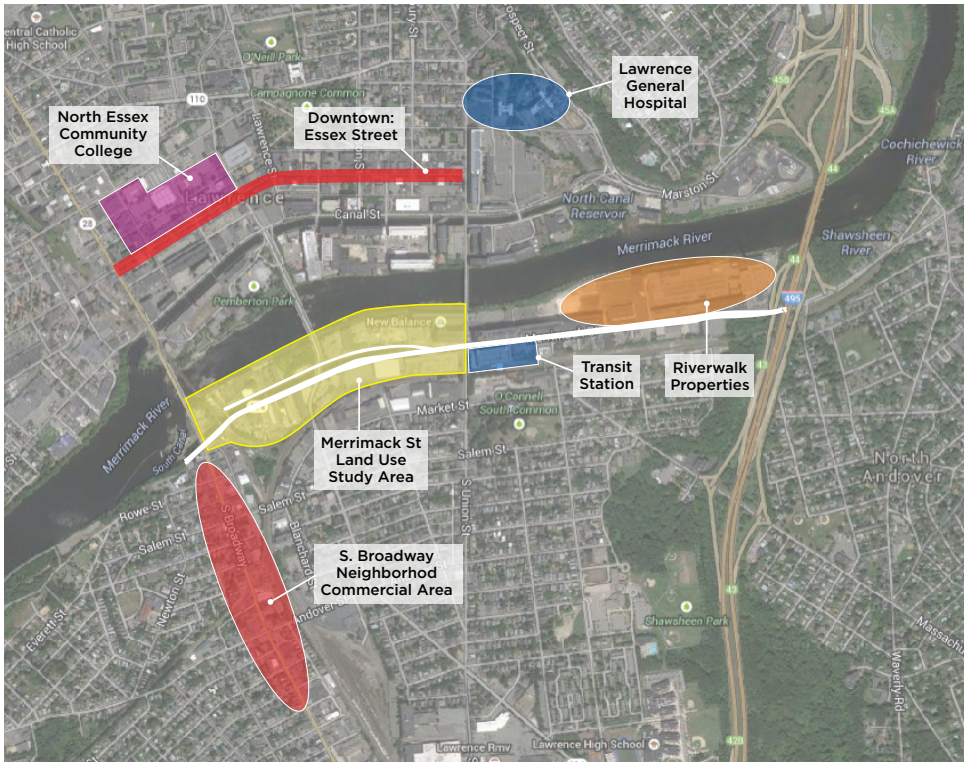
Merrimack Street is a commercial priority corridor in Lawrence, and is the industrial/ commercial spine running parallel to the south bank of the Merrimack River across from Downtown Lawrence. Today Merrimack Street stretches 1.3 miles east of I-495 to the Great Stone Dam at South Broadway and the Merrimack River. New Balance, a leading manufacturer of shoes and athletic-fitness clothing, is located in the historic Ayer Mill with the landmark clock tower serving as a beacon to the Merrimack Street district.

The focus of this study is an examination of land use and transportation on the western half of Merrimack Street from South Union Street to South Broadway, a length of 0.6 miles, extending from the south bank of the Merrimack River to the railroad. The City sought a land use study and analysis of existing conditions so as to appropriately guide the redevelopment of the study area, create jobs for Lawrence residents, develop a complete street and enhance the tax base. The City wanted to focus on land use, transportation and circulation, infrastructure, flood mitigation, open space, and marketing issues. The recent fire which ravaged the abandoned Merrimac Paper mill punctuated the need for a land use study and redevelopment plan. The hoped-for expansion of New Balance at the corner of South Union and Merrimack, and the significant redevelopment on the eastern section of Merrimack Street further drove the need for the Merrimack Street Land Use Planning Study aimed at creating job opportunities for Lawrence residents.

Lawrence working with the Commonwealth of Massachusetts has been upgrading Merrimack Street from I-495 to South Union Street, the 0.7 mile eastern stretch of Merrimack Street, into a complete street with repaving, sidewalk improvements and bicycle lanes along the street to serve a range of commercial and residential users on the eastern portion of Merrimack Street which hosts 2.6 million SF of redeveloped mill space, small businesses, and the McGovern Multi-Modal Transportation Center with MBTA commuter rail service to Boston and bus services operated by the Merrimack Valley Regional Transit Authority (MVRTA) serving Lawrence and nearby Andover and North Andover, also providing service to Boston.

The Merrimack Street Land Use Planning study is located wholly within the study area of the urban renewal planning effort led the Lawrence Redevelopment Authority. The Merrimack Street study area is part of several economic development growth and planning initiatives, including the Brownfields Area-Wide

Figure I.1: Merrimack Street Land Use Planning Study Area in Context of nearby employment and business centers.



Planning initiative focusing on the transformation of the former Pan Am Railway corridor, known as the Manchester-Lawrence spur, from Merrimack Street north to the Lawrence-Methuen city line. Figure I.2 highlights the relationship of the Merrimack Street Land Use Planning Study in context of other planning projects in Lawrence.

Merrimack Street on the south bank of the Merrimack River is the historic industrial core of South Lawrence that supported and complemented the textile mills and industry on the island and commerce in Downtown Lawrence on Essex Street.

Figure I.2: Lawrence Planning Projects.

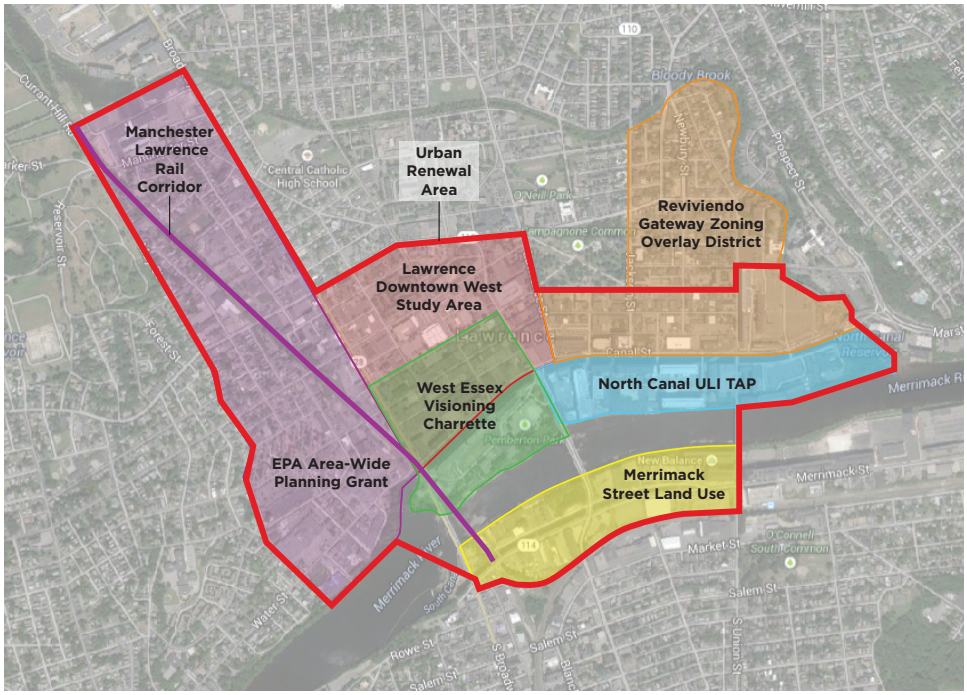
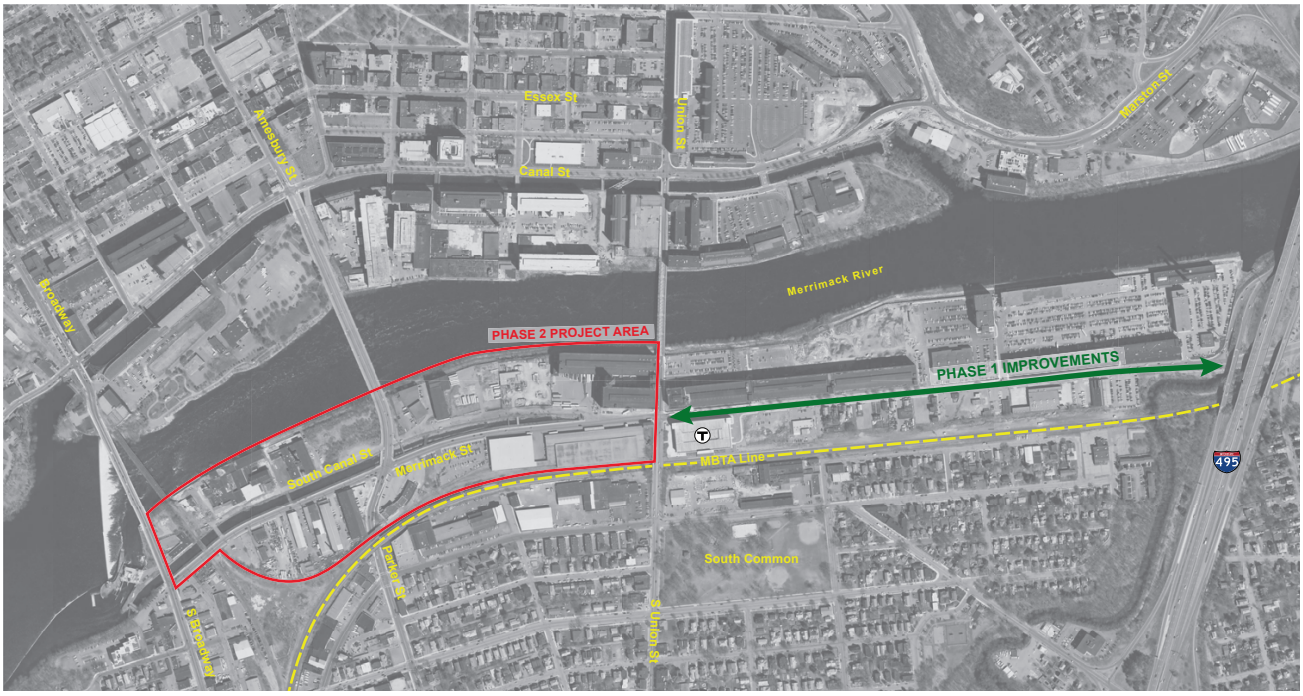


Figure I.3: Study Area.



Merrimack Street Land Use Planning Study Area, 2015.

The western portion Merrimack Street is a key connector of the South Lawrence community to employers along Merrimack Street, the Riverwalk employment center and Monarch (Wood) Mill area, the McGovern Transportation Center, to the island with the presence of Union Crossing, Cardinal Shoe mills, Family Services of Merrimack Valley and Pemberton Park, the redevelopment of the Duck Mill, currently underway, into housing, and the many vacant and underutilized mills, as well as to Downtown and Essex Street. The South Broadway commercial district is an active neighborhood-serving business district which is only a couple blocks away from Merrimack Street. The land use and redevelopment strategy for the westerly section of Merrimack Street have been developed mindful of the larger context, building upon Lawrence's assets, and complementing the nearby business areas. Figure I.1 illustrates the position of Merrimack Street and the study area in the context of Lawrence's nearby commercial and industrial areas.

The Study Area

The Merrimack Street Land Use Planning Study area extends from South Union Street to South Broadway along both sides of Merrimack Street from the southern banks of the Merrimack River (on the north side of the study area) to the railroad on the south, which is depicted in Figure I.3. During the course of this assignment, the land-locked triangular area to the southwest of the study area by the curve in the railroad that was once a concrete-mixing plant area came to be considered part of the study area as well.

The study area consists of sixty acres, inclusive of streets, the South Canal, some rail right-of-way area, and the expanded triangular area. There are fifty-one parcels encompassing 55.3 acres.

Route 114 is a state route that bisects the study area as Parker and Amesbury Streets leading into the Casey Bridge. In addition to the City-owned and managed Casey Bridge connecting Merrimack Street and South Lawrence to the Island and Downtown Lawrence, there are two additional bridges, the Duck Bridge which was upgraded in 2012 along South Union Street and the Edward O'Leary Bridge crossing the Merrimack River immediately south of the Great Stone Dam at South Broadway.

The railroad forming the southern boundary of the study area is owned by the MBTA and is used by the MBTA for commuter rail service stopping in Lawrence just east of the study area at South Union Street, site of the McGovern Transportation Center. Amtrak's Downeaster inter-city rail service travels along this line, but does not stop in Lawrence. The railroad line running on the southern edge of the study area, although owned by the MBTA, is considered part of Pan Am Railway's freight system.

Strategic Location

Lawrence is strategically located at two interstate highways, I-93 and I-495. The Merrimack Street Land Use Study Area is in the center of Lawrence on the south bank, and can easily be accessed by several exits off I-495. The study area is 27 miles from Boston and can be easily accessed by commuter rail or vehicle. Lawrence is in the center of the Merrimack Valley and Lawrence businesses often draw their work force not only from Lawrence and the surrounding towns, but also from the larger Merrimack Valley and southern New Hampshire. Additionally, Lawrence residents are employed regionally further strengthening ties to the Merrimack Valley area.

History

South Lawrence was once an area of agriculture, grain fields and orchards. The Salem Turnpike (now Route 114) and the Andover Turnpike (now Route 28) converged near the former Andover Toll Bridge crossing the Merrimack River. The history of industry along Merrimack Street and in South Lawrence really begins with the development of the Great Stone Dam on the Merrimack River just west of the study area and the former Andover Toll Bridge (at approximately where the Broadway or O'Leary Bridge is today).

In 1845, the Massachusetts Legislature approved the Essex Company charter and authorized the creation of a dam across the Merrimack River between Lowell and the mouth of the Shawsheen River and formation of a new industrial city, which was to become Lawrence. After two years of construction, in 1847, water from the dam flowed into the North Canal. Construction of the dam was completed in 1848. The Essex Company as part of its development initiative had acquired considerable property which was subsequently sold to foster industry and use of water for power. Two textile mills were constructed on the island with waterwheels and turbines anticipating the creation of the North Canal. Bay State Mill opened in 1848, and the Atlantic Mill # 1 opened in 1849. The land on the south bank of the Merrimack River was reserved for future development.

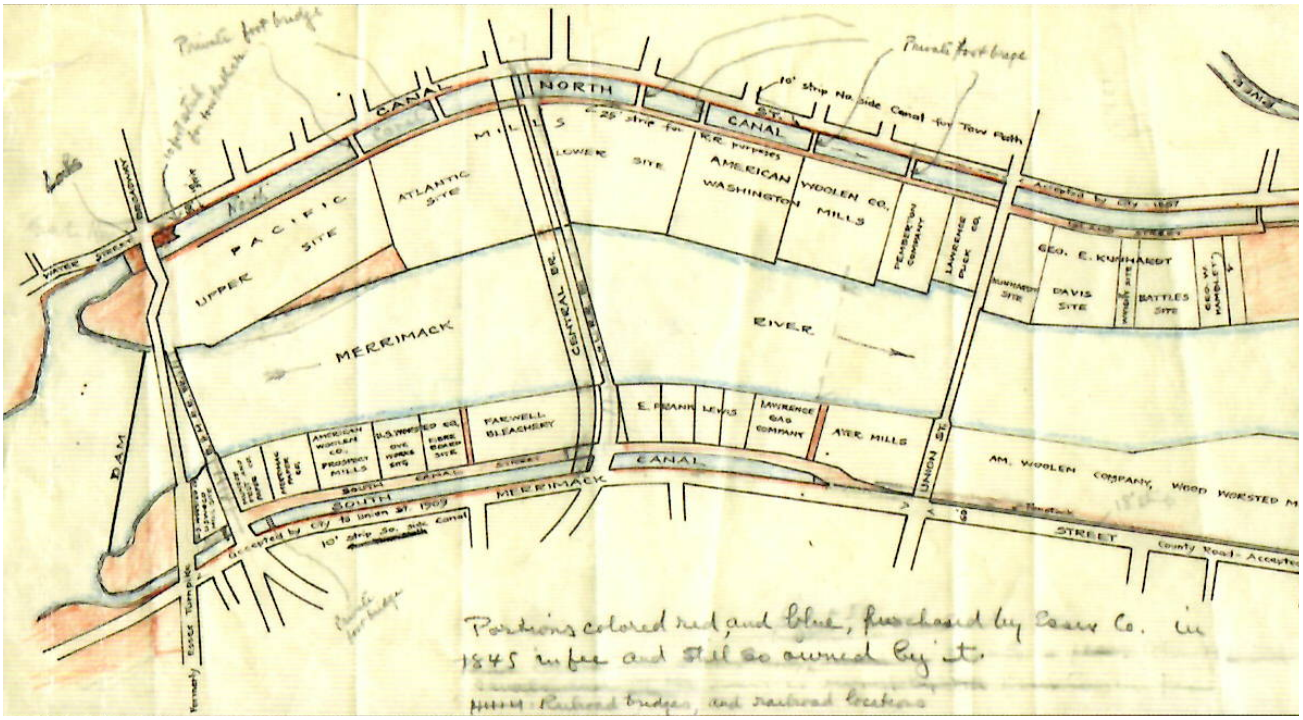
Construction of the south canal by the Essex Company began in 1864. The south canal was built in phases and is smaller than the North Canal. When it built the south canal, the Essex Company was attempting to shepherd its resources having survived the Panic of 1857 and just experienced another recession in 1860-61. In The History of the Essex Company, it is reported that Charles Storrow's, Lawrence's first mayor and the Chief Engineer for the Essex Company, intention for the south bank of the Merrimack River was to develop sites for small businesses with a focus on local ownership, "thus contributing directly to the wealth and prosperity of the Town."[1] Towards this goal, the Essex Company built the Union Mill on the south canal which was designed to provide rental space to multiple small businesses, who also purchased energy from the Company. The Union Mill is no longer standing, but was on the northwest corner of South Canal Street and the Casey Bridge.

The remaining buildings along South Canal Street east of the railroad tracks and west of the Casey Bridge (formerly the Central Bridge) are where the earliest buildings in the Merrimack Street study area were built by the Essex Company. A portion

Figure I.4: (Above) View of South Canal from near South Broadway, 1890.
Figure I.5: (Right) The Merrimack River Dam.

[1] *Hearn, Mike. The History of the Essex Company. Lawrence, MA: Lawrence History Center, 2014, page 58.*

Figure I.6: Historic Map of Study Area.



Merrimack Street Land Use Planning Study Area, 2015.

of the fire-ravaged Merrimac Paper Company was first built in 1860, and additional mills were added in 1880. The Riverside Business Center, the former US Worsted Mill, was erected in 1880, as was Simpson Brothers Moving facility and the brick warehouse building at 197-201 Merrimack Street.

In the early twentieth century, the Ayer Mill was built at the corner of Union and Merrimack Street with the prominent clock tower by William Wood. The Ayer Mill is now home to New Balance. Other early twentieth century buildings are found on the south side of Merrimack Street, Helfrich Brothers Boiler Works at 39 Merrimack Street, and the adjacent brick mill at 43 Merrimack built in 1910 and 1919 respectively.

Planning Process

The Merrimack Street Land Use Planning Study is based on a five-step planning process as depicted in Figure I.7, for gathering community and stakeholder input as well as data to develop a vision and plan based on potential re-use options for various properties along Merrimack and South Canal Streets.

Step 1: Observe & Identify Issues.

The McCabe Enterprises team reviewed prior studies and redevelopment plans, as well as the history of the Merrimack Street area and South Lawrence, visited and observed existing conditions along Merrimack and South Canal Streets, the canal and riverfront existing during the week in early morning, mid-day, close-of-business, and evening time, as well as during the weekends.

Step 2: Listen: Community Engagement

As a part of listening and engaging the community, the McCabe Enterprises team undertook three major outreach events in 2015 – the Salsa Kite Festival in June at the South Common, an outreach/ informational table one Saturday during the New Balance tent sale soliciting input and comments from customers; and at the Bread & Roses Festival on the North Common over Labor Day weekend. In addition, the McCabe Enterprises team spoke with property and business owners during the planning process.

The themes and issues raised during outreach events encompassed: parking; traffic; jobs; canal walk; complete streets; open space; the clock tower; history; jobs; safer turning at Amesbury and Parker Streets; walking; trees; river walk; a hotel; access to the river; clean it up; safety; a pier; neighborhood connections and benefits; and urban agriculture.

The consultant team held two community workshops in the study area at 65 Merrimack Street, the former Big City Grill now vacant storefront in July and September 2015. A final public presentation was held in December 2015. With the ideas and input from the community and business owners, the team developed a preliminary set of program concepts and scenarios which were shared at the second workshop, and further refined for the public presentation.

Step 3: Development Program

In Step 3, the team analyzed the inventory data on the fifty-one parcels and existing sites, assessed the market and existing and potential uses, and synthesized the material. During this step, the McCabe Enterprises team met biweekly with the City's working group on Merrimack Street.

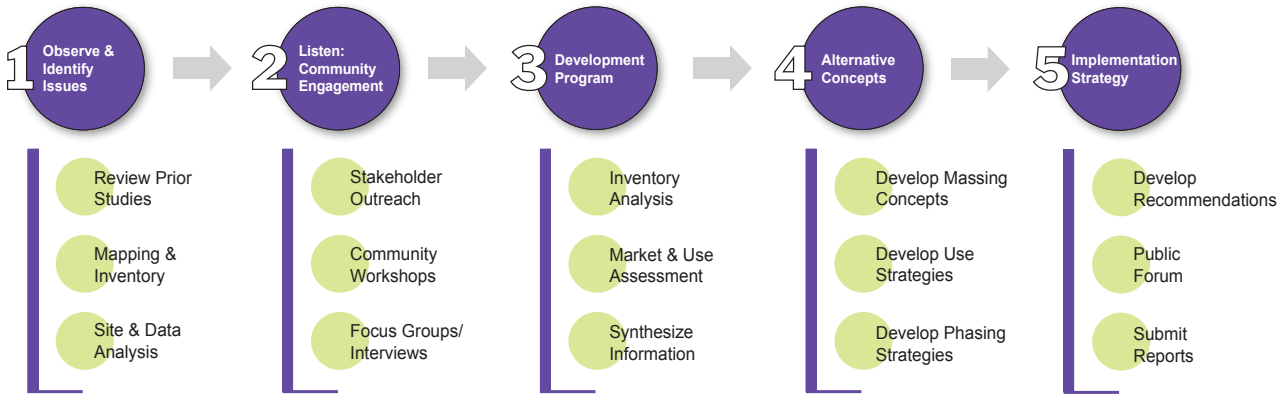
Step 4: Alternative Concepts

Several alternative conceptual frameworks for guiding future land use in the study area emerged, namely Made In America; Transit-Oriented Development focused on business and an additional variation of the Transit-Oriented Development framework with a housing focus; and a third concept of supportive infrastructure to facilitate and support new development and redevelopment along Merrimack Street, the island and Downtown. All three frameworks were vetted and discussed at the second community workshop with at-large and small group discussions in both English and Spanish. The preferences expressed at the workshop included an emphasis on jobs for Lawrence residents, retaining and using the South Canal as an asset, and addressing the transportation issues at Merrimack Street and Route 114. Participants desired a hybrid approach of the alternative frameworks.

Step 5: Implementation Strategy

Based on the input and feedback throughout the planning process and analysis of data and existing conditions, a land-use and redevelopment plan addressing the Merrimack Street corridor spanning the breadth from the railroad to the river from South Union to South Broadway was developed and is discussed in more detail in the pages to come, along with the implementation strategy and recommendations.

Figure I.7: Process Diagram.



2. The Vision

Lawrence's Vision for Economic Development

To create job opportunities for Lawrence residents locally and regionally and expand the commercial/ industrial tax base of the City by encouraging small business growth and start-up ventures, attracting new companies and retaining growing local businesses.

Lawrence is a City of Promise

Lawrence should strive to be creative, flexible and can-do. We should strive to promote our strengths including our location, employment base, and diverse space opportunities

II. Merrimack Street Today

The existing conditions section considers the Merrimack Street study area's character, opportunities and constraints. Through the review of existing conditions, Merrimack Street's assets can be identified. Understanding the larger framework provides a context so that the resulting land use and economic redevelopment strategy builds upon the district's assets and complements the nearby business areas.

More specifically, the existing conditions section entails a review of current land uses and zoning; property ownership; vacancies and property conditions; topography; brownfields; the public realm and open space; waterways, namely the South Canal and the Merrimack River, as well as flood plain and storm water issues; regulatory framework; infrastructure and utilities; transportation, access, circulation, transit and parking.

1. Land Use

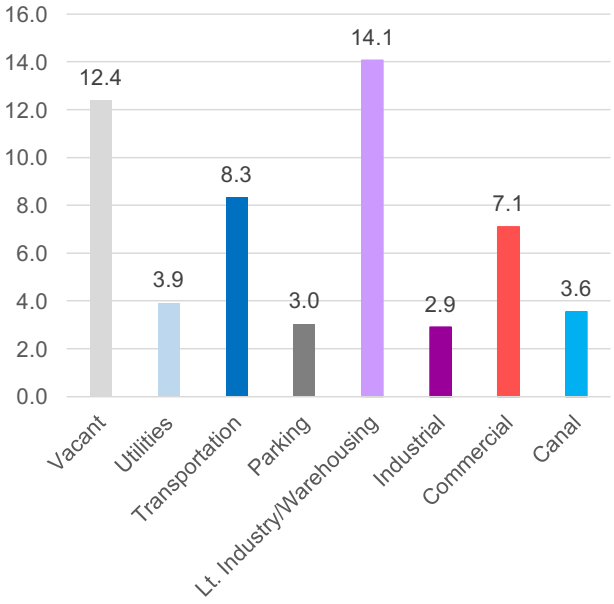
Existing Land Use

The predominant land use measured by land area in the study area is industrial/light industrial-warehousing which comprises 17 acres of the study area, about 30% of the land area. This is followed by 12.3 acres of vacant properties, constituting over one-fifth of the area's land mass (22%). Land Use by Acreage is depicted in Figure II.1.

Land use measured by valuation in the study area is predominantly industrial/ light industrial-warehousing valued at $12.8 million, 55% of the overall valuation. Commercial uses have the second highest aggregate value at $7 million and contribute 30% of the study area's valuation. How each land use contributes to Lawrence's tax base is noted in Figure II.2.

The land use map shown in Figure II.3 for Merrimack Street vicinity includes the study area west of South Union as well as the area east including the Wood Mill and Riverwalk development

Figure II.1 Land Use by Area in the Merrimack Street Study Area.



and Market Street. On the eastern side, commercial uses predominate, and there is a mixing of residential uses. Industrial, light industrial and warehousing uses are found predominantly on the western portion of Merrimack Street and on South Market. There is a preponderance of vacant land and vacant properties in the study area on the western portion of Merrimack Street.

Properties & Ownership

The Merrimack Street Study Area has fifty-one (51) tax parcels comprising 55.3 acres, exclusive of municipal streets. There are thirty property owners in the study area, including two public entities, the Massachusetts Bay Transit Authority (MBTA) and the Greater Lawrence Sanitary District. The MBTA owns the railway parcels at the southern edge of the study area, and the GLSD owns the southern edge of the Merrimack River bank, which is the northern boundary of the study area. There is also one building at 51 South Canal that has been subdivided into eight warehouse condominiums, each with seven separate owners.

Figure II.2 Current Land Use by Valuation by Acreage.

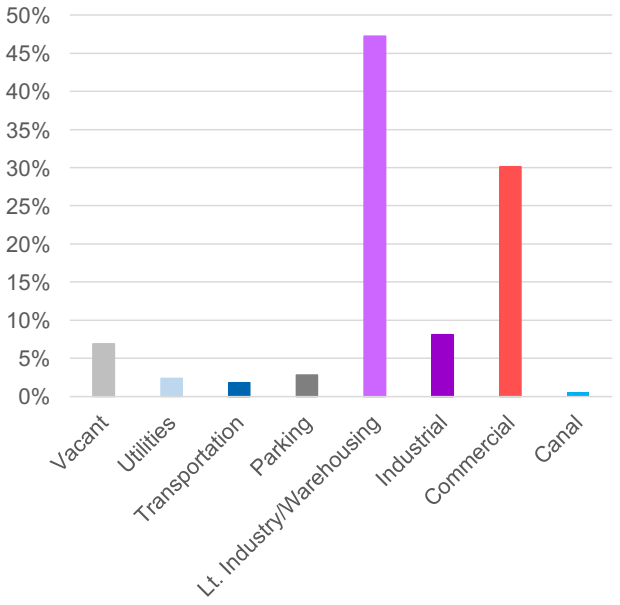
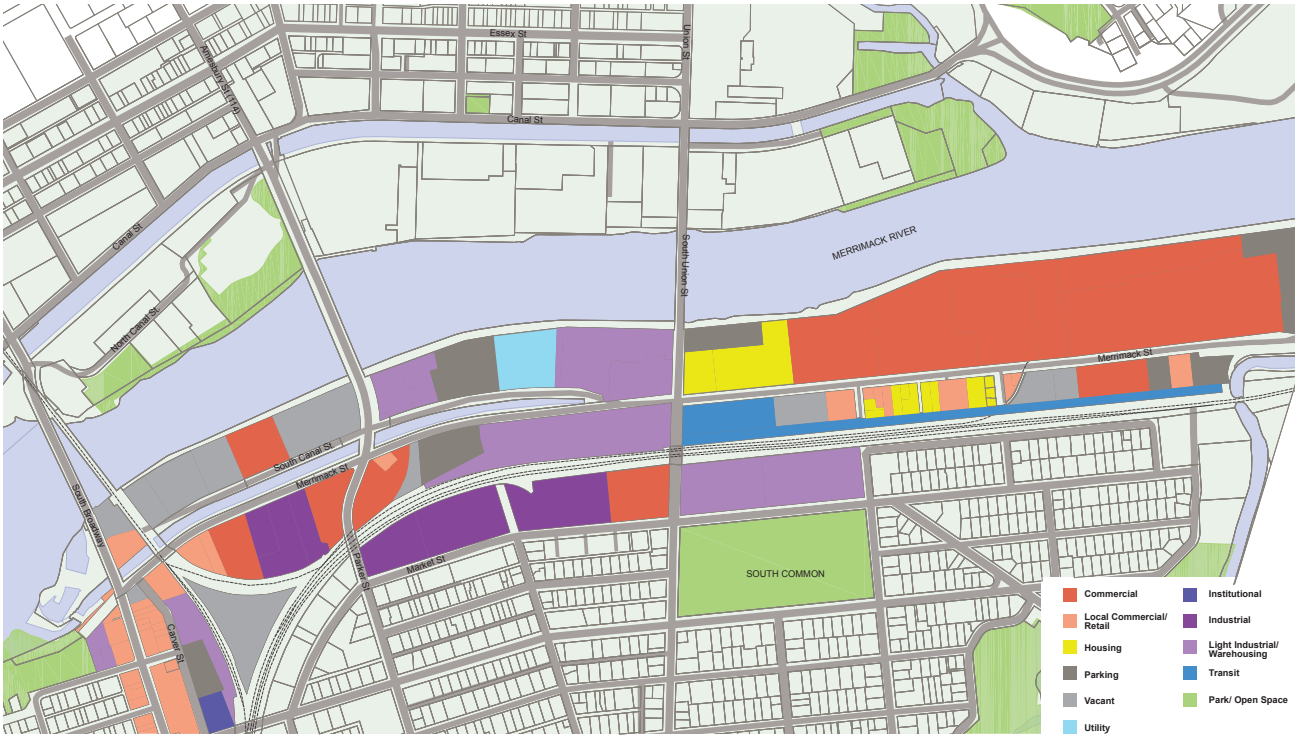


Figure II.3 Merrimack Street Land Use.



Existing land use in the Merrimack Street corridor, 2015.

The mean average parcel size is just over one acre or approximately 47,200 SF. The median parcel size is 31,873 SF. The largest parcel is 5.62 acres. There are seven private property owners who own 2.4 acres or more of land in the study area. Several owners control non-contiguous parcels. The MBTA owns 6.2 acres.

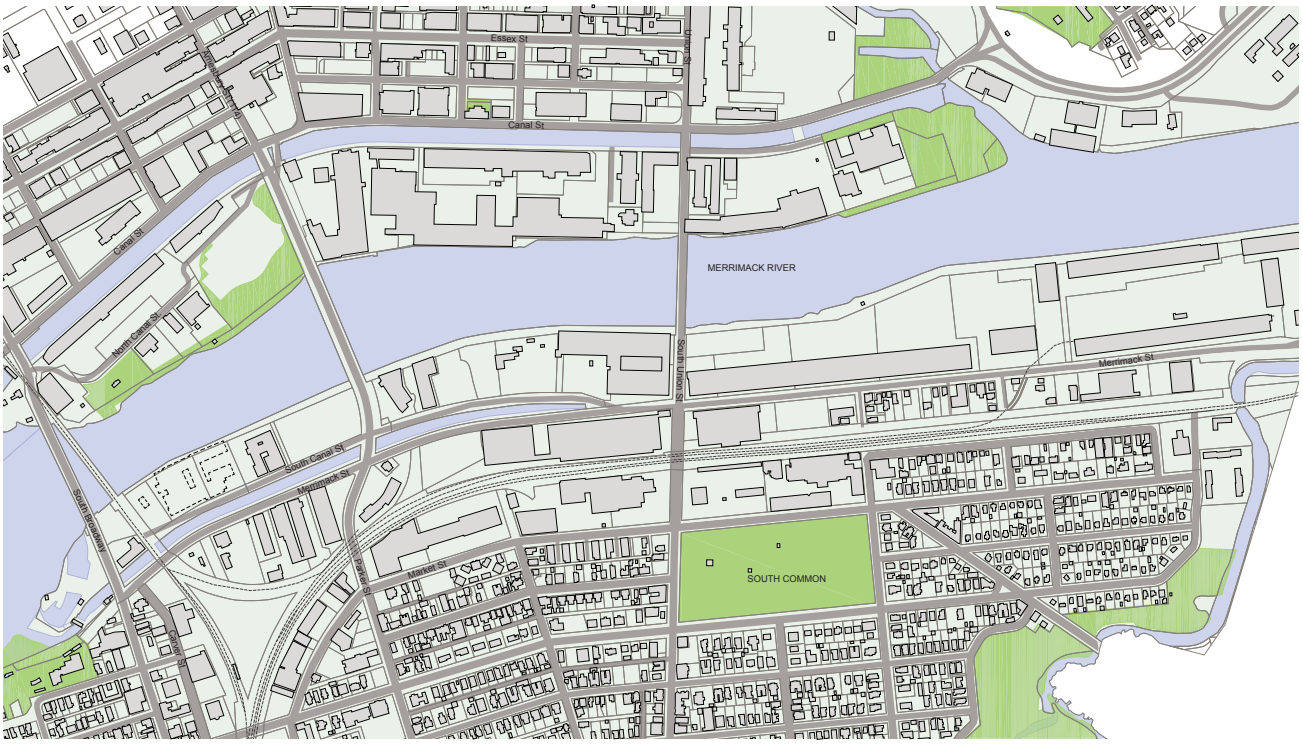
The overall real estate tax assessment for the study area is $23 million, inclusive of exempt properties. Taxable properties are valued at $18.9 million. There are five exempt parcels. There are five property owners with valuations exceeding $1 million. Overall, the Merrimack Street Phase 2 study area contributes just over 3% of the overall commercial and industrial assessed valuation of the City of Lawrence. Given the propitious location of Merrimack Street and its proximity to the river and the transportation network, there is significant potential for value enhancement.

Easements

The major utility corridor running through the study area is the Greater Lawrence Sanitary District's (GLSD) easement for their major sewer line which runs on the edge of the southern bank of the Merrimack River. In many parts, the GLSD owns the property where the sewer line is traversing. There are also significant overhead transmission lines running through the district. The most notable location is east of the Casey Bridge. Historically, this was where a second rail line crossing over the Merrimack was situated to serve the island. Today, the rail line no longer exists, but the electric transmission lines remain.

South Canal Street for the most part is a private way owned by Enel. The abutters on the north side of South Canal Street have a prescriptive easement of access, and likely a written agreement as well. There are several bridges in varying states of repair spanning the South Canal. The bridges are owned by the original landowner (and now their successor) who built the bridge for access to their South Canal Street operations, according to Enel. Thus, the Munroe Company Bridge (now Merrimac Paper) is owned by the privately held Merrimack Street Redevelopment Authority, LLC. Enel is the owner of the South Canal, but not the bridges spanning the South Canal.

Figure II.4 Merrimack Street Lots and Buildings.



Existing lots and building density along the Merrimack River, 2015.

Existing Buildings

Building Age

Over half-of the buildings in the Merrimack Street study area are over 75 years old as presented in Table II.1. While older buildings often have character, property and business owners frequently find building renovation challenging and expensive to incorporate today's standards and market expectations for electric and telecommunications infrastructure. Without major gut rehabilitation of older buildings, property owners find it difficult to find willing commercial and industrial tenants.

Building Conditions

A survey of existing building conditions was undertaken. The exteriors of buildings were reviewed and rated as to Excellent, Good, Fair and Poor condition. Buildings in Excellent condition were viewed as the building structure and site were well maintained and in superior condition with no or one visible building or site defect. Buildings rated as Good were in general good repair and well maintained. Two to three minor defects were observed as to site or building conditions. Fair condition is a below average rating. Buildings rated as fair had at least one major building problem and several minor site and building issues. Buildings rated as poor, had significant building and site conditions with at least two or more major building problems and several minor site and building problems. Four of the poorly rated structures were not habitable for commercial or industrial uses. For purpose of the building condition, buildings that were a network of attached buildings or additions were assessed as one building.

Table II.2 details the results of the building condition survey. Most buildings, 43%, in the Merrimack Street study area were rated in fair condition. Another twenty percent of the buildings were found to be in poor condition. Only one-third of the buildings in the study area are rated as in either Good or Excellent condition.

Table II.2. Building Conditions.

Rating	Number of Buildings	Percent of Buildings
Excellent	1	3%
Good	9	30%
Fair	13	43%
Poor	6	20%
Temporary	1	3%

Source: USGS.

Table II.1. Buildings as to Era Built.

Year	Number of Buildings	Percent of Building by Era	Building Area SF	Percent of Building by SF	Valuation of the Building Only	Percent of Building Valuation
Pre 1940	16	53%	1,495,862	94%	$ 11,179,500	81%
1940-1970	9	30%	62,593	4%	$ 1,729,500	13%
1971-1999	4	13%	14,354	1%	$ 476,000	3%
2000- 2015	1	3%	10,780	1%	$ 409,100	3%
TOTALS	30		1,583,589		$ 13,794,100	

Source: USGS.

Existing Zoning

All of the land contained within the Merrimack Street study area is zoned I-2, General Industrial District, as depicted in Figure II.5. The zoning and land use framework for the Merrimack Street area was established with initial development of Merrimack Street by the Essex Company in the beginning of the twentieth century and has continued with few changes. The goal of the General Industrial District Zone is to permit the most intense industrial uses in an environment where the uses are safe, healthy, and pleasant. Moreover, Lawrence desires that these industrial uses coexist with other uses permitted in the district or surrounding areas of the City and reflect contemporary manufacturing uses.

Zoning proscribes dimensional regulations, such as height and setbacks; parking requirements; as well as strictures on use. The General Industrial District in Lawrence has become a very flexible district allowing a wide-range of land uses by right, or by a special permit from either the Board of Appeals or the Planning Board. The only major land use not generally allowed in the I-2 district is residential. The Appendix to this report includes the detailed list of permitted uses in the General Industrial District. The parking requirements are as to specific uses. The Lawrence Zoning Ordinance provides some small incentives for parking management plans that adopt provisions supporting ride-sharing, car-pooling, and transit.

The dimensional requirements for the General Industrial District are fairly flexible with no height restrictions, nor lot coverage requirements. The front set back requirement is thirty feet, with a side and rear setback requirement of twenty-five feet. A fifty feet side and rear set back is required when adjacent to a residential district. The Merrimack Street study area, however, does not abut a residential zoning district. Many of the existing industrial and commercial buildings along Merrimack Street are directly on the front lot line with little, if any setback. This is due to construction prior to zoning.

Topography

The topographic conditions at first glance appear to be relatively level in the study area, however there are some significant grade changes, approximately 20 feet, contained within the parcels on South Canal Street which also front onto the south bank of the Merrimack River. The southern edge of the study area is the rail corridor which is somewhat elevated and higher than the parcels fronting Merrimack Street from Carver to Parker Streets. A rail bridge extends over Parker Street, which is depressed under the railway. The rail line travels east towards South Union where it crosses under South Union at surface grade levels.

Figure II.5. Lawrence Zoning in the Merrimack Street Study Area.

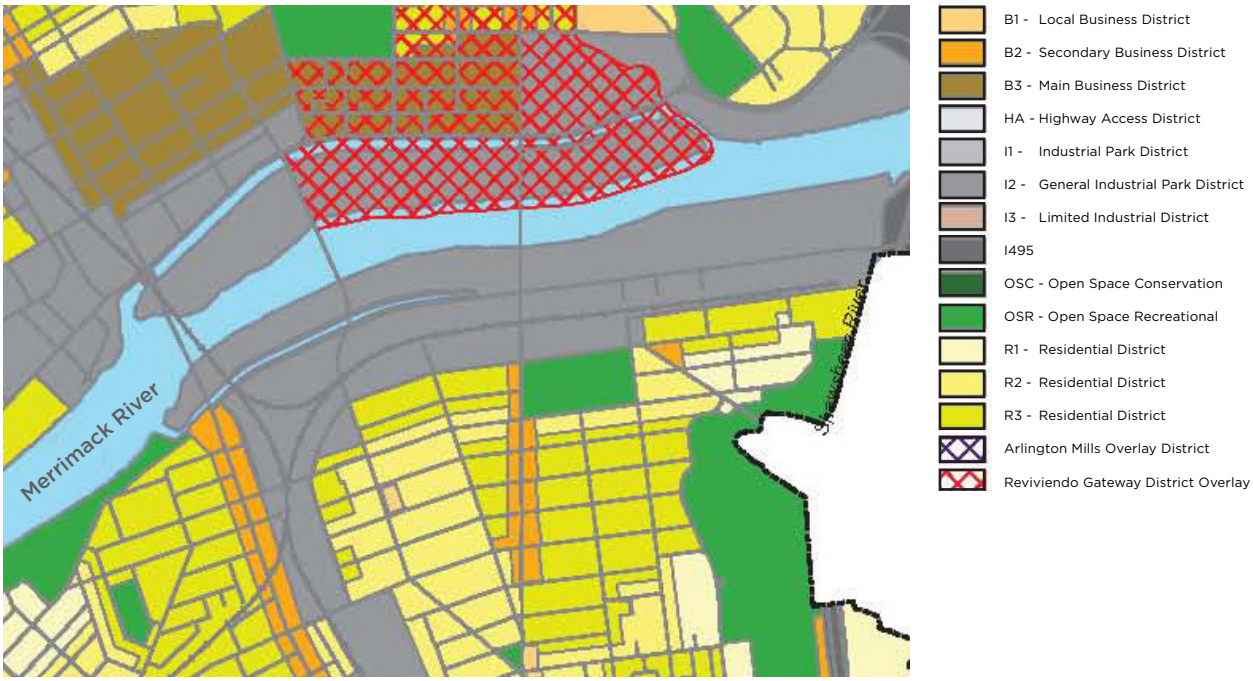
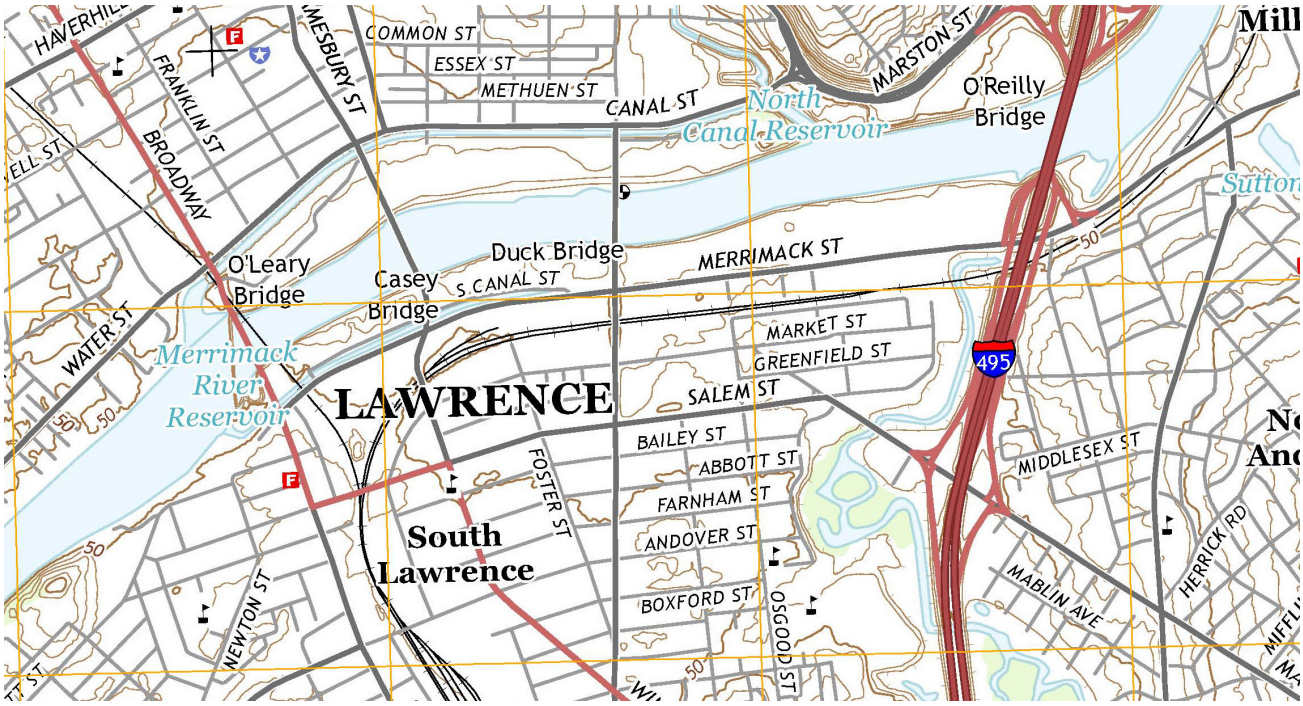


Figure II.6 Current USGS Map.



2015

Figure II.7 Historic USGS Maps.

1888

1918

1893

1944

Regulatory Framework

The regulatory framework sets forth the parameters for land use and new development. In addition to zoning, a local regulation, there are several other parameters governed by local, state and federal regulations and statutes. A critical parameter determining the land use and development potential for the Merrimack Street study area is the flood plain of the Merrimack River. Other considerations include Massachusetts' Chapter 91, historic resources, and brownfields. Open space and the public realm are existing conditions meriting attention when addressing future urban land uses.

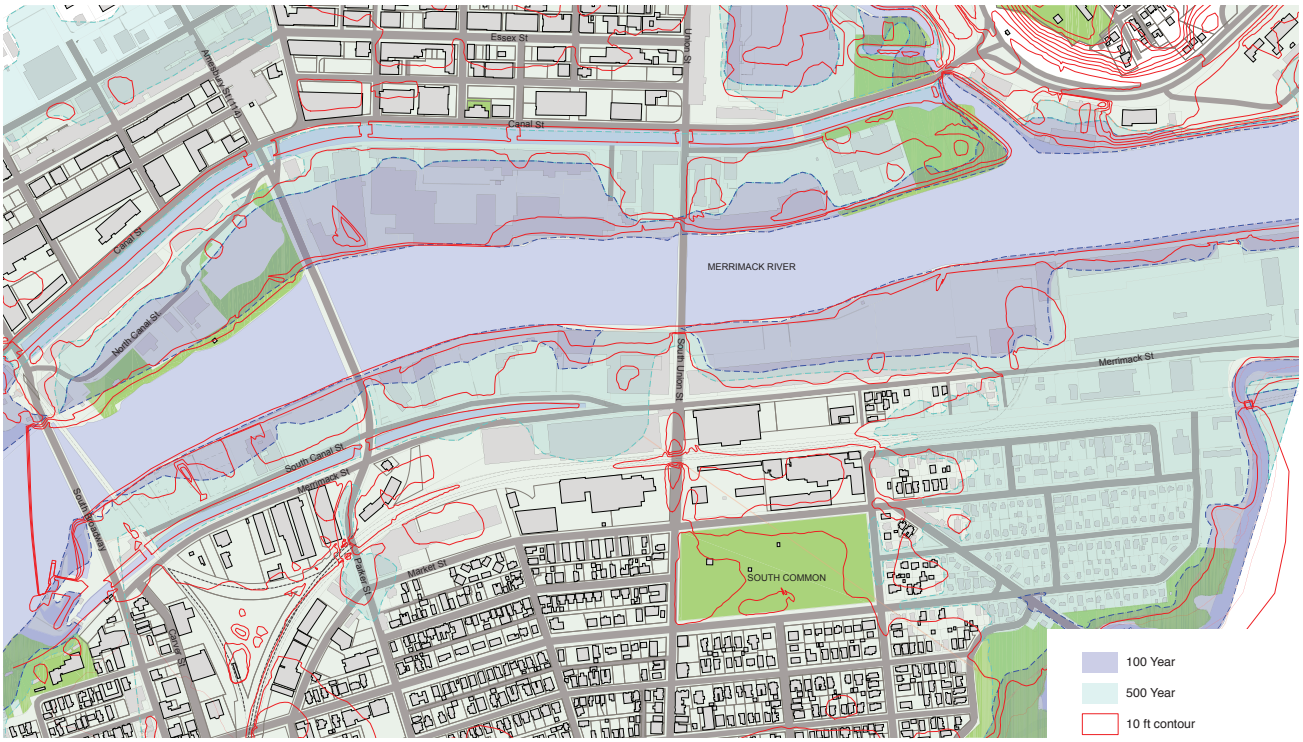
Flood Plain & Resilience Planning Considerations

Portions of the Merrimack Street study area are in the 100 year flood plain and a larger portion of the study area is contained within the 500 year flood plain, per the most recent maps of the Flood Emergency Management Agency (FEMA). Flood plain mapping for Lawrence was updated in 2012 by FEMA, and expanded the area in the Merrimack Street study considered to be in the AE zone (100 year flood plain). Figure II.8 details the 100 year and 500 year flood plain along Merrimack Street.

An AE Zone is an area that has a one percent (1%) probability of flooding every year. This is commonly referred to as the "100-year floodplain." FEMA studies indicate that properties in the AE Zone are at high risk of flooding. Flood insurance is required for all properties in Zone AE that have federally-backed mortgages. It is generally required that the principal structure must be elevated above the Base Flood Elevation (BFE). There are four FEMA cross-sections establishing the BFE in the study area, ranging from a high of 36.5 feet near South Broadway to a low of 35.2 feet just west of South Union. In some portions of the study area, the actual flood-way is coincident with the channel banks of the Merrimack River, however, in many parts the flood-way extends beyond the channel banks. The BFE for specific parcels may vary dependent upon actual elevations.

Recent data, on the water elevation and heights of the Merrimack River in Lawrence as measured by the US Geological Survey indicated the recent maximum in 2014 was 22.48 feet.

Figure II.8. Flood Zones.



Existing contours and flood zones along the Merrimack River 2015.

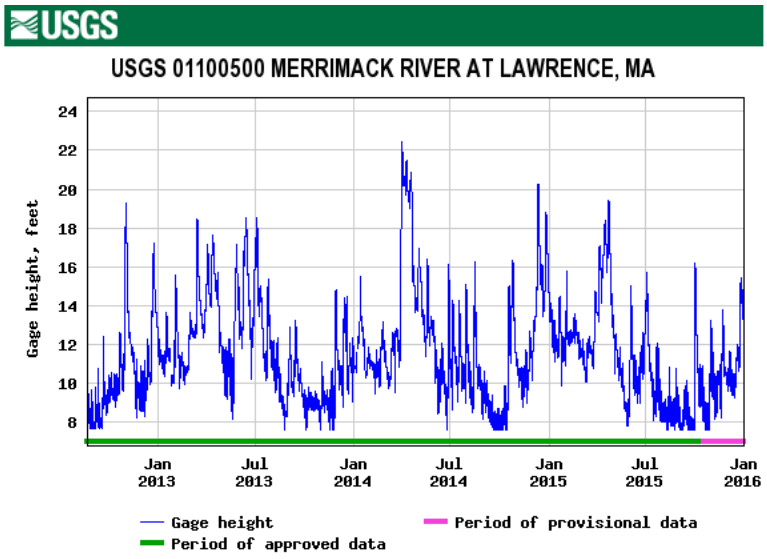


Figure II.9 Water Elevations of the Merrimack River at Lawrence.

See Table II.3 and Figure II.9 for data on water elevations from 2012 through 2015. It is important to remember that in 1936 and 1938, Lawrence suffered significant flooding from the Merrimack River. The flood elevations at the time of the 1936 flood was 52.3 feet, more than twice recent maximum elevations. In the 1938 flood, the maximum elevation was 49.2 feet, over thirty-five feet higher than the recent maximum.

The implications of the flood plain risk for the Merrimack Street Study Area are several-fold. Managing storm water is critical. Incorporating permeable surfaces and spaces within the study area, which is presently largely covered with buildings, concrete and asphalt surfaces is important. New construction, within the one-hundred year flood plain (the AE Zone) needs to elevate usable areas. Elevated construction can incorporate surface level parking provided that there is room for water to move through. This generally requires uses that can support higher costs of construction and lease rates. Also, in times of flood risk, existing and future users would be well-advised to relocated vehicles and other items in wash areas beyond the flood-risk area. The South Canal, although not a part of the Merrimack River's natural system, provides an important function in providing additional flood storage space.

Table II.3. Recent Water Elevations of the Merrimack River at Lawrence.

Year	Maximum Gage Height (feet)	Minimum Gage Height (feet)
2012	**12.39**	**7.66**
2013	19.30	7.61
2014	22.48	7.61
2015	20.14	7.74

Source: USGS.

Chapter 91 and Water-related Uses

The Merrimack Street Study Area parcels on the southern bank of the Merrimack River are subject to Chapter 91 jurisdiction, if they lie below the high water mark of the Merrimack River. Chapter 91 was adopted by the Massachusetts General Court in the mid-nineteenth century to protect public interest in waterways. Chapter 91 permits are required for projects along the non-tidal waters of the Merrimack River, which includes the Lawrence area. The types of buildings and structures requiring a Chapter 91 permit include: piers, wharves, floats, retaining walls, revetments, pilings, bridges, dams and some waterfront buildings, particularly any extending over the water.

Chapter 91 is designed in part to maintain water-dependent uses adjacent to waterways and to provide public waterfront access. Water-dependent uses are land uses which require water access, such as a dam, a pier, a marina, boating and shipping. Some of the historic uses in the study area have been dependent upon hydro-power for their operations.

Historic Resources

Lawrence has a rich industrial and architectural history. The Ayer Mill Clock Tower at 5 South Union is listed on the Massachusetts State Registry of Historic Properties, and has a permanent preservation restriction. A review of the MACRIS historic properties database maintained by the Massachusetts Historical Commission (MHC) indicates there are 16 properties that have been inventoried for their historic or architectural character. The inventoried historic resources are detailed in Table II.4 and Figure II.10. Some of the properties on the south side of Merrimack Street have not yet been inventoried and formally reviewed for their historic and cultural contributions.

Figure II.10 Historic Resources.

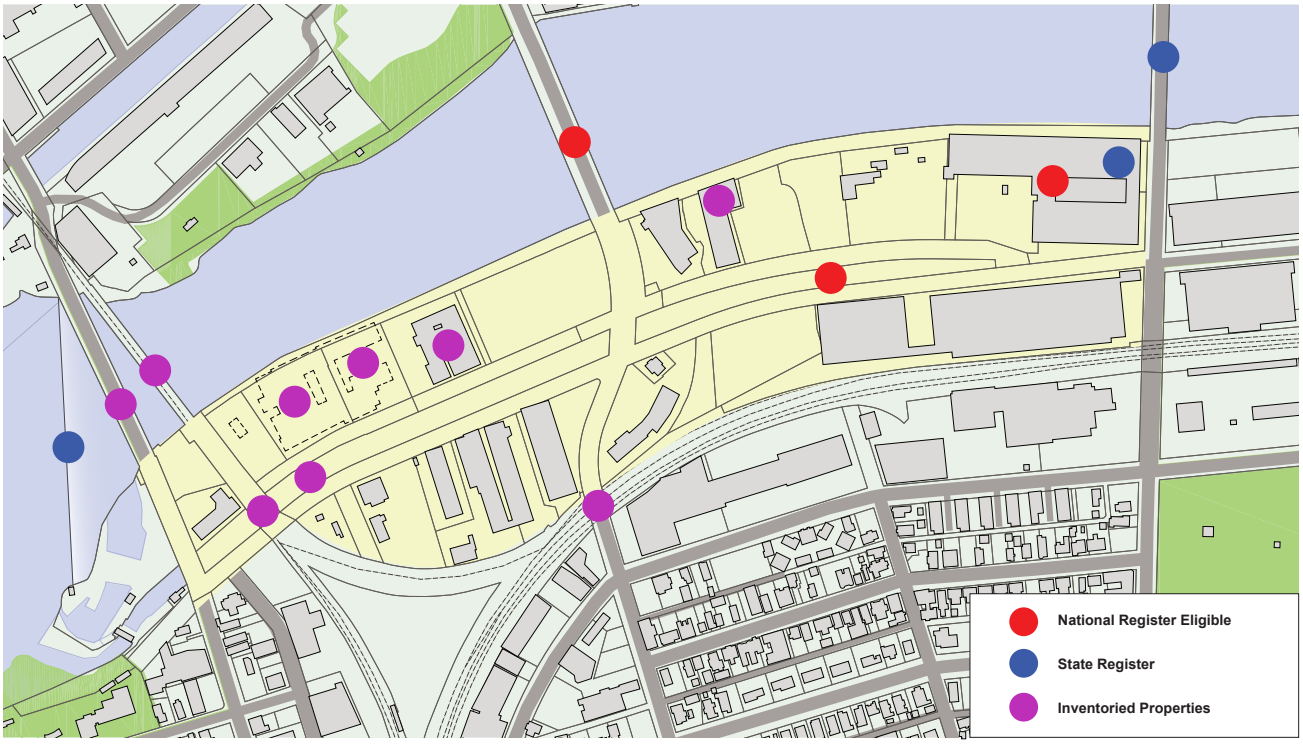


Table II.4 Historic Resources in the Merrimack Street Study Area.

MHC Inventory Number	Property	Address	Year Built	Historic Status	Current Status
2	Ayer Mill	5 South Union	1907	National Register eligible	Active Use
9006	Ayer Mill Clock Tower	5 South Union	1909	State Register	Permanent Preservation Restriction
564	Merrimac Paper	9 South Canal	1872	Inventoried	Fire; Largely demolished
568	Prospect Mill	19 South Canal	1872	Inventoried	Altered Facade; some fire damage;
572	US Worsted Co. Dying Plant	29 South Canal	1915	Inventoried	Riverside Business Center
574	Farwell Bleachery	39 South Canal	1877	Inventoried	Demolished
576	Lewis E. Frank Co. (wool scouring plant)	South Canal	1895	Inventoried	Warehouse condominiums
901	Central Bridge		1919	National Register Eligible	Actively Used
902	Duck Bridge		1888	State Register	Actively Used
907	Great Stone Dam		1848	State Register	Actively Used
908	South Canal		1866	National Register Eligible	Intact
921	Munroe Company Bridge over South Canal		1867	Inventoried	Fair condition
923	Boston & Maine Manchester & Lawrence Railroad Bridge		1871	Inventoried	Abandoned
927	Boston & Maine South Canal Railroad Bridge		1907	Inventoried	Abandoned
930	Boston & Maine Railroad Bridge over Parker Street		1930	Inventoried	Actively Used
998	O'Leary Bridge	South Broadway	1854	Inventoried	Actively Use

Source: Massachusetts Historical Commission.

Brownfields

As an urban area with a century-plus history of industry, the presence of brownfields is to be anticipated. The Massachusetts Department of Environmental Protection (DEP) has twenty-six reported releases of hazardous materials in the study area on eight different properties in the Waste Site/Reportable Release database, as depicted in Figure II.11. The MA DEP database reports span the last two decades of reportable releases, since 1994. Some of the brownfield contamination on properties in the study area occurred earlier. Brownfield site assessments will be needed to determine the extent of contamination, if any, before reuse and redevelopment.

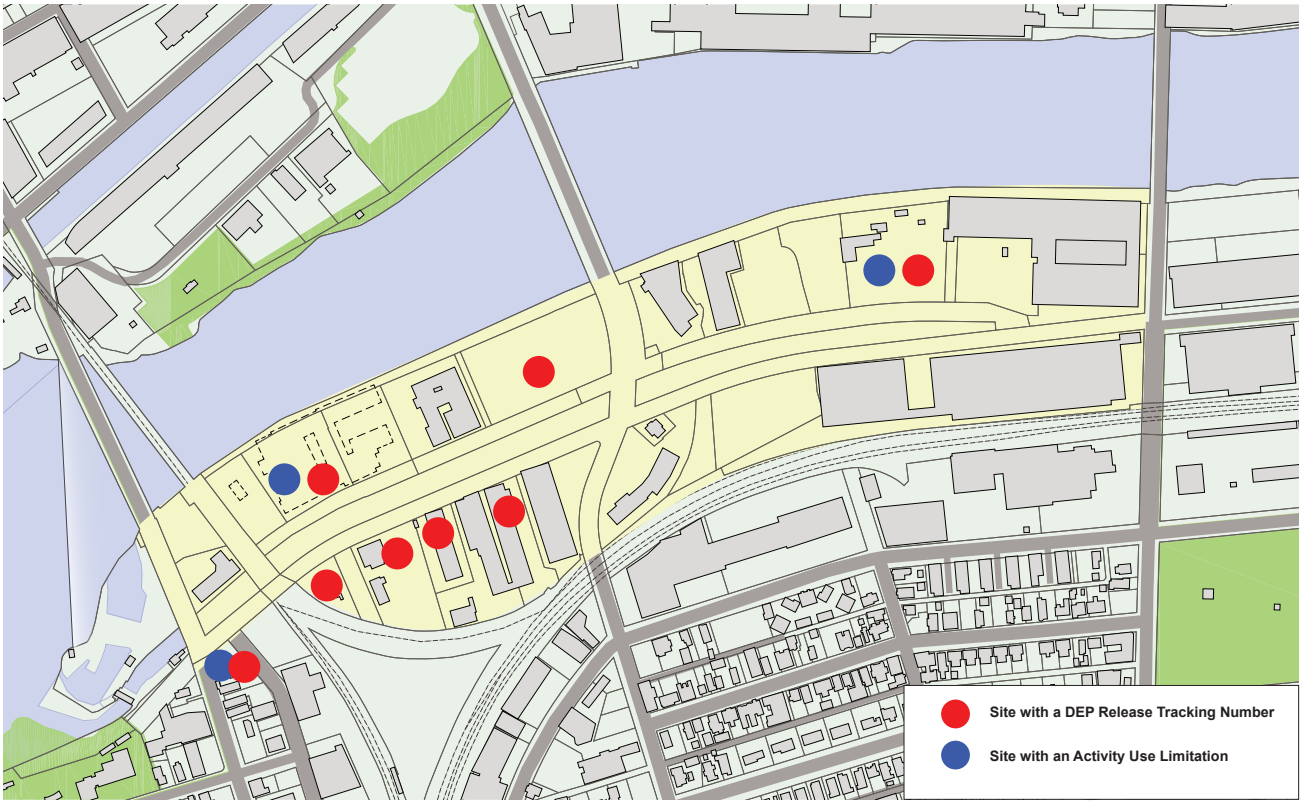
There are three Activity Use Limitations (AUL) that have been recorded on properties. Table II.6 details the AULs found in the study area. An AUL is an approach permitted by Massachusetts law governing the clean-up of hazardous waste sites that allows an owner to use a risk-based approach to determine the extent and level of clean-up and remediation activities. In each case, a Licensed Site Professional must assess and characterize the site as to potential and actual contamination. An AUL is

Table II.5. Locations with Hazardous Waste Releases.

Address	Number of Reported Releases	Status
11-17 Merrimack Street	2	Tier 2
31 Merrimack Street	4	RTN Closed
37 Merrimack Street	1	RAO
43 Merrimack Street	1	RAO
9 South Canal Street	8	Varied
39 South Canal Street	3	RTN Closed for Haz. Materials Tier 1 for Oil
75 South Canal Street	2	RAO
10 Carver Street	3	RAO

Source: MA DEP .

Figure II.11 Brownfields in the Study Area.



a written restriction governing future land uses imposed by the owner recorded at the Registry of Deeds. The goal of the AUL is to prevent future exposure to the remaining hazardous materials and to reduce clean-up and response costs while maintaining protection of public health and the environment.

The Merrimac Paper site has been an active clean-up site through the efforts of US EPA working with the City of Lawrence, following a major fire at the mill location in January 2014. The clean-up efforts have focused on above-ground clean-up and remediation of asbestos. Further assessment of below ground contamination and risks are still needed. An AUL was placed by the former owner at the South Canal Street site. The existing AUL now merits further scrutiny since site conditions have substantially changed with the fire, partial building demolition and site disturbance.. The AUL was put in place since oil had seeped below the building foundation, and the former owner was unable to remediate the oil without threatening the integrity of the building foundation.

Redevelopment of any of the sites in the Merrimack Street study area will require a preliminary site assessment to determine if any contamination necessitating clean-up is needed.

Table II.6. Activity Use Limitations.

Address	AUL Limitations
9 South Canal Street	• Use as a residence, school, nursery, playground, recreational area, where a child is likely to be present is precluded. • No direct contact with the soils, disturbance or relocation of soils contaminated with oil located at the depths of 12 to 15 feet, except for maintenance of the building foundation and short-term utility work.
75 South Canal Street	Residential, child care (commercial or residential), agricultural, institutional (with a residential or child care component), educational (for children under 18 years of age) and recreational uses or a playground or other similar use where a child may likely be present.
10 Carver Street	• Use as a residence, school, day care, nursery, playground, recreational area, or other use in which a child or children are likely to be present on a regular basis unless measures are taken to prevent such children from inadvertently exposed to subsurface soils. • Gardening or agricultural use which utilizes soil currently located below pavement and/or buildings concrete floor, including the cultivation of food producing vegetation with roots that could extend below pavement and/or the building's concrete floor.

Source: MA DEP.

Open Space and Public Realm

The public realm encompasses publicly-accessible space, typically open space, parks, and streetscape areas. Views and vistas are elements that can shape the experience of an area, as well.

Historically, there was no dedicated open space in the Merrimack Street corridor. However, historical images of the South Canal indicated that it was once tree-lined and an open space amenity. There are no parks within the study area, and no formalized access along the Merrimack River. The one nearby park is the O'Connell South Common, at the corner of South Union Street and Market Street. Although the South Common is beyond the study area, it is one block away. Nonetheless, the South Common is not easily accessible from the Merrimack Street study area for pedestrians. The Merrimack Street sidewalks are intermittent and do not provide continuous safe walkway for pedestrians. The South Common was bequeathed to the City of Lawrence by the Essex Company, which was the original developer of the Merrimack Street corridor, and the builder of the Great Stone Dam.

There is a second nearby park beyond the study area, namely Pemberton Park that is almost as big as the South Common, but more visually connected across the Merrimack River to the study area. Accessing Pemberton Park requires crossing the Merrimack River by either the Casey Bridge at Amesbury/Parker Streets or the O'Leary Bridge at South Broadway.

The South Canal represents an untapped potential as a highly visible and accessible water resource and open space amenity. Even in its current state, people are frequently seen taking a walk along the South Canal both during the work day and on weekends, as well as the occasional fishing expedition. The banks of the Merrimack River along the study area have no formal pedestrian access. Although there is an unofficial footpath worn along a portion of the banks. This also presents an untapped potential as a public open space amenity.

Overall, the present streetscape on Merrimack Street from South Union to South Broadway is fairly bleak with the South Canal providing the only vegetative relief from pavement and buildings. There is a lack of trees on Merrimack Street, contributing to the pedestrian-unfriendly character of the street. Many of the existing spaces are empty mills and paved lots, leaving those who live and work in or near the area with a deficit of contact with nature. Overhead utility lines run the length of Merrimack Street and two transmission corridors cross Merrimack Street. While overhead utility lines are not uncommon in New England cities and towns, particularly in districts with active industry, the absence of trees on the street make the overhead electric power lines and transmission corridors all the more conspicuous.

Street lighting is more highway scale than pedestrian scale. The pavement cross section of the street is based on past standards of road design, resulting in an excessively wide street, which gives the appearance of a vehicle and pavement dominated landscape. Parker Street as it passes beneath the railroad tracks lacks lighting, making the pedestrian connection to South Lawrence neighborhoods inhospitable and feeling unsafe.

The Ayer Mill clock tower (in the New Balance building at the corner of South Union and Merrimack) is a cultural and aesthetic asset. The clock tower is iconic for Merrimack Street and Lawrence, overall. It is the feature of the study area most liked by Lawrence residents. In addition to the Ayer Mill clock tower, the smoke stacks from Lawrence historic mills dot the skyline and help define the area. Of particular note is the smoke stack of one of Merrimack Streets' centennial businesses: Helfrich Brothers Boiler Works.

Additional views that are an asset to the Merrimack Street study area include not only the clock tower and historic smoke stacks, but also the Merrimack River, South Canal, the historic architecture. The vistas and views from the bridges of the study area, the Merrimack River and the historic architecture are dramatic and an asset to the study area. Another resource is the Great Stone Dam immediately to the west of the Merrimack Street study area stretching across the Merrimack River. It can be seen from the southern bank of the Merrimack River, particularly from multi-story buildings.

2. Market Conditions

The market overview begins with a discussion of demographics in Lawrence and the Greater Lawrence area. Demographics are important in that we are in a consumer-based economy, for which demographics influence and shape retail, office, industry and leisure land uses, business decisions and consumer behavior. The market overview and analysis examines the potential retail market for the Merrimack Street study area from both a consumer demand and real estate perspective. The real estate market conditions for commercial office, industrial and hotel are assessed for Lawrence and the large context of the I-495 North market is reviewed for each land use.

Market conditions inform redevelopment plans and land use planning, such as in the Merrimack Street study area. The real estate market for housing, office, industrial and hotels, however is cyclical and demand for certain land use types may vary. It is important to understand market conditions so that they can inform the overall strategic policy decisions for the city's vision for an economically stronger and more sustainable Lawrence with jobs and opportunities for Lawrence residents. Lawrence's propitious location in eastern Massachusetts near the intersection I-93 and I-495, along with freight and commuter rail services serve it and the Merrimack Street study area well. The challenge ahead is to understand and harness the market forces for effective redevelopment and land use planning.

Data

Population

76,377 people (2010)
Grew 6% since 2000, faster than Lowell and Haverhill

Employers in Lawrence

2,417 employers in Lawrence (2014)
104.1% increase in # of employers since 2001

Employment in Lawrence

25,964 working in Lawrence (2013)
Number of people working in Lawrence grew 8.4% since 2001

Unemployment

May 2015 – 8.3% (31,746 residents working; 3,701 unemployed)
2013 Annual – 13.5% (30,650 residents working; 4,778 unemployed)
2001 Annual – 8.8% (26,733 residents working; 2,567 unemployed)

Demographics

The Merrimack Street corridor is located on the south side of the Merrimack River and in the heart of the City, serving the South Lawrence neighborhoods, as well as the City of Lawrence, as a whole. The discussion of demographics and market issues pertaining to the Merrimack Street study area between South Union and South Broadway will focus on Lawrence.

The City of Lawrence is growing in population, and now numbers 77,364 residents according to the latest 2014 population estimate by the US Census through the American Community Survey. Lawrence is projected to reach a population of 80,000 by 2020 according to the Metropolitan Area Planning Commission (MAPC). Lawrence is part of a slow but steadily growing region. As the central city, Lawrence over the past twenty-five years has seen its population grow, reversing the trend of population losses that is common in many of the Commonwealth's Gateway Cities. The population of Lawrence and the Greater Lawrence vicinity (namely Andover, Lawrence, Methuen, North Andover, and Salem, NH) is projected to continue growing 3.5% over the next five years through 2020, as noted in Table II.8.

The number of households in Lawrence is projected to grow 12.7% to 12,928 households in 2020. This is a slightly faster rate of increase this decade than the Greater Lawrence area, where households are projected by MAPC to grow 11.3% to 84,872. The average household size in Lawrence is 3.0, which is higher than the average household size in the US and Massachusetts, which are 2.63 and 2.53 respectively. The average family household size is 3.52 persons in Lawrence.

Lawrence is a racially and linguistically diverse city. Lawrence has the highest percentage of Latino residents of any municipality in Massachusetts, totaling over 75% according to the US Census 2014 estimates. The racial demographics of Lawrence, Greater Lawrence and the state are reported in Table II.9. Over three-quarters (76.6%) of Lawrence residents speak a language other than English. This includes the 70.2% of Lawrencians who speak Spanish, of which the majority, 50.2%, are fluent in English, as well. However, 49.2% of Spanish-speakers speak English less than very-well. Another 5.5% of Lawrence residents speak other languages, both European as well as Asian languages.

Sources: US Census, 2014 American Community Survey 5 yr. estimates & McCabe Enterprises.

**The Hispanic/ Latino population may be of various and different races.*

Table II.7. Households & Household Growth.

	2010 Households	Projected # of Households 2020	Rate of Change
Lawrence	25,181	28,383	12.7%
Greater Lawrence	76,222	84,872	11.3%

Sources: US Census; MAPC; Donahue Institute; NH Office of State Planning, McCabe Enterprises.

Table II.8. Population Change.

	City of Lawrence	Greater Lawrence	Massachusetts
2020	80,633	225,186	6,950,668
2014	77,364	217,578	6,755,124
2010	76,377	213,961	6,547,629
2000	72,043	202,393	6,349,097
1990	70,207	187,886	6,016,425
1980	63,175	170,499	5,737,037
	Rate of Change		
2020	4.2%	3.5%	2.9%
2014	1.3%	1.7%	3.2%
2010	6.0%	5.7%	3.1%
2000	2.6%	7.7%	5.5%
1990	11.1%	10.2%	4.9%

Source: US Census 2010, MAPC, Rockingham Co. Planning Commission and McCabe Enterprises.

Table II.9. Racial and Ethnic Characteristics.

	City of Lawrence	Greater Lawrence	Massachusetts
White	37.6%	68.1%	80.0%
Black	7.0%	3.9%	7.0%
Asian	3.3%	5.0%	5.8%
Other Races	49.1%	20.8%	4.4%
Two or More Races	3.1%	2.2%	2.9%
Hisp./ Latino*	75.7%	33.8%	10.2%

Merrimack Valley Comparatives

Lawrence is one of three textile mill cities along the Merrimack River. Each grew substantially in the late nineteenth century and early twentieth century with the advent of industrialization and the booming textile mills. Each city suffered during the Great Depression in the 1930s as businesses closed and the exodus of the textile industry to the south and eventually overseas slowly began. The 1950s brought the advent of suburbanization and the interstate highway, and the population of Lawrence and its neighboring cities continued to decline as industries moved to the south and to suburbia. The fortunes of the Merrimack Valley cities have begun to turn as urban areas have been rediscovered in the 1990s. Lowell with leadership from former Senator Paul Tsongas, the National Park Service and the Lowell Plan has led much of the revitalization and reinvestment.

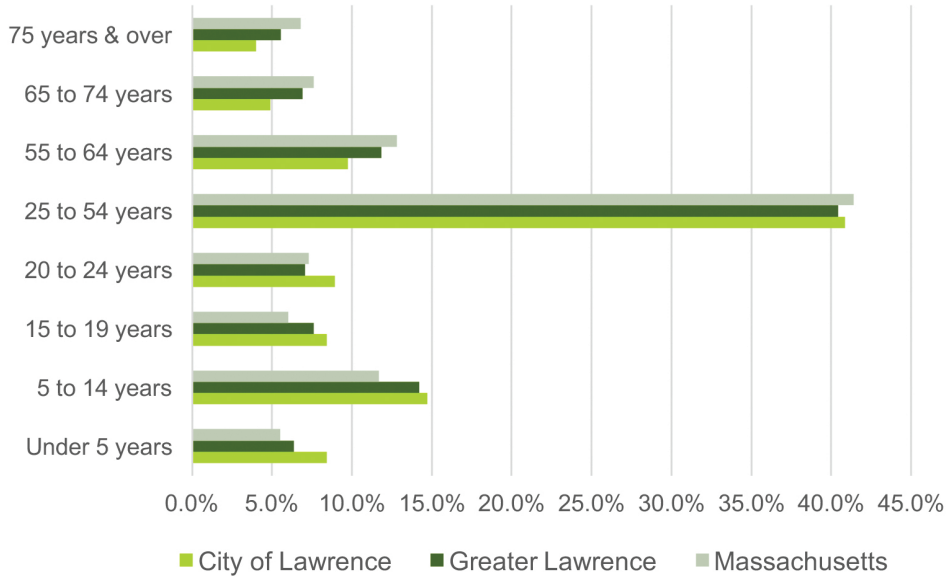
Lawrence is physically the smallest of the three cities on the Merrimack River, being only 7.42 square miles. Lowell is twice the size of Lawrence and spans 14.54 square miles. Haverhill has the greatest land area extending over 35.64 square miles, nearly five times the size of Lawrence.

Table II.10. Population Change in Merrimack Valley Cities: Lawrence, Haverhill & Lowell.

YEAR	Lawrence		Haverhill		Lowell	
	Population	Percent Change	Population	Percent Change	Population	Percent Change
1870	28,921		13,092		40,928	
1880	39,151	35.4%	18,472	41.1%	59,475	45.3%
1890	44,654	14.1%	27,412	48.4%	77,696	30.6%
1900	62,559	40.1%	37,175	35.6%	94,969	22.2%
1910	85,892	37.3%	44,115	18.7%	106,294	11.9%
1920	94,270	9.8%	53,884	22.1%	112,759	6.1%
1930	85,068	-9.8%	48,710	-9.6%	100,234	-11.1%
1940	84,323	-0.9%	46,752	-4.0%	101,389	1.2%
1950	80,536	-4.5%	47,280	1.1%	97,249	-4.1%
1960	70,933	-11.9%	46,346	-2.0%	92,107	-5.3%
1970	66,915	-5.7%	46,120	-0.5%	94,239	2.3%
1980	63,175	-5.6%	46,865	1.6%	92,418	-1.9%
1990	70,207	11.1%	51,418	9.7%	103,439	11.9%
2000	72,043	2.6%	58,969	14.7%	105,167	1.7%
2010	76,377	6.0%	60,879	3.2%	106,519	1.3%
2014	77,364	1.3%	61,769	1.5%	108,491	1.9%
Growth from 1870 to 2014 (144 years)		168%		372%		165%
Change from 1970 to 2014 (44 yrs.)		15.6%		33.9%		15.1%

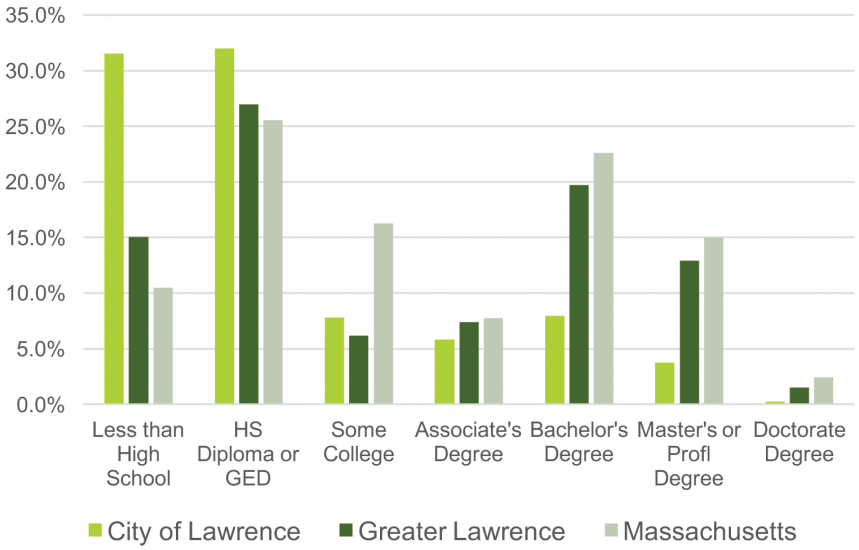
Sources: US Census and McCabe Enterprises.

Figure II.12.
Age Cohorts.



Sources: US Census, American Community Survey 2014, 5 year estimates and McCabe Enterprises.

Figure II.13.
Educational Attainment of Residents 25 Years and Older.



Sources: US Census, American Community Survey 2014, 5 year estimates and McCabe Enterprises.

Lawrence is a young city as depicted in Figure II.12, Age Cohorts. Lawrence residents are significantly younger than the Greater Lawrence region and the Commonwealth. The median age in Lawrence is 31 years, compared to the statewide median age of 39.3 years. Most of the communities in the Greater Lawrence area have a median age upwards of 40 years.

Just over two-fifths, 40.5%, of Lawrence residents are under 25 years of age. Another forty percent of Lawrence residents are between 25 years and 54 years of age. One in six Lawrence residents (or 18.6%) are over 55 years of age. This is significantly less than the Greater Lawrence region where nearly one in four residents (24.3%) are over 55 years of age. Statewide, over one in four (27.2%) residents are over 55 years of age. From a work force and economic development perspective, Lawrence residents are the next generation of workers. Unlike some parts of Massachusetts and New England with an aging work force, and fewer younger residents available to repopulate the work force, the Greater Lawrence region has the next generation of workers.

Educational attainment is related to earnings and advancement. As an immigrant city, Lawrence has many residents who are new arrivals who often lack formal education. Over one-third (38.3%) of Lawrence residents have emigrated to the U.S. Lawrence lags behind the region and state as to educational attainment amongst its residents as shown in Figure II.13, Educational Attainment.

The median household income as determined by the US Census for 2014 for Lawrence is $34,496, which is the lowest median amongst the cities and town in the Greater Lawrence area, as well as the neighboring Merrimack Valley cities of Haverhill and Lowell. The per capita income in Lawrence is $17,295 per the 2014 American Community Survey five year estimate.

Although Lawrence has a low median household income, Lawrence is a dense urban area. There is over $300,000 of aggregate income per acre in Lawrence, which easily surpasses the aggregate income per acre than the surrounding communities as noted in Table II.12. A high aggregate income indicates that there is more purchasing power in a compact area for a retailer or service business within Lawrence than the same geographic area in a nearby community. As such, Lawrence offers retail and service businesses greater opportunity to prosper from the buying power of local residential households. Although individual households may be income constrained, there is a high density of residential households resulting in a higher aggregate income per acre in Lawrence. This represents opportunity for Lawrence's commercial areas, particularly commercial areas in residential mixed-use areas of the City.

Further evidence of this opportunity is Lawrence's business growth since 2001. The number of retail establishments has increased 10.6% (compared to a statewide 2.9% decrease in retail establishments); a 27% increase in Lawrence's food & public accommodations businesses (compared to 16.3% statewide increase); an 841% increase in health care employers in Lawrence (compared to 204% statewide increase), and arts and entertainment establishments have increased 150% in Lawrence from 2001 to 2014 (compared to a 34.7% increase across the Commonwealth.)

Table II.11. Median Household Income.

	Median Household Income	Median Family Income	Percent Community College Plus	Percent Bachelor's Degree
Lawrence	**$34,496**	**$36,073**	**16.5%**	**11.1%**
Lowell	$49,452	$55,915	29.8%	22.4%
Haverhill	$60,429	$71,736	38.6%	28.5%
Andover	$112,681	$139,111	75.9%	69.2%
Methuen	$67,556	$83,125	38.6%	29.2%
North Andover	$96,002	$121,414	62.1%	55.2%
Salem, NH	$78,395	$90,353	40.0%	31.1%
Massachusetts	$66,866	$84,900	47.1%	39.4%

Sources: US Census, American Community Survey, 5 year estimates and McCabe Enterprises.

Table II.12. Aggregate Household Income.

	Geographic Size Acres	Aggregate Income	Income Per Acre
Lawrence	**4,749**	**$1,459,127,600**	**$307,262**
Andover	20,563	$1,825,492,400	$88,775
Methuen	14,778	$1,459,127,600	$98,739
North Andover	17,824	$1,387,908,000	$77,867
Salem NH	16,576	$1,050,193,600	$63,356
Haverhill	22,810	$1,826,148,400	$80,061
Lowell	9,306	$2,383,476,000	$256,134

Sources: US Census, American Community Survey, 5 year estimates and McCabe Enterprises.

Labor Force

The potential labor force in a community is defined to be the persons of working age from 16 years to 65 years. With the aging baby boomer generation and changing social security rules, many older workers are working beyond 65, so the potential labor force is expanding upwards to include the 65 to 69 years of age cohort. While many youth are anxious to work, most young people remain in school until 17 years to complete high school and thus are not considered to be available for full-time work. This discussion of the potential labor force focuses on persons who are 18 to 69 years of age. The City of Lawrence has a potential labor force of 52,796. The Greater Lawrence area has a potential labor force of 148,000 workers, as noted in Table II.13. The size of the Lawrence local labor force has steadily grown since the 1990s, as shown in Figure II.14.

When employers evaluate potential business locations, the availability and quality of the labor forced are important considerations. Work force and talent availability are increasingly a key determinant in business location decisions. Businesses look at the potential labor force not only within the immediate community, but also at the surrounding area, which is termed as the labor-shed. A labor-shed typically is an area within a twenty to thirty minute drive-time, and is the likely recruiting area for potential employees. For highly skilled or unusual skills commanding higher pay, the actual labor-shed may be greater for more specialized occupations. For Lawrence, the labor-shed is the Greater Lawrence area comprising the City of Lawrence, Andover, Methuen, North Andover and Salem, NH. In 2014, sixty percent of the persons working in Lawrence lived within ten miles of their job.

Table II.13. Potential Labor Force.

	City of Lawrence			Greater Lawrence		
Age Cohort	Males	Females	Total	Males	Females	Total
18 to 19 years	3,091	1,462	4,553	7,097	3,257	10,354
20 to 64 years	21,862	24,201	46,063	62,602	66,510	129,112
65 to 69 years	889	1,291	2,180	3,908	4,774	8,682
Total Potential Labor Force	25,842	26,954	52,796	73,607	74,541	148,148

Sources: US Census, American Community Survey, 5 year estimates and McCabe Enterprises.

Figure II.14. Lawrence Population and Labor Force, 1990 to 2013.

Sources: US Census, American Community Survey, 5 year estimates and McCabe Enterprises.

In 2015, the unemployment rate for City of Lawrence residents was 9.6%, which exceeded the annual Greater Lawrence regional[1] and state unemployment rates of 6.5% and 5%, respectively. Lawrence's 2015 unemployment rate of 9.6% is the highest of the twenty-seven Massachusetts' Gateway Cities. Lawrence residents comprise over half of persons unemployed looking for work in the region. The Greater Lawrence labor force consists one one-third (34%) of the City of Lawrence residents.

In 2014, there were 52,796 persons living in Lawrence between 18 and 69 years of age. There were 35,530 persons in the labor force living in Lawrence in 2015. The labor force participation rate (which includes persons working and actively looking for work) in Lawrence is 67.3% and for Greater Lawrence[2] is 75.1% of the population 18 years of age to 69 years.

The Massachusetts Department of Labor & Work Force reported that in 2014, there were 26,206 persons working in Lawrence at Lawrence establishments. There were 2,416 business establishments in Lawrence with a payroll. The average weekly wage in 2014 for persons working in Lawrence was $931.00, which is equivalent to $48,412 annually (52 weeks).

In the Massachusetts portion of the Greater Lawrence region there are 5,715 business establishments. The City of Lawrence is home to 42.2% of the business establishments with a payroll in the region. Lawrence businesses employ just over one-quarter (28.9%) of the persons working in the Greater Lawrence area. Andover has the largest segment (38.1%) of the 90,524 jobs in the region.

Lawrence is home to many small business owners and has the highest growth rate of business establishments in the Greater Lawrence region and amongst Gateway Cities in eastern Massachusetts, as shown in Table II.14. Since 2000, the number of business establishments with a payroll has doubled in Lawrence. In the last decade the number of Lawrence-based business establishments has grown 69.4%, five times the state rate of business establishment growth. Lawrence is clearly an engine of entrepreneurial activity.

[1] The 2015 unemployment rate for the Greater Lawrence region does not include data from Salem, NH. In 2015, Salem had a municipal annual unemployment rate of 4.3%.

[2] The Greater Lawrence labor force participation rate is based on the Massachusetts portion of Greater Lawrence, and does not include data on Salem, NH.

Table II.14. Growth of Number of Business Establishments.

Jurisdiction	Number of Establishments			Percent Change 2001 to 2014	Percent Change 2005 to 2014
	2001	2005	2014		
Massachusetts	193,547	207,788	234,696	21.3%	12.9%
Essex County	19,309	20,442	22,998	19.1%	12.5%
Andover	1,075	1,104	1,231	14.5%	11.5%
Brockton	1,977	2,233	2,664	34.7%	19.3%
Chelsea	756	739	832	10.1%	12.6%
Fall River	2,180	2,471	2,715	24.5%	9.9%
Fitchburg	934	962	1,047	12.1%	8.8%
Haverhill	1,220	1,297	1,480	21.3%	14.1%
Holyoke	1,233	1,549	1,885	52.9%	21.7%
Lawrence	1,184	1,426	2,416	104.1%	69.4%
Lowell	1,772	1,896	2,750	55.2%	45.0%
Lynn	1,301	1,352	1,656	27.3%	22.5%
Methuen	891	989	1,198	34.5%	21.1%
New Bedford	2,314	2,642	3,268	41.2%	23.7%
North Andover	861	908	1,026	19.2%	13.0%
Peabody	1,432	1,519	1,545	7.9%	1.7%
Revere	729	791	874	19.9%	10.5%
Salem, MA	1,249	1,284	1,367	9.4%	6.5%

Sources: ES202 data, MA Executive Office of Labor & Workforce, & McCabe Enterprises.

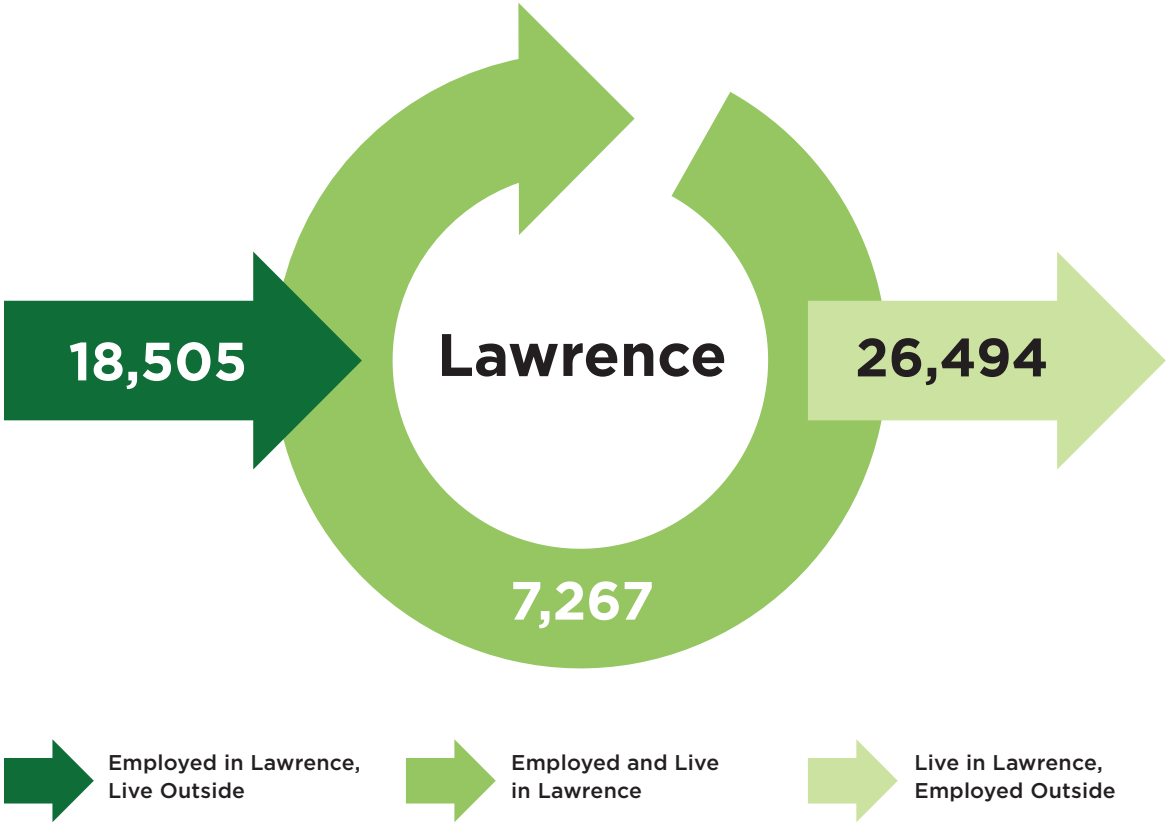
Jobs in Lawrence

The federal government reports that there are 25,772 jobs in Lawrence employing both Lawrence residents and persons living in the surrounding area. In 2014, 28.2% of the jobs in Lawrence employed residents of the city. Persons living outside of Lawrence fill over two-thirds (71.8%) of the jobs in Lawrence, as depicted in Figure II.15. There are 26,494 Lawrence residents travel beyond Lawrence for work. The top four sending locales in 2014 for persons working in Lawrence, following Lawrence, are Methuen (9.4% of workers employed in Lawrence), Haverhill (6.6%), Lowell (4.7%), and Boston (1.8%).

The analysis of jobs and local labor force considers both the jobs currently within the community, as well as where Lawrence residents, are working. Figure II.16 highlights where Lawrence residents are working. One-fifth, 21.5%, of Lawrence residents live and work in Lawrence. The second highest segment, 8.0% of Lawrence residents commute to Boston-Cambridge for work. Methuen is the third-highest ranking employment designation and employs 6.5% of Lawrence residents. Nearby Haverhill draws 4.5% of Lawrence residents for work. Woburn is the fifth top location, employing 2.7% of Lawrence residents. Employment locations of Lawrence residents have remained relatively stable between 2011 and 2014, as shown in Table II.15.

The jobs currently held by Lawrence residents are in five key sectors. Health care and social assistance sector is the largest employer of Lawrencians. The number of jobs in the health care and social assistance sector filled by Lawrence residents increased 2,264 from 2011 to 2014 to 6,853 jobs. The manufacturing sector fell from first place in 2011 to second in 2014 as the largest employer of Lawrence residents. However, the number of Lawrence residents working in manufacturing increased to 5,076 jobs in 2014. The third, fourth and fifth leading sectors employing Lawrence residents in 2014 are administration and support services; retail trade; and food service and accommodations, as noted in Table II.16. Table II.16 describes the industry sectors employing Lawrence residents, and the jobs may be at any location (and not exclusively in the City of Lawrence).

Figure II.15. 2014 Employee In-flows and Out-flows for Jobs in Lawrence.



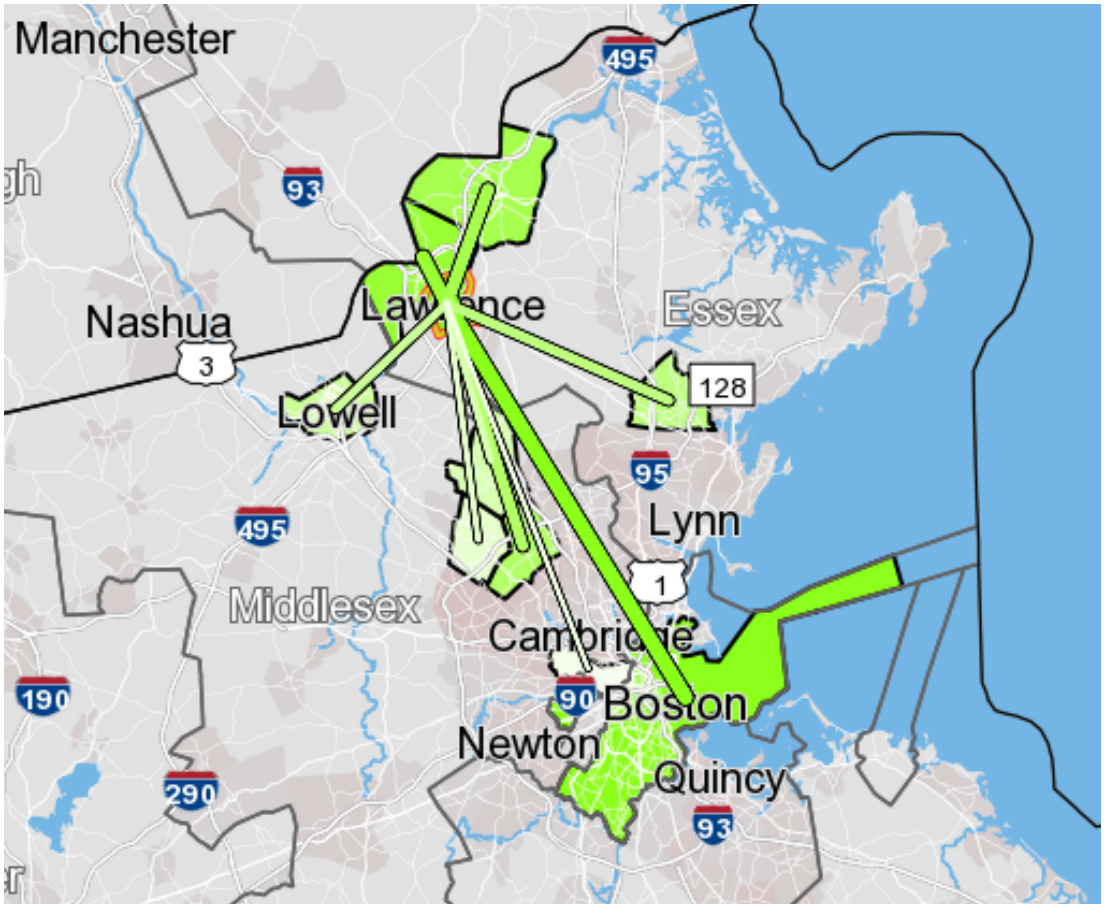
Source: US Census, LEHD.

Table II.15. Job Counts by Places where Lawrence Residents Work.

Location	2014		2011	
	Count	Share	Count	Share
Lawrence city, MA	7,267	21.5%	5,833	20.8%
Boston city, MA	2,275	6.7%	1,997	7.1%
Methuen Town city, MA	2,197	6.5%	1,795	6.4%
Haverhill city, MA	1,516	4.5%	1,308	4.7%
Woburn city, MA	1,066	3.2%	769	2.7%
Danvers CDP, MA	767	2.3%	734	2.6%
Lowell city, MA	740	2.2%	686	2.4%
Wilmington CDP, MA	695	2.1%	705	2.5%
Burlington CDP, MA	578	1.7%	358	1.3%
Cambridge city, MA	432	1.3%	361	1.3%
All Other Locations	16,228	48.1%	13,538	48.2%

Source: US Census LEHD.

Figure II.16. Locations Where Lawrence Residents Worked in 2014.



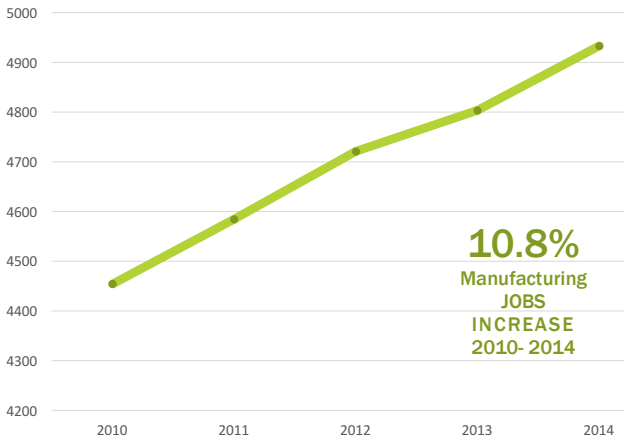
Sources: LEHD, On the Map.

Table II.16. NAICS Industry Sectors Employing Lawrence Residents.

Location	2014		2011	
	Count	Share	Count	Share
Agriculture, Forestry, Fishing and Hunting	137	0.4%	103	0.4%
Mining, Quarrying, and Oil and Gas Extraction	2	0.0%	1	0.0%
Utilities	38	0.1%	33	0.1%
Construction	954	2.8%	767	2.7%
Manufacturing	5,076	15.0%	4,835	17.2%
Wholesale Trade	1,088	3.2%	911	3.2%
Retail Trade	3,536	10.5%	3,038	10.8%
Transportation and Warehousing	1,099	3.3%	889	3.2%
Information	517	1.5%	457	1.6%
Finance and Insurance	846	2.5%	757	2.7%
Real Estate and Rental and Leasing	357	1.1%	254	0.9%
Professional, Scientific, and Technical Services	1,613	4.8%	1,362	4.8%
Management of Companies and Enterprises	546	1.6%	436	1.6%
Administration & Support, Waste Management and Remediation	3,774	11.2%	3,150	11.2%
Educational Services	1,875	5.6%	1,429	5.1%
Health Care and Social Assistance	6,853	20.3%	4,589	16.3%
Arts, Entertainment, and Recreation	362	1.1%	286	1.0%
Accommodation and Food Services	3,034	9.0%	2,519	9.0%
Other Services (excluding Public Administration)	1,262	3.7%	1,535	5.5%
Public Administration	792	2.3%	733	2.6%

Source: US Census, LEHD.

Figure II.17. Increase in Manufacturing Jobs in Lawrence, 2010 to 2014.



Sources: ES 202, MA Department of Labor & Workforce Development, McCabe Enterprises.

The NAICS industry sectors employing persons in Lawrence in 2014 are shown in Table II.16. The leading sector is health care and social assistance services in Lawrence, followed by manufacturing. Educational services is the third largest employing sector in Lawrence. Employment growth in the educational services sector is attributable to the growing presence of Northern Essex Community College in downtown Lawrence. Retail trade and administration and support services sectors are ranked fourth and fifth respectively. Of particular note is the manufacturing sector, which continues to slowly grow in Lawrence. Figure II.17 indicates the rate of job growth in manufacturing.

Table II.17. NAICS Sectors of Businesses Based in Lawrence.

Location	2014		2011	
	Count	Share	Count	Share
Agriculture, Forestry, Fishing and Hunting	0	0.0%	0	0.0%
Mining, Quarrying, and Oil and Gas Extraction	0	0.0%	0	0.0%
Utilities	53	0.2%	60	0.2%
Construction	591	2.3%	633	2.6%
Manufacturing	5,187	20.1%	4,900	20.2%
Wholesale Trade	692	2.7%	651	2.7%
Retail Trade	1,618	6.3%	1,509	6.2%
Transportation and Warehousing	305	1.2%	255	1.1%
Information	371	1.4%	399	1.6%
Finance and Insurance	232	0.9%	289	1.2%
Real Estate and Rental and Leasing	238	0.9%	213	0.9%
Professional, Scientific, and Technical Services	529	2.1%	621	2.6%
Management of Companies and Enterprises	249	1.0%	222	0.9%
Administration & Support, Waste Management and Remediation	1,409	5.5%	2,203	9.1%
Educational Services	2,302	8.9%	1,701	7.0%
Health Care and Social Assistance	8,580	33.3%	6,898	28.5%
Arts, Entertainment, and Recreation	98	0.4%	25	0.1%
Accommodation and Food Services	979	3.8%	961	4.0%
Other Services (excluding Public Administration)	1,159	4.5%	1,517	6.3%
Public Administration	1,180	4.6%	1,166	4.8%

Source: US Census, LEHD.

The Business Mix

The number of business establishments doubled in Lawrence since 2001. There are currently 2,416 businesses with a payroll in Lawrence, and 26,206 jobs. Employment has increased 2,264 jobs since 2001. The Great Recession of 2007-2009 impacted Lawrence and was a period of job loss in Lawrence. The City is recovering. The changes in the type of establishments and the jobs in Lawrence since 2001 are depicted in the pie charts in Figures II.18 and II.19. A key change is the growth in the health and social assistance sectors as to number of establishments and jobs since 2001. Manufacturing continues to be an important source of jobs, although the number of establishments has shrunk. The breadth of the sectors has also narrowed as to number of establishments and jobs from 2001 to 2013.

A city-wide comparison in the type of establishments by industry sector to the Merrimack Street study area is illustrated in Figure II.20. Merrimack Street hosts a wide variety of industry sectors. The transportation and warehousing sector have a strong presence on Merrimack Street in large part due to the presence of the Pan Am rail line which has rail sidings servicing several businesses on the south side of Merrimack Street. B & D Advance Warehousing located at Merrimack Street and South Union has a large presence and operates from several parcels in the study area.

In the past five years, 2010 to 2014, the business establishment growth rate has been 31.7%. Growth in business establishments has been led by the health care and social assistance sector, which increased from 150 establishments in 2010 to 1,355 establishments in 2014, an 803% increase.

Reviewing the different segments of the health care and social assistance sector, the largest growth in establishments came from the Individual and Family Services segment which dramatically grew from 21 establishments in 2010 in Lawrence to 1,209 establishments in 2014, employing 2,162 persons. There was also

Figure II.18. City-Wide Change in Establishments, 2001-2013.

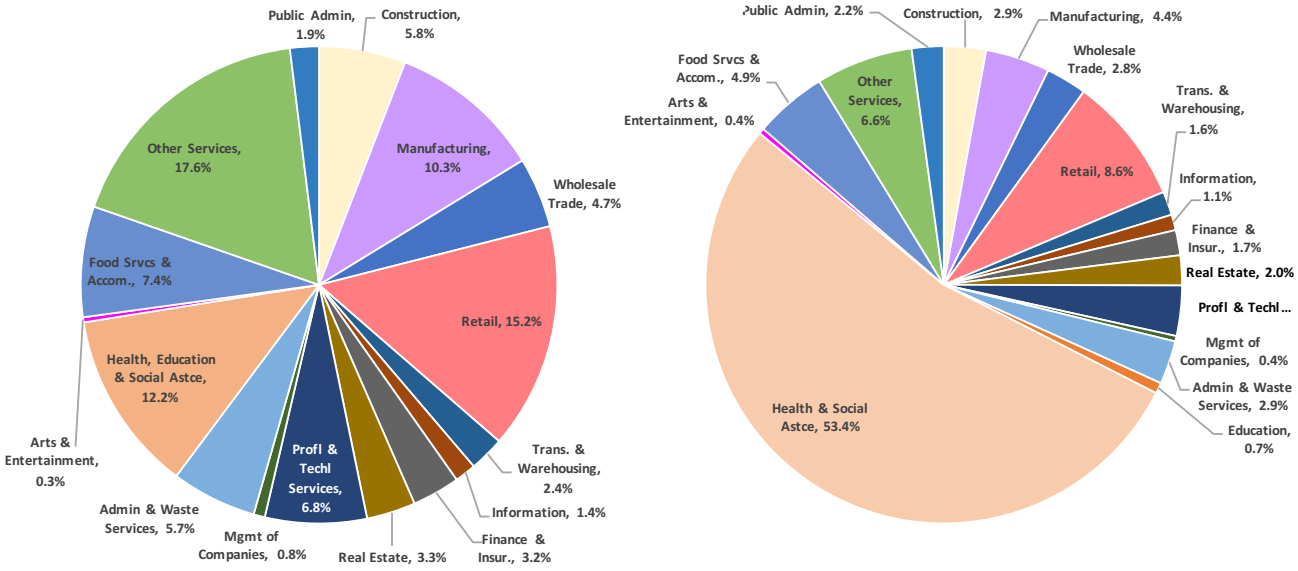
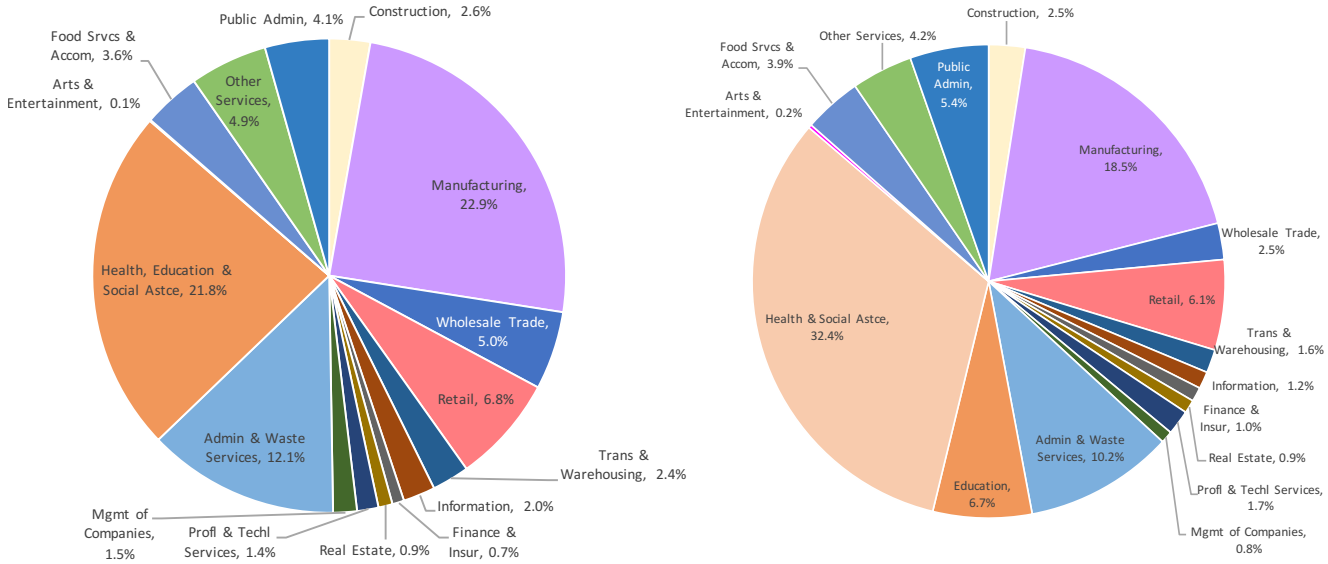


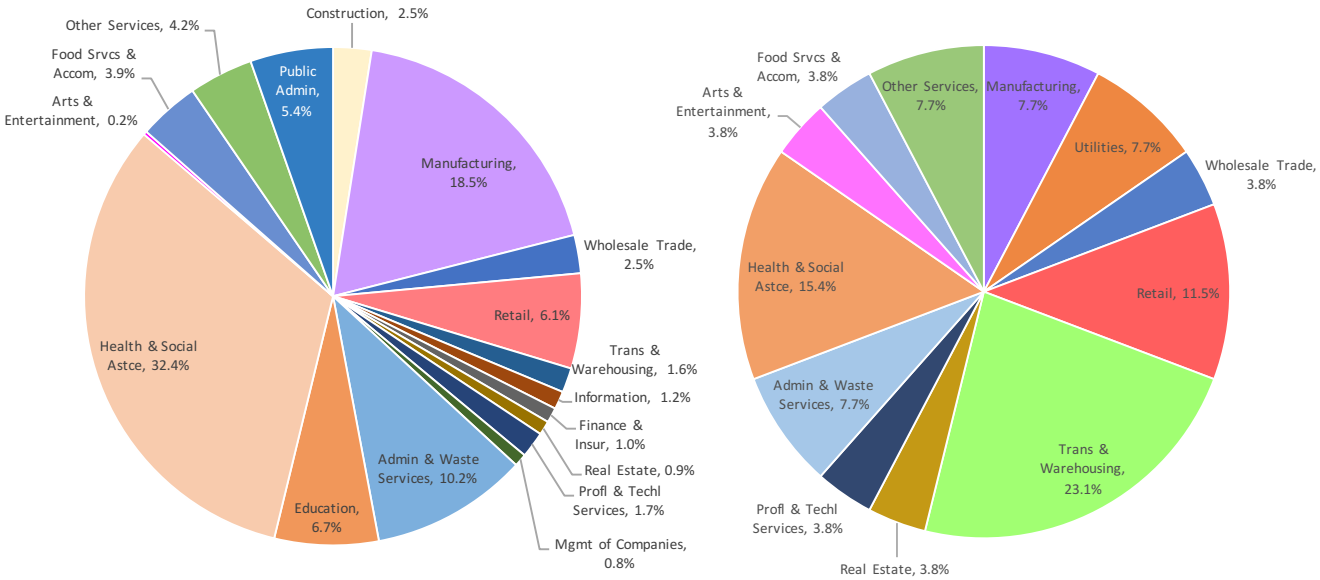
Figure II.19. City-wide Changes in Employment, 2001-2013.



a significant growth in home health care establishments to fifteen services with 2,119 jobs in Lawrence. Table II.18, Health Care Sector Growth, 2010 to 2014 highlights the top five health care sectors which fueled the growth in the number of establishments and employees from 2010 to 2014.

The arts, entertainment and recreation sector doubled the number of establishments from five to ten accounting for a 100% increase. Rounding out the top five sectors with growth in establishments from 2010 to 2014 are administrative and waste

Figure II.20. Business Establishments as to Industry Sector.



services which grew 19.3%; transportation and warehousing establishments which grew 18.2%; and accommodations and food services which grew 8.7%.

Increasing the number of establishments is one measure of business vitality. Another key measure is employment by industry sectors. Some sectors like manufacturing experienced a decrease in the number of establishments, but an increase in employment in Lawrence. Overall, from 2000 to 2014, there was a net increase of 2,081 jobs added in Lawrence.

The sectors which led employment growth in Lawrence for the period 2000 to 2014 are the arts, entertainment and recreation sector which grew 265% with an increase from 20 jobs in 2010 to 73 jobs in 2014. The growth in the arts, entertainment and recreation sector illustrates how a small sector can grow and contribute to Lawrence's well-being. The health care and social assistance sector grew substantially as to number of establishments and as to the additional number of employees in the sector. The health sector added 2,305 jobs in the past five years, a 35.3% increase in jobs.

The manufacturing sector grew 10.8% and added 479 jobs in Lawrence. The accommodations and food services added 149 jobs for a growth rate of 16.1%. Retail trade added 94 jobs for a 6.1% increase. While many sectors added jobs, there were also sectors that shed jobs, notably the administrative and waste service sector where employment decreased 33.5% for a loss of 754 jobs, and other services which decreased 37.2% and employment decreased 702 jobs.

Table II.18. Health Care Sector Growth, 2010 to 2014.

NAICS Code	Health & Social Assistance Sector	Number of Establishments in 2014	Growth in Establishments 2010-2014	2014 Average Monthly Employment	Growth in Employment 2010 -2014
6211	**Office of Physicians**	**36**	**63.6%**	**916**	**7.4%**
6216	Home Health Care Services	15	87.5%	2,119	45.4%
6241	Individual and Family Services	1209	5657.1%	2,163	184.2%
6244	Child Day Care Services	14	55.6%	309	72.6%
6212	Offices of Dentists	24	4.3%	316	19.2%

Source: ES202 data and McCabe Enterprises.

Table II.19. Leading Industry Sectors in Lawrence as to Number of Establishments.

Rank as to # of Establishments	NAICS Industry Sector	Number of Establishments in 2014
	Total, All Industries	**2,416**
1	Health Care and Social Assistance	1,355
2	Retail Trade	198
3	Other Services, Ex. Public Admin	155
4	Accommodation and Food Services	112
5	Manufacturing	99
6	Professional and Technical Services	72
7	Administrative and Waste Services	68
8	23 - Construction	67
9	Wholesale Trade	64
10	Public Administration	50
11	Real Estate and Rental and Leasing	41
12	Transportation and Warehousing	39
13	Finance and Insurance	35
14	Information	23
15	Arts, Entertainment, and Recreation	10
16	Management of Companies and Enterprises	7

Source: US a Sources: ES202, MA Department of Labor & Work Force Development, McCabe Enterprises. Census, LEHD.

Table II.20. Leading Industry Sectors in Lawrence as to Number of Employees.

Rank as to # of Employees	Description	Average Monthly Employment in 2014
	Total, All Industries	**26,206**
1	Health Care and Social Assistance	8,826
2	Manufacturing	4,933
3	Retail Trade	1,639
4	Administrative and Waste Services	1,499
5	Public Administration	1,320
6	Other Services, Ex. Public Admin	1,184
7	Accommodation and Food Services	1,072
8	Wholesale Trade	675
9	Construction	595
10	Professional and Technical Services	419
11	Transportation and Warehousing	415
12	Information	329
13	Finance and Insurance	241
14	Real Estate and Rental and Leasing	237
15	Management of Companies and Enterprises	229
16	Arts, Entertainment, and Recreation	73

Source: US a Sources: ES202, MA Department of Labor & Work Force Development, McCabe Enterprises. Census, LEHD.

Clearly, Lawrence is a dynamic business environment experiencing growth, consolidations, and losses. Overall the trends for job and business establishment growth are positive.

An assessment of the leading industry sectors by number of establishments, number of jobs, and annual wages for businesses in Lawrence was conducted. The results are detailed in Tables II.19, II.20, and II.21. The three sectors with compensation above the average wage level paid by businesses in Lawrence are management of companies and businesses, the manufacturing and construction sectors. Of these three highest paying sectors, manufacturing offers the most promise for Lawrence. Manufacturing offers good paying jobs with an average annualized wage of $64,116, almost twice the median household income of Lawrence residents. The manufacturing sector is growing as to number of jobs; 10.6% since 2010. Manufacturing also accounts for one-fifth of all jobs in Lawrence. Lawrence has both durable and non-durable manufacturing operations.

The health care and social assistance sector paid an average annualized wage of $44,356 in 2015. This sector is growing as to the number of jobs and the number of establishments in Lawrence. Although the annualized wage in health care and social assistance is less than the industry-wide average, the wages of a single full-time position in this sector exceed the median household income in Lawrence. Moreover, health care jobs have a career ladder and potential for upward mobility. Northern Essex Community College has built a health care training center in Lawrence pro-

Table II.21. Leading Industry Sectors in Lawrence as to Annual Wages.

Rank	Description	Average Weekly Wages 2014	Annualized Wage (52 weeks)	Growing By # of Establishments	Growing by # of Jobs
1	Information	$1,459	$75,868		
2	Professional and Technical Services	$1,453	$75,556		
3	Public Administration	$1,357	$70,564		
4	Management of Companies and Enterprises	$1,269	$65,988		▲
5	Manufacturing	$1,233	$64,116		▲
6	Construction	$1,212	$63,024		▲
7	Wholesale Trade	$1,188	$61,776		
	Average Income Level for All Industries	$931	$48,412		
8	Finance and Insurance	$929	$48,308		
9	Transportation a Warehousing	$911	$47,372	▲	
10	Health Care and Social Assistance	$853	$44,356	▲	▲
11	Real Estate and Rental and Leasing	$769	$39,988		▲
12	Retail Trade	$670	$34,840	▲	▲
13	Other Services, Ex. Public Admin	$499	$25,948		▲
14	Administrative and Waste Services	$479	$24,908	▲	
15	Accommodation and Food Services	$309	$16,068	▲	
16	Arts, Entertainment, and Recreation	$291	$15,132	▲	▲

Sources: ES202, MA Department of Labor & Work Force Development, McCabe Enterprises.

viding education and training for persons seeking jobs as well as advancement in health care. Lawrence General Hospital (LGH) is the cornerstone of the health sector in Lawrence, and many allied health services, health-related businesses, and social services have located in Lawrence, in part due to LGH's presence.

Retail trade jobs and establishments are both increasing. However, average annual wages for retail trade positions is $34,480. The retail sector provides needed services for residents, as well as entry-level positions for job experience. However, while the wage levels for retail may provide sufficient income for a single adult, or two adults who are both working, average retail trade wages cannot support a family in Lawrence, based on the MIT Living Wage Calculator as well as the Crittenden Women's Union' Economic Independence Calculator.

Market Overview

Lawrence is a growing community as to population, household formation, number of business establishments and number of jobs. This sets the stage well for market conditions that can support growth and development. In the market overview, market conditions for retail, the food industry, office, health care, manufacturing, hospitality and energy are reviewed.

The Retail Market

There are several components to assessing the retail market. One is identifying the retail customer and determining the consumer demand for retail products and services. Another aspect is the demand by businesses for retail locations in Lawrence as measured by retail rents and vacancies. A review of competitive locations for retail is one more key consideration.

Retail Today along Merrimack Street

The Merrimack Study area from South Broadway to South Union today is not a retail district. Nor does Merrimack Street present itself as a retail area to the person passing through. Yet, there are three locales in the district with retail services. New Balance operates a retail factory store featuring athletic shoes and sportswear as part of their facility at the corner of Merrimack Street and South Union. The retail outlet's entrance is on South Union. Although the New Balance outlet is on the first floor, there is a short flight of steps to enter, and there are no exterior display windows for passers-by. New Balance holds an annual "tent sale" which draws customers from a ten-to-twenty mile radius to shop during the tent sale week. The New Balance factory store is a destination retail store.

The second retail location is Parker Street at Merrimack. Men's Wearhouse & Tux has a small 3,400 SF stand-alone building on a pad-site in the parking lot of the former train station at the corner of Merrimack and Parker. The former train station is home to a women's dress store, and several vacant storefronts. The new dress shop features formals and dressy clothes, which could compliment Men's Wearhouse, but there are two different customers for each store. There is also a tattoo parlor on the west side of Parker Street.

The third retail area in the study area is at the western edge by Carver Street and South Broadway. There is a small 8,800 SF retail strip center facing South Broadway on the north side of South Canal Street. This center is known for its adult bookstore. There are several other businesses in this small plaza including a pizza parlor, lingerie shop, nail salon, and beauty parlor, and a vacant storefront. There is a vacant satellite bank building at the southwest corner of Carver and Merrimack. There are used car sales lots along Merrimack Street near Carver, as well.

The retail establishments along Merrimack Street are independent, each drawing their own customers. Merrimack Street does not function as a retail district. New Balance illustrates how a retail outlet can complement a manufacturing facility. The adult bookstore is its own draw, and isolated from the balance of the study area. The reuse of the former train station at Parker and Merrimack has underperformed as a retail center due to a lack of foot traffic, difficulties accessing the parking area from Merrimack Street, and its isolation from other retailers. In addition, there are no nearby adjacent residential customers.

Table II.22. Aggregate Purchasing Power within the Trade Areas.

Drive-Time from Merrimack Street & Route 114	5-Minute	10-Minute	20-Minute
Aggregate Purchasing Power	$1,456,374,108	$3,276,243,761	$11,362,386,116

Sources: Nielsen and McCabe Enterprises.

Retail Market Analysis Definitions

Some definitions of retail market analysis terms that will be helpful when reading this report follow.

Trade Area. The trade area is the geographic area where a business district's customers originate. Although businesses may highlight that they have customers who come from a great distance, the trade area looks at principal sources of customers who patronize the district, not the outliers. Business districts often have a primary or core trade area, as well as a secondary trade area – in other words, there is an inner circle where the majority of customers live or work, and a secondary ring where additional customers reside. A business district's trade area is the sum of its parts. Although each business and store in a district is unique and relies on its own customers, businesses are located within a downtown or shopping center, in part so that they can more easily attract shoppers from the existing customer base that is patronizing their neighbors. Although the trade area for each business may vary, the retail market analysis is concerned with the trade area of the district as a whole. Businesses which draw from a larger trade area can be beneficial for the district as a whole, if the customers from these businesses can be induced to patronize nearby business along Merrimack Street.

Aggregate Purchasing Power. The aggregate purchasing power is the maximum available dollars to be expended on consumer goods by residents within the defined trade area. This is based on the specified trade area of the district.

Consumer Expenditures. The US Bureau of Economic Analysis (BEA) conducts consumer expenditure surveys annually documenting detailed spending patterns as to type of consumer goods. Based on the Consumer Expenditure Survey, the potential likely sales for each business sector can be estimated based on the purchasing power in the trade area.

Retail Opportunity Gap or Sales Leakage. The terms Retail Opportunity Gap or Sales Leakage are frequently used interchangeably. Sales leakage refers to the amount of residential consumer purchasing that is occurring at locations outside and beyond the specified trade area of the business district. Sales leakage represents an opportunity for the sales of this product to be offered by an existing retailer or new establishment in the district.

The Retail Trade Area

For purposes of the market assessment, the retail trade area for the Merrimack Street study area was defined as a five minute drive distance from the central point of the district at 65 Merrimack Street (the corner of Parker and Merrimack). The five-minute drive time distance encompasses much of Lawrence in the primary retail trade area. A ten-minute and twenty-minute drive time trade areas were analyzed as the secondary and reach trade areas. The primary and secondary trade areas as defined by drive-times for the Merrimack Street study area are depicted in Figure II.21.

The residential consumer demand as measured by aggregate purchasing power for the primary trade area of the Merrimack Street study area is $1.4 billion annually. The primary and secondary trade areas combined (the ten-minute drive-time) has a consumer demand of $3.2 billion annually, as noted in Table II.22. This market assessment is focused on the residential retail consumer.

Other markets that retailers can potentially tap include the workers in the study area and the visitor market. Today, there are approximately 600 persons working in the Merrimack Street study area. As the study area is currently configured and the existing retail mix, the potential worker/ customer base is generally not served by the retailers in the immediate district. The Riverwalk, located 2000 feet (0.4 mile) east of the Merrimack Study area, is home to businesses employing over 3000 people. Presently, persons working at the Riverwalk typically drive in, park, go inside and work, and then drive-out at the end of the day. Many workers at the Riverwalk arrive by car exiting off I-495 into the Riverwalk, and leave without traveling westward on Merrimack Street. As the walkability along Merrimack Street is improved and the streetscape enhanced, there is a longer-term potential for prospective retail-related businesses to serve the workers at Riverwalk during their lunch break or following work, particularly if the retail opportunities are located in the eastern portion of the study area.

Although, there are rich historical resources, the Heritage State Park in the downtown area and potential amenities along the Merrimack River, there is no visitor market for the Merrimack Street study area today or in the near future.

Retail Store Opportunities

The retail opportunities analysis for the five-minute, ten-minute and twenty-minute drive time areas is contained in Table II.23 in Appendix 3. The analysis indicates that there is unmet demand for retail goods in several retail sectors, including furniture and home furnishings, nursery/garden center, clothing, shoes,

sporting goods, gifts, and limited-service eating establishments. The potential retail opportunities and stores are based on the primary trade area are based on potential unmet demand, average sales per SF by retail type and typical store size. This is detailed in Table II.23. Projected retail store opportunities were conservatively projected based on the five-minute drive time primary trade area.

Retail Rents

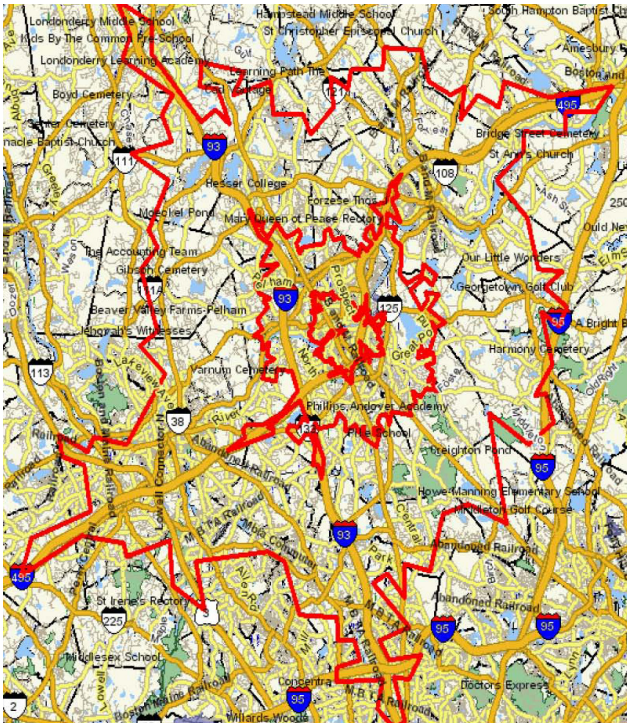
Retail rents in the Lawrence area range from $10.00 to $15.50/SF, depending upon size, location and condition. There are vacant commercial storefronts along Merrimack Street, and in the various business districts throughout Lawrence. Overall retail vacancy rates in Lawrence, however, are low.

Retail Competition

Retail in Lawrence is situated in Downtown along Essex Street, as well as on the commercial corridors in Lawrence's neighborhoods, namely Broadway, South Broadway, South Union Street, and Lawrence Street. Many of retail and service establishments in downtown and in Lawrence's neighborhoods are small independently operated businesses. There are two strip retail centers along Route 114 in South Lawrence, namely the 175,000 SF Plaza 114 and the 50,000 SF Stadium Plaza adjacent to the AMC theaters. The Route 114 Plaza has an 8% vacancy rate.

Figure II.21. Trade Areas.

5-Minute, 10-Minute and 20-Minute Trade Areas for Merrimack Street Study Area.



Source: Nielsen Site Reports.

Table II.23. Retail Store Opportunities in the Five-Mile Drive Trade Area.

Retail Sector	Retail Sales Opportunity	Average Sales/ SF	Potential Supportable SF AF	Number of Stores
Furniture & Home Furnishings Stores	$5,989,527	$320	18,717	1 -- 10,000 SF store
Nursery & Garden Centers	$7,366,640	$330	22,323	1 -- garden center
Cosmetics, Beauty Supplies, Perfume Stores	$1,565,189	$920	1,701	1 -- 1500 SF store
Men's Clothing Stores	$702,041	$465	1,510	1 -- 1000 SF store
Women's Clothing Stores	$1,178,677	$450	2,619	1 -- 1500 SF store
Family Clothing Stores	$3,061,901	$455	6,729	2 -- 3000 SF stores
Shoe Stores	$1,248,793	$405	3,083	1 -- 1500 SF store
Jewelry Stores	$8,500,358	$980	8,674	2 -- 3000 SF stores
Sporting Goods Stores	$4,447,468	$310	14,347	1 -- 10,000 SF store
Gift, Novelty & Souvenir Stores	$2,890,594	$373	7,750	2 -- 3000 SF stores
Limited-Service Eating Places	$6,800,225	$653	10,414	3 -- 3000 SF stores

Sources: Nielsen Site Reports, ICSC, ULI, and McCabe Enterprises.

Nearby retail commercial shopping centers include the North Andover Mall on Route 114 just immediately south of Lawrence, 1.9 miles away from the Merrimack Street study area. The North Andover Mall consists of 232,000 SF and is anchored by Market Basket and Kohl's. It has a 2.5% vacancy rate. The Loop in Methuen on Route 213 is 2.9 miles away, and offers 480,000 SF of retail, restaurants and family entertainment. The Loop is anchored by Stop'n'Shop and Marshall's. Market Basket, Home Depot and Walmart are adjacent to the Loop. Target is across the street. The Loop area is a major retail draw for many Lawrence residents.

Seven-and-one-half miles north of the Merrimack Street study area is The Mall at Rockingham Park in Salem, NH. It is a 1 million SF Simon Properties-managed regional mall with 150 specialty stores and six anchors ranging from Sears, J.C. Penney's to Macy's on Route 28 (the northern extension of Broadway in Lawrence). The Mall at Rockingham is situated along Route 28 which is aligned with commercial pad sites and strip centers beckoning Massachusetts residents to shop in sales tax-free New Hampshire.

The local neighborhood retail and nearby retail shopping centers, such as the Loop and North Andover Mall are major competitive locations drawing customers from Lawrence. In addition, internet shopping is another competitive retail venue. E-commerce nationally accounted for 8.7% of the non-adjusted retail sales in the fourth quarter of 2015, which is an 83% increase since 2000. E-commerce sales have been steadily increasing, approximately 15% per quarter, according to the US Census. In short, there is considerable retail competition.

Food

Places to eat or buy groceries are not visible in the Merrimack Street study area. There are a few eateries on Merrimack Street east of South Union, but none along Merrimack Street or South Canal Street in the study area. There are nearby bodegas and convenience stores along South Broadway and South Union. A coffee truck often services workers on their morning break along Merrimack Street, since there is no coffee shop on Merrimack Street (even though there is a Dunkin Donuts at South Union and Market as well as along South Broadway).

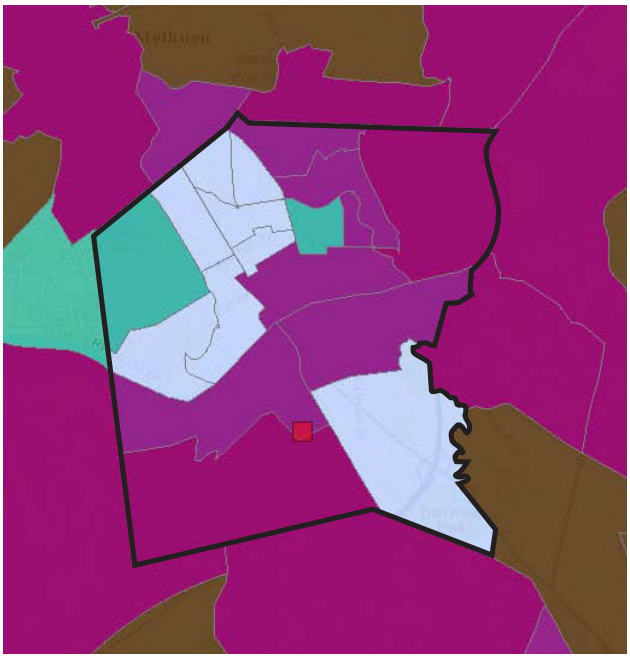
The retail market assessment discussed in the previous section found that there is potential for a 9,000 SF small food/grocery store in the primary trade area for Merrimack Street. Large grocery stores today are at least 50,000 SF, and convenience stores are typically 3,000 to 5,000 SF. So there is insufficient market demand for a full-scale grocery store. Market Basket, is the major regional grocery store chain, serving Lawrence and the Merrimack Valley. It is a regional chain known for being price-competitive for family shopping. Market Basket has a Lawrence store at 700 Essex Street, one mile from the center of the study area, as well as another store at the North Andover Mall on Route 114, just south of the Lawrence/North Andover city line, 1.9 miles away and is served by buses operated by the Merrimack Valley Transit Authority.

The question of whether or not Merrimack Street is part of a food desert was investigated. Food deserts are areas that lack access to affordable fruits, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a healthy diet. Although the Merrimack Street study area meets the technical definitions of a food desert, the proximity of Market Basket's two stores and nearby bodegas, and the lack of consumer market identified in the retail market assessment, make siting a major grocery store along Merrimack Street improbable. Moreover, the Mayor's Health Task Force is working with the small neighborhood grocery stores and bodegas to offer fresh fruits and vegetables and healthier food options for nearby residents. A small fresh fruit and vegetable purveyor may be an opportunity for the future land use in the study area.

Food Desert

The USDA working with the Healthy Foods Financing Initiative has defined a food desert on a census tract level. For urban areas, a census tract that is considered a low-income tract with at least 500 people or 33 percent of the population living more than ½ mile ½ mile from the nearest supermarket, supercenter, or large grocery store. A large grocery store or supermarket is defined as a grocery store with at least $2 million of annual sales. Low income census tracts are defined as a tract with either a poverty rate of 20 percent or more, or a median family income less than 80 percent of the State-wide median family income; or a tract in a metropolitan area with a median family income less than 80 percent of the surrounding metropolitan area median family income.

Table II.22. Food Deserts in Lawrence.

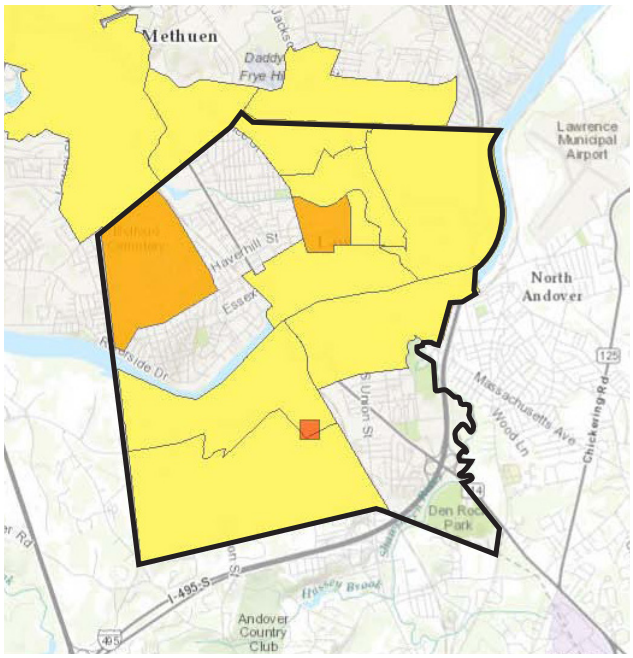


USDA Food Deserts in Lawrence, MA

Date: 9/8/2015 Source: USDA Economic Research Service, ESRI. For more information: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx

- Low Vehicle Access
- Low Access half and 10
- Low Access 1 and 20
- Low Income

Table II.23. Food Deserts in Lawrence: Low Income & Low Access Using Vehicle Access.



Food Deserts: Low Income & Low Access Using Vehicle Access

Date: 9/8/2015 Source: USDA Economic Research Service, ESRI. For more information: http://www.ers.usda.gov/data-products/food-access-research-atlas/documentation.aspx

- LILA using Vehicle Access
- LILA at 1/2 and 10

Office

Lawrence is considered part of the North Route 495 suburban office market in metropolitan Boston. Given, Lawrence's close proximity to Salem, New Hampshire, which functions as part of the Greater Lawrence area, real estate leasing activity in southern New Hampshire influences the Lawrence market as well.

The North/Northeast Route 495 office market is comprised of approximately 7 million SF of office space. Some commercial brokers define the north Route 495 market more broadly to stretch from Amesbury to Acton/Littleton, which encompasses approximately 33 million SF of office space (Class A and Class B space). The North/ Northeast Route 495 office market is the softest office market in eastern Massachusetts. The effective vacancy rate hovers around 24%. Salem NH has an inventory of approximately 500,000 SF of office space, with an 18% vacancy rate.

Asking rents for the North/Northeast Route 495 office market range from $17.90/SF to $21.00/SF. In Salem, NH asking rents for office space are in the $18.50 to $22.00/SF range.

Lawrence has an extensive inventory of Class B office space in older mills. Several large mill buildings in Lawrence, such as the Riverwalk on Merrimack Street, the Everett Mill on Union Street and the Bell Tower Mill on Island Street, are actively leasing office space. In addition, there are additional existing mills awaiting refurbishment and re-use, such as the Stone Mill. Just ten minutes (3.7 miles) east of the Merrimack Street Study area is 1.5 million SF of available office/lab/manufacturing space at Osgood Landing (the former Lucent (AT&T) office and manufacturing center) in North Andover, near the Lawrence Municipal Airport.

Likely tenant types for the existing office space include price-sensitive users, back-office space, and businesses needing large volumes of office space, unavailable in or close to Boston.

The focus in the suburban office market has been to upgrade and transform existing office product into mixed-use areas with urban amenities. Projects such as the redevelopment of Third Avenue in Burlington, and the City Point development in Waltham exemplify this focus on incorporating mixed-uses and urban amenities to suburban office developments. The New England Office Park in Burlington off Route 128 is being re-branded to "The District." Lawrence, actually already has the elements of the urban mixed-use experience now being incorporated into the redevelopment and repositioning of suburban office areas. Competitive office space now features walkable areas, complete streets with transit and room for bicycle-commuting, as well as restaurants and other life-style amenities.

21st Century Office Market Users

Office users in the current market are looking for a number of infrastructure and amenities in space selection:

- Move-in Ready Space
- Hi-speed Internet
- Easy access to work force
  - Transit
  - Bike / Walk-to-work
  - Parking
- Amenity-rich area
  - Restaurant/ Café
  - Walking trails
  - Services for employees
    - Child Care
- Green, Sustainable Space with no premium

Characteristic users include:

1. Large Corporate Single-Users
   - Will consider new construction, build-to-suit
2. Small-and-Mid-Size Users
   - Move-in Space
   - Hi Speed, Reliable Internet connection (Fiber preferred)
   - Ability to grow (contract)
3. Start-Ups
   - Shared. Co-Work Space
   - A Community of Like-Minded Users/ Innovation Eco-system
   - Business Support Services

The soft market and close proximity of large amounts of Class B office space and newly refurbished office mill space makes development of land for office space along Merrimack Street a long-term prospect. The market place needs to absorb much of the considerable inventory of available office space in the North/Northeast Route 495 market place, before new office construction in the northeast Route 495 market, including Lawrence, becomes viable. User-specific development deals will continue to occur.

Health Care and Office Space

Medical and health care providers often require specialized office space with more plumbing for individual exam rooms and laboratory spaces. As such, medical and health care providers generally pay a premium, $1.00 to $5.00/SF, over general office space rents. In addition, the vacancy rate for medical office space is typically lower.

Overall, the projections for the need for medical office space is strong, based on the aging baby boomer and aging millennial population over the next twenty years. There are two periods in one's life that an individual is a typically a large consumer of health care services, that is childhood, and 55 years and older. Over thirty percent of Lawrence residents are under 18 years of age and hence are major health care consumers. Over one-quarter (27.3%) of Greater Lawrence residents are 55 years of age or older today, and that proportion of aging residents is slated to increase. The overall Boston/eastern Massachusetts market is ranked nationally as one of the best markets for medical office space, given the high proportion of aging baby boomers and millennials.

The vacancy rate for medical office space in the larger Boston metro area according to Colliers International is 5.5% with average rents of $21.68/SF.

Lawrence since 2010 has experienced job growth in the health care and social assistance center. Health care jobs in Greater Lawrence expanded 2.3% in the past five years. As health care continues to expand, there will be a need for additional medical office space in Lawrence. Since medical offices often use state-of-the-art equipment, some new construction may be warranted.

Industrial

There are three types of industrial space, namely manufacturing space, flex/R&D (R&D stand for research and development), and warehousing space. In today's environment, industrial users prefer single-floor, ground level space with loading. Increasingly, higher clear spans and ceiling heights are being required for modern applications of all classes of industrial space. Manufacturing space is generally designed to have a minimum of Phase 3 electrical services and flooring which can support heavy machinery used in production facilities.

Figure II.24. The Helfrich Brothers Boiler Works complex on Merrimack Street.

Flex/R&D space is generally the most expensive. A flex building is an industrial building typically located in an industrial park of industrial neighborhood where a portion of the building can be used flexibly for office space. Generally about 25% of a flex building is used for office space. Flex space can be used for a variety of purposes such as R&D, storage, office, lab, light manufacturing, high tech uses, as well as data or call centers.

Warehousing includes general storage facilities as well as storage/distribution facilities. There are also types of specialized warehousing, including refrigerated and climate controlled facilities.

The industrial market in the Greater Boston metropolitan market is strong. Manufacturing space vacancy rates have reached the lowest rate since 2001, and now hover around 10% for the overall metropolitan region. The vacancy rate for Route 495 North is approximately 11.5%.

Overall, industrial rents for all classes of industrial buildings have increased and are currently in the range of $6.05/SF to $6.50/SF, with flex/R&D space rents in the North of Boston market ranging up towards $9 to $9.70/SF. There has been positive absorption of the vacant industrial space in the past year.

There is strong demand for modern industrial facilities. There have been several build-to-suit industrial projects in the Greater Boston metropolitan area in the past year, principally in the South Route 495 and south suburban markets. 450,000 SF of new industrial space is being constructed in the I-495 North market. Some developers are beginning to build speculative industrial space in locations with highly competitive utility rates.

The priorities for industrial users include proximity and access to vendors, suppliers and customers; access to a skilled labor force; easy truck access from interstate highways, as well as availability of reliable, high-speed internet. Railroad spurs can be an added benefit, depending upon the particular business sector. Many manufacturers prefer low operating cost locations, with particular attention to the reliability and cost of utilities – water, sewer and electrical. Competitive energy pricing is a key consideration. Many industrial users, including food manufacturers have been choosing locations served by municipal utilities which often have lower electrical rates.

Massachusetts' leadership role in medical devices, life sciences and bio-tech/bio-manufacturing establishes a strong pipeline for specialized manufacturing operations. The demand for clean rooms and wet labs, often required as part of the medical device and life sciences manufacturing, will likely drive demand for new manufacturing space. Lawrence is a bronze certified bio-ready community with the Massachusetts Biotechnology Council. Lawrence's health care education and biotechnology curricula at Greater Lawrence Technical High School, as well as continuing health careers education at Northern Essex Community College can prepare Lawrence residents for work in the expanding types of manufacturing in Massachusetts.

Table II.24. Growing Industrial Sectors in Lawrence.

Industry Sector	Establishment Growth, 2010 to 2014	Employment Growth, 2010-2014	Average Annual Wages 2014	Persons Employed
Computer & Electronic Product Mfg.	20.0%	20.1%	$94,744	842
Food Manufacturing	6.7%	17.7%	$33,644	737
Electronic Instrument Mfg.	33.3%	37.4%	$114,348	415
Fabricated Metal Product Mfg.	-22.2%	13.9%	$51,480	401
Printing	-11.1%	6.3%	$51,480	425
Coating, Engraving, & Heat Treating Metal	-44.4%	20.4%	$33,800	189
Plastic Products	New firm	New Growth	$62,868	189
Chemical Mfg.	-12.5%	-10.4%	$75,452	294
Architectural & Structural Metals	0%	58.3%	$56,264	57
Misc. Manufacturing	-33.3%	12.8%	$42,068	168

Source: ES 202, MA Department of Labor and Workforce Development, McCabe Enterprises.

The growing industrial sectors as to jobs in Lawrence are computer and electronic product manufacturing, food manufacturing, electronic instruments, and metals (coating/ engraving and heat metal, and the architectural and structural metals sector). The growth in number of firms and employees is detailed in Table II.24. These leading fields each have supporting educational curriculums at the Greater Lawrence Technical High School.

The education and training preparing youth for careers in manufacturing, whether it is food manufacturing, electronic instruments, metals, biotechnology or computer product manufacturing, is part of a manufacturing eco-system that makes the local environment more conducive for like manufacturers to locate in Lawrence and the surrounding area. A manufacturing cluster is the core of a manufacturing eco-system. Other elements of the manufacturing eco-system includes large companies in the sector as well as small and medium enterprises (SMEs); university research; prototyping labs either as part of higher education or private labs; professional resources supporting the field, and the local manufacturing extension partnership (MEP), such as MassMEP. A manufacturing eco-systems stimulates and enables growth and expansion in the industry sector. Forward-thinking businesses and manufacturers consider the local eco-system for their business during site selection. Lawrence and the Merrimack Valley is a favorable environment for manufacturing.

The Hotel Market

Lawrence is home to one hotel property, namely a Holiday Inn Express located on Route 114 at the southern edge of the City. This hotel was built in 1987 and consist of 126 guest rooms. The City of Lawrence in fiscal year 2015 collected $165,877 in local option room taxes. There are 1,356 keys (or guest rooms or suites) located in the eleven hospitality properties located in Lawrence, Andover and Methuen. Most of the hotels, including long-term stay hotels, are located in Andover, many near the Andover/Lawrence line. The Andover/Northeast Boston suburban market encompasses 6020 hotel rooms and comprises about 11% of the lodging supply in metropolitan Boston in 2014.

The Boston hotel markets is amongst the strongest markets in the US at present with occupancy rates ranging for Boston/Cambridge properties at 81.5%. For the overall Boston metropolitan area, hotel occupancy rates in 2014 were 75.4%. Nationally, hotel occupancy rates were 64.4% in 2015 according to the Pinnacle Report. The suburban hotel occupancy rate for this same period was 70.8%.

The Andover/Northeast suburban market had 6020 hotel rooms in 2014, comprising 11% of the metropolitan area's lodging

Table II.25. Hospitality Properties in Andover, Lawrence, Methuen.

Name	Address	Keys
Holiday Inn	224 Winthrop Avenue, Lawrence, MA 01843	126
Andover Inn	4 Chapel Avenue, Andover, MA 01810	30
Courtyard Boston Andover	10 Campanelli Drive, Andover, MA 01810	146
Days Inn Hotel Boston Methuen	159 Pelham Street, Methuen, MA 01844	128
Doubletree by Hilton	123 Old River Road, Andover, MA 01810	293
Homewood Suites by Hilton, Andover/Boston	4 Riverside Drive, Andover, MA 01810	82
La Quinta Inn & Suites	131 River Road, Andover, MA 01810	168
Passport Inn	487 Lowell Street, Methuen, MA 01844	24
Residence Inn Boston Andover	500 Minuteman Road, Andover, MA 01810	120
Sonesta ES Suites	4 Tech Drive, Andover, MA 01810	133
Springhill Suites, Andover Boston	550 Minuteman Road, Andover, MA 01810	136
TOTAL KEYS		**1,356**

Source: McCabe Enterprises.

supply. One quarter of the rooms in the Northeast suburban market are located in the Greater Lawrence (Andover-Lawrence-Methuen) sub-market.

RevPar or revenue per available room has been increasing in the suburban Boston market from a low of $55.43 in 2009 to $87.14 in 2014. Nationally, the RevPar rate for 2014 was $74.28. Average daily hotel rates in suburban Boston in 2014 were $122.43. Nationally, the average room rate was $127.39. Overall, the hotel market in suburban Boston can be characterized as good.

Real Estate Taxes

For commercial tenants, leases are often triple net (NNN), meaning that the tenant is responsible to pay rent, as well as taxes, insurance and property maintenance. The exact terms are dependent on the specifics in the lease as negotiated between the parties. As a results, the comparative cost of real estate taxes becomes a factor in the final evaluation of potential site locations. Lawrence has one of the highest commercial tax rates in the area, with the exception of Lowell, which is slightly higher.

Table II.26. Lawrence and Nearby Communities FY2015 Real Estate Tax Rates.

Municipality	Residential	Commercial
	Rates are Per $1000 of valuation	
Andover	$14.97	$24.77
Lawrence	$15.12	$32.43
Methuen	$14.60	$25.57
North Andover	$14.39	$20.29
Salem, NH	$21.39	$21.39
Amesbury	$20.54	$20.54
Chelmsford	$18.70	$18.70
Haverhill	$15.35	$26.80
Lowell	$15.48	$32.46
Newburyport	$13.34	$13.34
Tewksbury	$16.37	$27.62

Sources: MA Department of Revenue; Town of Salem, NH and McCabe Enterprises.

Energy

Electric rates in New England are generally higher than the balance of the country. Businesses are seeking approaches to reduce and contain their energy costs. In Massachusetts, the average industrial rate payer is paying 13.34 cents/kWh, compared to 7.32 cents/kWh in the US overall. As a result, high-energy using businesses often are looking for locations where power is provided by a municipal utility, such as in Taunton, Braintree or Danvers, as well as thirty-eight other municipalities. The challenge of competitive electric rates for business is exacerbate as several power generation sources serving Massachusetts and the electric customers have recently or will soon be going offline, including Pilgrim Nuclear Power Plant in Plymouth. The recent drop in oil prices has enabled investor-owned utilities to offer more competitive electric rates over the past winter season. Table II.27 illustrates the challenge of electric rates in Massachusetts and New England.

Table II.27. Electric Rates.

	Residential	Industrial	All Sectors
	Cost Per kWh in cents		
Massachusetts	17.99	13.34	16.11
New England	18.06	11.98	15.74
US	10.90	7.32	10.86

Market Summary Overview

A short synopsis of market conditions in Lawrence and for the Merrimack Street study area follows.

Table II.28. Market Summary Overview.

Use Type	Current Market	Outlook	
Industrial	Strong; $6/sf rents; some new speculative warehousing/ manufacturing	Positive	Major segments: food processing, electronic and computer-part manufacturing
Office	Soft – I-495 North office market softest office market in Boston metro; Rents $ 18 to $21/SF	Soft	Absorption of existing vacancies needed
Hotel	Good: Occupancy and Room Rates have "recovered" from Recession	Positive; Office market influences week day occupancy	11 properties with over 1400 keys. Competitive landscape.
Retail	Average: current market rents $12 to $15/SF Retail opportunities strongest in apparel, general merchandise, sporting goods. Weak in restaurants.	Dynamic; competitive; smaller footprints favored	Need major traffic generators to bring customers. Market demand can support small retail stores.
Assisted Living	Lawrence Housing Needs Study indicates a severe need for affordable elderly housing with support services. Assisted living with continuum of care options is growing overall.	Positive	3 nursing facilities in City with 263 beds; 5 more within 5 miles with 621 beds.
Health	Health care and medical-related services is a growing segment. Health office rents are higher than general office.	Positive	

3. The Canal and River

Waterfront Infrastructure

There is little waterfront infrastructure along the south bank of the Merrimack River in the study area. The Greater Lawrence Sanitary District maintains a CSO outfall station on the river just east of South Broadway. At present, there is no official direct access to the river.

In addition to the three major bridges spanning the Merrimack River, the O'Leary Bridge at South Broadway, the Casey Bridge at Amesbury and Parker Streets, and the Duck Bridge at South Union, there is an abandoned Pan Am Railway bridge. The former rail bridge is slated to become a multi-use path/ rail trail becoming a re-purposed piece of infrastructure.

The South Canal is the other water body in the study area, extending nearly the entire length of the study area. The South Canal has granite retaining walls on both sides of the canal, and there remain residual hydro-power infrastructure apparatus along the South Canal. There are several bridges crossing the South Canal linking Canal Street and Merrimack Street, including rail, pedestrian, and vehicle. Most are impassable and unsafe. They provide glimpses into an industrial past. The westernmost bridge provides vehicle access to the former, now five-ravaged and partially demolished Merrimac Paper site. The bridges spanning the South Canal are privately owned.

The Merrimack River Bank

The south side of the Merrimack River forms the northern boundary of the study area. There is a fairly steep change in elevation from the South Canal site and the actual rive. The Greater Lawrence Sanitary District owns much of the adjacent land to the river, which is the location of a major wastewater transmission line. Large granite slabs cover the line and form an informal, de facto path. This informal path is approximately four to five feet below the elevation of South Canal Street and Merrimack Streets. The southern bank is invisible from the public ways.

The Casey Bridge (Amesbury Street) at the southern bank provides shelter for homeless persons. The number of homeless persons congregating and camping underneath the bridge has been steadily increasing. Lawrence's Office of Planning & Development is actively working on housing for homeless providing a much needed housing alternative. This will enable the City to relocate the homeless population from under the Casey Bridge.

Figure II.25. The canal looking east from Parker Street.

Figure II.26. Historic rail crossing in disrepair.

Figure II.27. Intersection of Merrimack and South Canal St.

Figure II.28. Overgrown path along the Merrimack River.

4. Transportation and Infrastructure

Transportation, Circulation and Access

The Merrimack Street Phase 2 study area is a multi-modal transportation area. Merrimack Street is the sole through-street extending from east to west with five intersections. Three of the intersections with Merrimack Street, namely South Union, Route 114 (Parker Street), and South Broadway, each correspond with one of the three bridge crossing the Merrimack River, namely the Duck Bridge, the Casey Bridge and the O'Leary Bridge respectively. These three bridges connect South Lawrence and the Merrimack Street Phase 2 Study Area with Downtown Lawrence.

The Merrimack Street Phase 2 Study Area has good access to Interstate 495, the circumferential interstate around the Boston metropolitan region extending to New Hampshire and Maine, circling around the greater metro area and then southward to Cape Cod, with connections to the MassPike for westbound travel. The Merrimack Street area has four easy entrances to I-495: exit 44 at Merrimack Street; exit 43 at Loring Street / Massachusetts Avenue; exits 42 A and B at Route 114; as well exits 41 A and B at Route 28. Interstate 93 is less than 3 miles to the west of Merrimack Street area, with good access via I-495. The Merrimack Street commercial and industrial area has excellent highway and interstate proximity.

In addition to interstate roadways, the Merrimack Street study area has excellent proximity to aviation facilities and rail. Lawrence Municipal Airport is two miles east along Merrimack Street. Lawrence Municipal Airport is a general aviation facility with a control tower and two runways, a 5000' x 150' runway and a 3900' x 100' runway. Lawrence Municipal Airport principally serves private planes, single and multi-engine for corporate activity, recreational flying, flight training, emergency medical care and law enforcement. Lawrence Municipal Airport is a reliever airport for Boston's Logan International Airport and is classified as a primary airport in Massachusetts.

Situated at the corner of South Union and Merrimack Streets is the McGovern Transportation Center, that includes an 895 car parking garage, and is the stop for the MBTA's commuter rail service to and from Boston extending to Haverhill. There are thirteen inbound and another thirteen outbound trips (total twenty-six trips daily) stopping in Lawrence on weekdays. The weekday Lawrence-Boston service includes inbound trains to Boston leaving Lawrence starting at 5:15 am and the last train leaving Lawrence at 11 pm on weekdays. Return trips to Lawrence leave Boston at 7:35 am arriving in Lawrence at 8:35 am and continuing throughout the day with the last train leaving Boston just after midnight at 12:10 am and arriving in Lawrence at 1:07 am.

Figure II.29. Regional Connectivity.

Regional connections to rail, highway and air transportation.

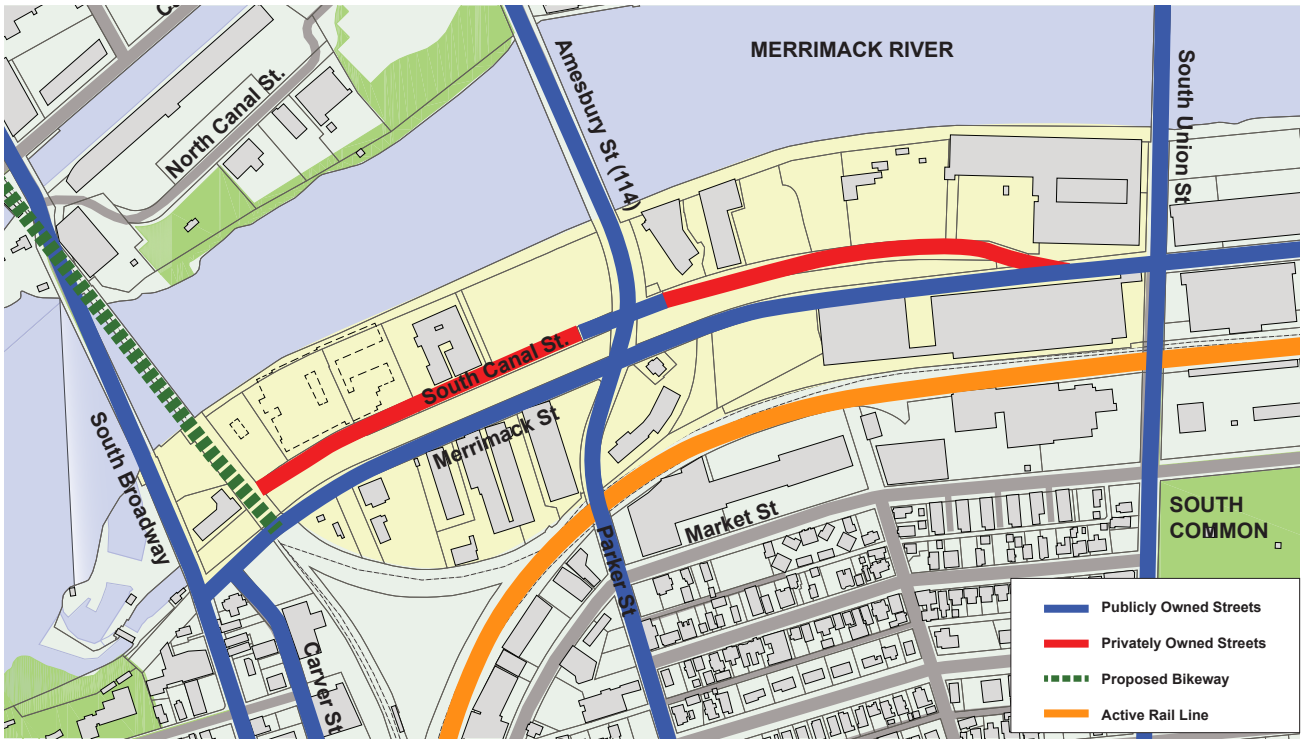
Figure II.30. MVRTA serves the Lawrence area.

Figure II.31. Proposed rail trail would traverse the river.

Saturday and Sunday commuter rail service is at a lower frequency with six inbound and outbound trips each way (total twelve trips each weekend day). Weekend service from Lawrence to Boston starts with the first inbound train leaving Lawrence at 7:27 am and the last train pulls out of Lawrence at 10:10 pm. Trains from Boston to Lawrence on the weekends leave Boston starting at 8:40 am arriving in Lawrence at 9:35 am. The last weekend train leaves Boston at 11:30 pm, arriving in Lawrence at 12:25 am. A taxi stand is also at the McGovern Transportation Center.

The Merrimack Valley Regional Transit Authority (MVRTA) operates buses serving the McGovern Transportation Center, although the MVRTA's hub, the Buckley Transit Center is located north of the Merrimack River in Downtown Lawrence. A few MVRTA buses regularly stop at the McGovern Transportation Center, namely Route 33 which serves South Lawrence-North Andover and the MVRTA's Boston Commuter bus service. Seven MVRTA bus line routes touch the Merrimack Street Phase 2 Study Area, traveling along South Broadway, Route 114 and South Union with connections to South Lawrence neighbor-

Figure II.32. Existing Mobility Network.



Mobility network: roads, rail and proposed bike-way.

hoods, Downtown, the Buckley Transit Center, Andover, and North Andover. In some cases, portion of the bus routes immediately north and south of Merrimack Street is designated as a no-stop area along the bus route. Although Merrimack Street is an employment area, this "no stop" policy makes the transit riders' direct access and walk to work destinations longer and less hospitable, particularly in inclement weather. There are no designated bus stops in the Merrimack Street Phase 2 study area. No MVRTA bus service travels directly on Merrimack Street between South Broadway and South Union.

The railroad tracks for the MBTA commuter rail service stopping at Lawrence's McGovern Transportation Center form the southern edge of the Merrimack Street Phase 2 Study Area. This rail line is part of the PanAm Railways freight system. PanAm Railways maintains right-of-way rights to use the rail line which is owned by the MBTA. Both commuter rail and freight utilize this active rail line that runs parallel to most of Merrimack Street, entering the area from the south, east of Carver Street. There are several freight rail sidings serving properties along Merrimack Street, including the B & D Advanced Warehousing at South Union and Merrimack Street. PanAm's Manchester-Lawrence branch which extends northward spanning the Merrimack River is an abandoned rail line. A feasibility study is underway to transform this abandoned Manchester-Lawrence rail corridor into a bicycle rail trail, which would connect with Lawrence's existing network of bicycle paths. At present, there are no other bicycle amenities within the Merrimack Street Phase 2 Study Area. The City of Lawrence has adopted a complete streets policy.

The two minor intersections are at Carver Street on the western edge of the Study Area and South Canal Street at the eastern edge. The Carver Street intersection is a T-intersection where Carver Street's northern terminus is at Merrimack Street. Carver is a short street spanning two blocks between Salem Street and Merrimack Street, and is often used as a short-cut. South Canal Street intersects Merrimack Street functioning almost like a slip lane or driveway veering westerly off the north side of Merrimack Street approximately 250 feet east of South Union. South Canal Street is unimproved in parts and functions as an access road to the properties on the north side of Merrimack Street. The remnants of pedestrian, rail and vehicular bridges spanning the South Canal which once connected South Canal Street and Merrimack Street remain.

Pedestrian circulation is limited in the Merrimack Street Phase 2 Study Area, in part due to a lack of pedestrian-oriented destinations as well as a lack of bus stops, and nearly no pedestrian amenities. There is a sidewalk that runs along the north side of Merrimack Street from South Canal Street westward to South Broadway. The sidewalk on the south side of Merrimack Street runs from South Broadway eastward to mid-block between Parker and South Union. The B&D Advance Warehousing facility has loading facilities which are frequently used that are directly on Merrimack Street, and there are at present no pedestrian accommodations. New Balance also has loading areas directly facing Merrimack Street. However, most New Balance shipping and receiving occurs off-street.

Traffic and Safety

Merrimack Street is considered a minor arterial roadway. Traffic counts indicates that traffic volumes have been slowly but steadily increasing over the years, with an average rate of increase between 1 and 1.5 percent annually. Most of the traffic count data from other sources (MassHighway, Merrimack Valley Planning Commission and private engineering firms) have focused on peak morning and afternoon rush hour volumes. This traffic counts at times overlook the tractor-trailer truck traffic in the Merrimack Street Phase 2 Study Area which frequently moves

Figure II.33. Parker at Merrimack Streets, looking north.

Figure II.34. Merrimack at South Canal Streets, looking west.

Table II.29. Merrimack Street Study Area Crash Data Summary by Intersection.

Intersection/ Year	Total	Injury	Fatal	PDO*	Rear-End	Angle	Head-on	Sideswipe (Same Direction)	Sideswipe (Opposite Direction)	Bicycle	Pedestrian	Fixed Object	Unknown
Merrimack Street & Parker Street													
2011	10	1	0	9	3	5	0	1	1	0	0	0	0
2012	9	2	0	7	4	2	0	2	0	0	0	0	1
2013	7	2	0	5	3	2	1	0	0	0	0	1	0
Total	26	5	0	21	10	9	1	3	1	0	0	1	1
Merrimack Street & S. Union Street													
2011	3	1	0	2	1	0	0	1	0	1	0	0	0
2012	4	1	0	3	2	2	0	0	0	0	0	0	0
2013	9	3	0	6	4	4	0	0	0	0	0	0	1
Total	16	5	0	11	7	6	0	1	0	1	0	0	1
Merrimack Street & South Broadway													
2011	3	1	0	2	3	0	0	0	0	0	0	0	0
2012	7	0	0	7	3	2	1	1	0	0	0	0	0
2013	3	2	0	1	1	0	1	0	0	0	1	0	0
Total	13	3	0	10	7	2	2	1	0	0	1	0	0
Other Locations													
2011	1	1	0	0	0	0	0	0	0	0	1	0	0
2012	4	1	0	3	1	1	0	1	0	0	0	1	0
2013	7	2	0	5	2	4	0	1	0	0	0	0	0
Total	12	4	0	8	3	5	0	2	0	0	1	1	0
Study Area Total	67	17	0	50	27	22	3	7	1	1	2	2	2

Source: Pare Corporation and MassDOT.

**PDO is Property Damage Only.*

during off-peak times. Since several of the businesses along Merrimack Street are involved in shipping, distribution and warehousing, there is active truck volumes. CLASS also operates a fleet of small buses and vans transporting sheltered workshop employees and participants to its center on Merrimack Street.

Safety along Merrimack Street has been steadily improving even as traffic volumes have slowly increased. The most recent crash data impacts are noted in Table II.29. Table II.31 reports comparative crash data for Merrimack Street since 2005. Traffic safety is clearly improving. There are fewer accidents involving personal injury along Merrimack Street. Although accidents involving a bicyclist and pedestrian accident occurred in 2013, one at South Union in the case of the bicyclist, and the one with the pedestrian at South Broadway. Despite the incidents with the bicyclist and pedestrians, the intersections of Merrimack and South Broadway and Merrimack and South Union have noticeably improved from a safety perspective. This may be in part due to the recent reporting period, 2011-2013 including construction periods affecting the bridges that feed traffic to South

Table II.30. Traffic Volumes.

Street	Location	Year	Volume (ADT)
Merrimack Street	At Parker Street	2011	7,808
Merrimack Street	West of Parker	2004	7,319
Merrimack Street	East of Parker	2004	6,600
Merrimack Street	East of South Union	2011	14,158
Merrimack Street	West of South Union	2004	8,600
Merrimack St.	West of South Union	2004	9,654
Merrimack Street	300' East of South Union	2001	12,100
Merrimack St.	South Broadway	2009	4,465
Merrimack Street	South of Route 28 (South Broadway)	1999	1,500
South Broadway	At Shattuck	2015	17,128
South Union	At Salem Street	2002	14,100
Parker Street	At Merrimack	2011	38,180*

Sources: MassHighway; Merrimack Valley Planning Commission; TEC

** Traffic volumes in 2011 were likely higher on Parker Street since this was during reconstruction of the Duck Bridge which was closed from July 2010 through November 2012 and the rehabilitation of the O'Leary Bridge (also referred to as the Broadway bridge) , which reduced traffic across the bridge to one lane.*

Table II.31. Merrimack Street Intersection Accident Data: Comparison Over Time.

Time Period	Intersection / Year	Total Accidents	Type of Damage			
			Injury	Fatality	PDO	Not Reported
2011-2013	Merrimack & S. Broadway	13	3	0	11	
2005-2007	Merrimack & S. Broadway	20	10	0	8	2
2011-2013	Merrimack and Parker	26	5	0	21	
2007-2009	Merrimack and Parker	27	4	0	17	
2005-2007	Merrimack and Parker	27	7	0	15	5
2011-2013	Merrimack & S. Union	16	5	0	11	
2005-2007	Merrimack & S. Union	35	13	0	19	3

Source: Pare Corporation, with data from MassDOT, MVPC, and Merrimack Street Functional Report.

**PDO is Property Damage Only.*

Figure II.35. South Canal Street, east toward South Union.

Broadway and South Union, or in improvements made in the bridge approaches during the reconstruction of the Duck Bridge and the upgrade of the O'Leary Bridge.

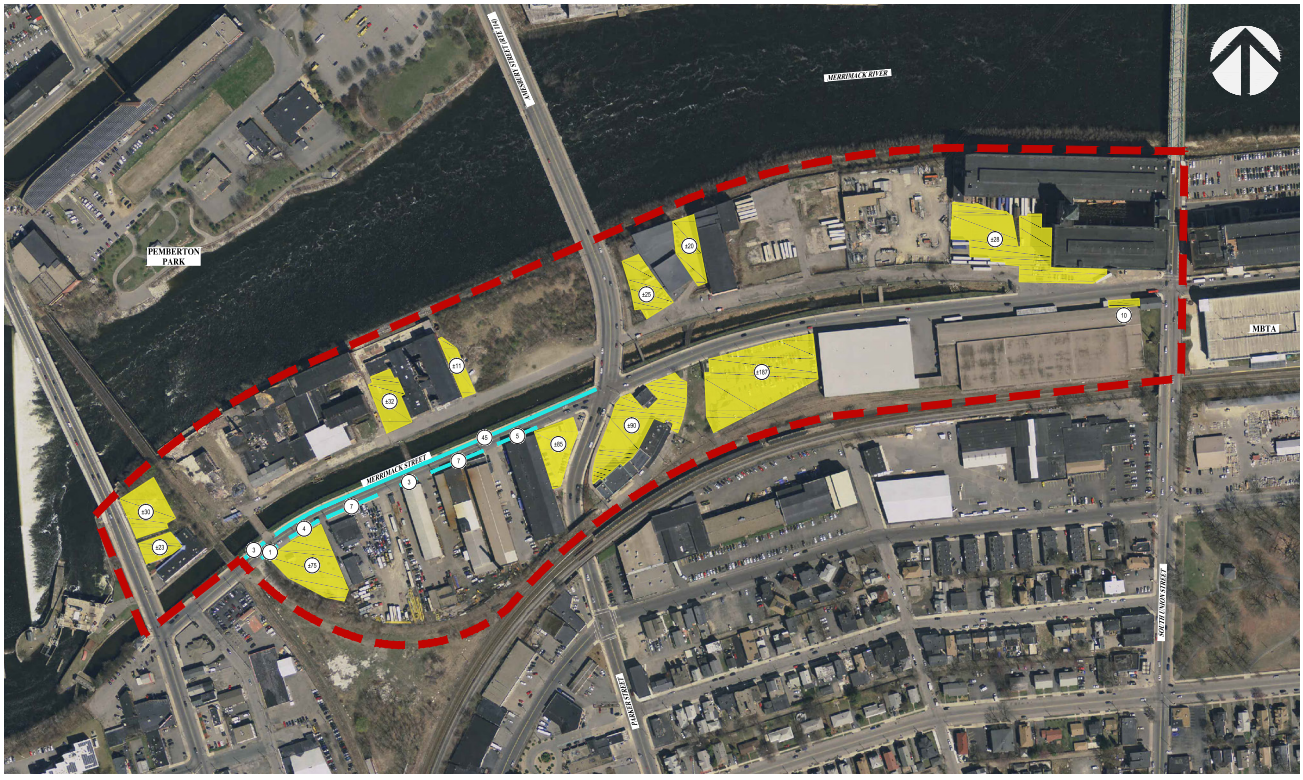
Thirty-nine percent of the accidents in the 2011-2013 period occurred at Merrimack and Parker Streets. This intersection was the site of 29.4% of the personal injuries and 42% of the accidents entailing property damage only. Rear-end accidents were the most commonly reported type of accident at Parker and Merrimack Street.

Parking

There are approximately 691 public and private parking spaces in the Merrimack Street Study area as shown in Figure XX. The approximately 75 public parking spaces are on-street parking along Merrimack Street between Carver and Parker Streets. There are approximately 616 parking spaces on privately-owned property for use by the business and their customers. Most parking, both public and privately owned, has limited striping and space delineation, so the exact number of spaces is approximate. There is one parking structure in the study area, at the southwest corner of Merrimack and Parker with in/out entries to the parking deck on Merrimack and on Parker for the lower level. The McGovern Transportation Center features a large public parking structure owned and managed by the MBTA at the corner of South Union and Merrimack Streets just east of the study area. New Balance has a long-term lease for parking at the McGovern Transportation Center, and its surface employee and customer parking lot on the west side of South Union Street is typically full. During the work day, New Balance sometimes needs to rely on "cram" parking and uses a valet to maximize space for employee parking in its surface lot on South Union (just beyond the study area).

Parking also occurs along both sides of South Canal Street, dependent upon road and weather conditions, and parking de-

Figure II.36. Existing Available Parking.



Public Parking Lots (approx. 75 spaces) Private Parking Lots (approx. 616 spaces)

Figure II.37. Merrimack Street, east toward Parker Street.

mand. Demand for spaces along South Canal is primarily occurring on the weekend for church services.

In aggregate, there is sufficient parking for current users in the district. However, employees at CLASS have voiced a need for additional parking. As existing businesses grow, hire more people, and new development occurs, there will be a need for additional parking. However, a shared-use parking strategy could accommodate most present-day parking demand.

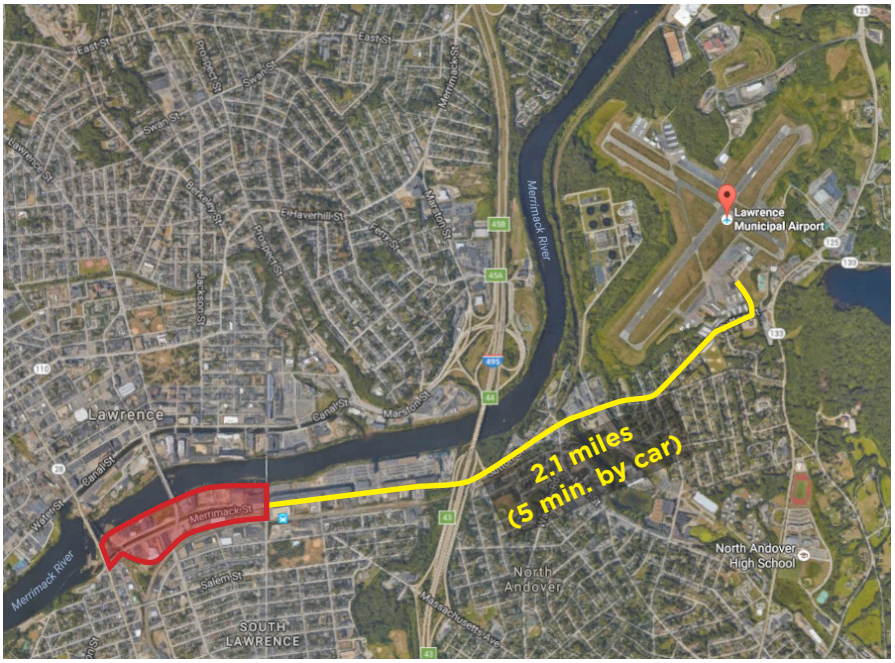
Aviation

The Lawrence Municipal Airport (LWM) is located one-and-one-half miles directly east of the study area along Merrimack Street in North Andover. LWM is a general aviation airport with two runways and functions as a reliever airport to Boston's Logan International Airport. The longest runway at Lawrence is 5001 feet by 150 feet wide. The second runway extends 3900 feet by 100 feet. Private corporate and business planes use the Lawrence General Airport along with flight training services, emergency medical care, recreational flying, and law enforcement operations.

Lawrence Municipal Airport is one of three reliever airports in eastern Massachusetts. The other two being Beverly Municipal Airport and Norwood Municipal Airport. LWM is the closest airport to a MBTA commuter rail station with connections to Boston (a 45 to 55 minute commuter rail trip). Hanscom Field in Bedford is part of the military's Hanscom Air Force Base, and is a general aviation airport serving the greater Boston/Route 128 area. Small aircraft pilots find LWM more competitively priced as to landing fees than Hanscom Field.

Access to an airport is an economic development consideration, particularly as to same day delivery or shipping of specialized parts for business-to-business transactions. Easy airport access can be a site selection factor for executive staff who travel frequently. Lawrence Municipal Airport is an important albeit frequently overlooked, asset to the overall redevelopment and economic growth along Merrimack Street.

Figure II.38. Lawrence Municipal Airport Relative to Study Area.



Storm Water

Storm water today in the Merrimack Street Study Area for the most part is captured by catch basins as part of Lawrence's street and utility system. The Greater Lawrence Sanitary District (GLSD) operates a combined sewer system, capturing both storm and sanitary waters, and treating them at the wastewater treatment facilities in North Andover adjacent to the Lawrence Municipal Airport, as shown in Figure II.38. GLSD requires industrial users to pre-treat storm and sanitary sewerage. With the new storm water regulations issued by MA DEP, there is an increased emphasis on Low Impact Design (LID) and Best Management Practices (BMPs) for treating storm water on site. The new MS4 permit regulations go in effect in 2017 and widen the scope of projects to be reviewed.

GLSD has a major sewer interceptor pipe that runs along the southern bank of the Merrimack River in the study area. There is a large CSO (combined sewer overflow) Outfall station east of South Broadway on the Merrimack River bank. A second CSO outfall is located on the island, and a third is slightly downriver east of South Union on the southern bank of the Merrimack River.

Transportation projects, except for emergency repairs to roadways and drainage systems, are to comply with the Massachusetts Storm Water Standards. Pedestrian paths and trails must also comply to the maximum extent practicable. Redevelopment projects as well as new construction are also subject to incorporating storm water management into the redevelopment design plan.

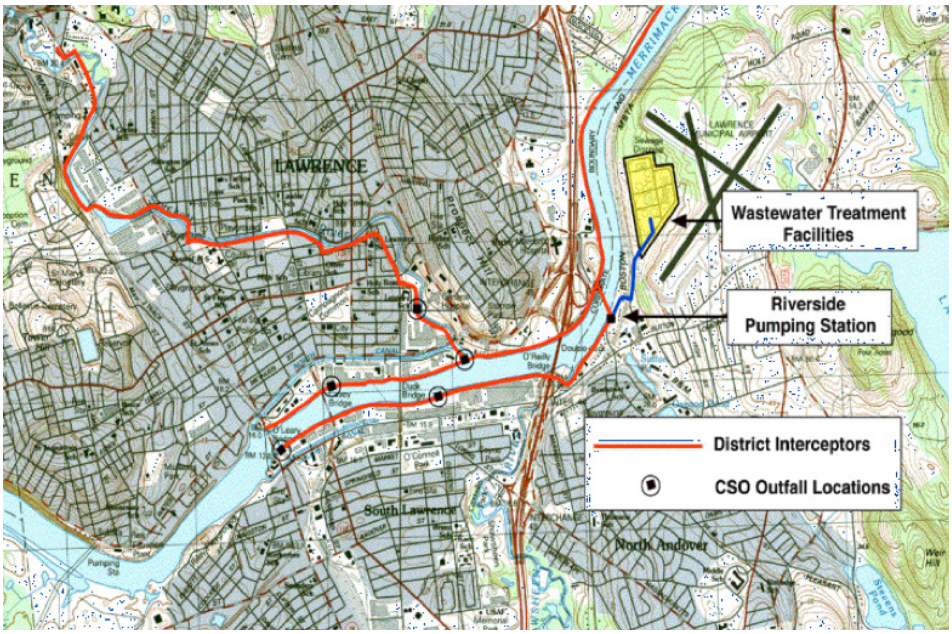
Utilities

National Grid is the electrical service provider to Lawrence and the Merrimack Street study area. National Grid maintains an electric substation on South Canal Street within the study area. The substation has recently been upgraded. Columbia Gas Company provides natural gas for heating and industry.

The water system is maintained and managed by the City of Lawrence. During 2014-2015, there were several water main breaks along Merrimack Street. The water line distribution line along Merrimack Street is 16 inches in diameter, with some twelve inch sections. Lawrence also owns and maintains the sanitary sewer collection system, with treatment provided by the Greater Lawrence Sanitary District (GLSD). There is no upgrade of the water distribution or sewer collection systems planned at this time. There is adequate supply of fresh water to support new development along Merrimack Street. GLSD has capacity to treat new sanitary sewer flow.

Comcast provides cable modem service for internet communications. DSL service is available from Verizon. A review of the National Broadband map indicates that Lawrence is well served by internet providers as to speed, reliability, and coverage.

Figure II.39. GLSD's Combined Sewer System.



Source: Greater Lawrence Sanitary District.

5. Analysis

Conditions Analysis

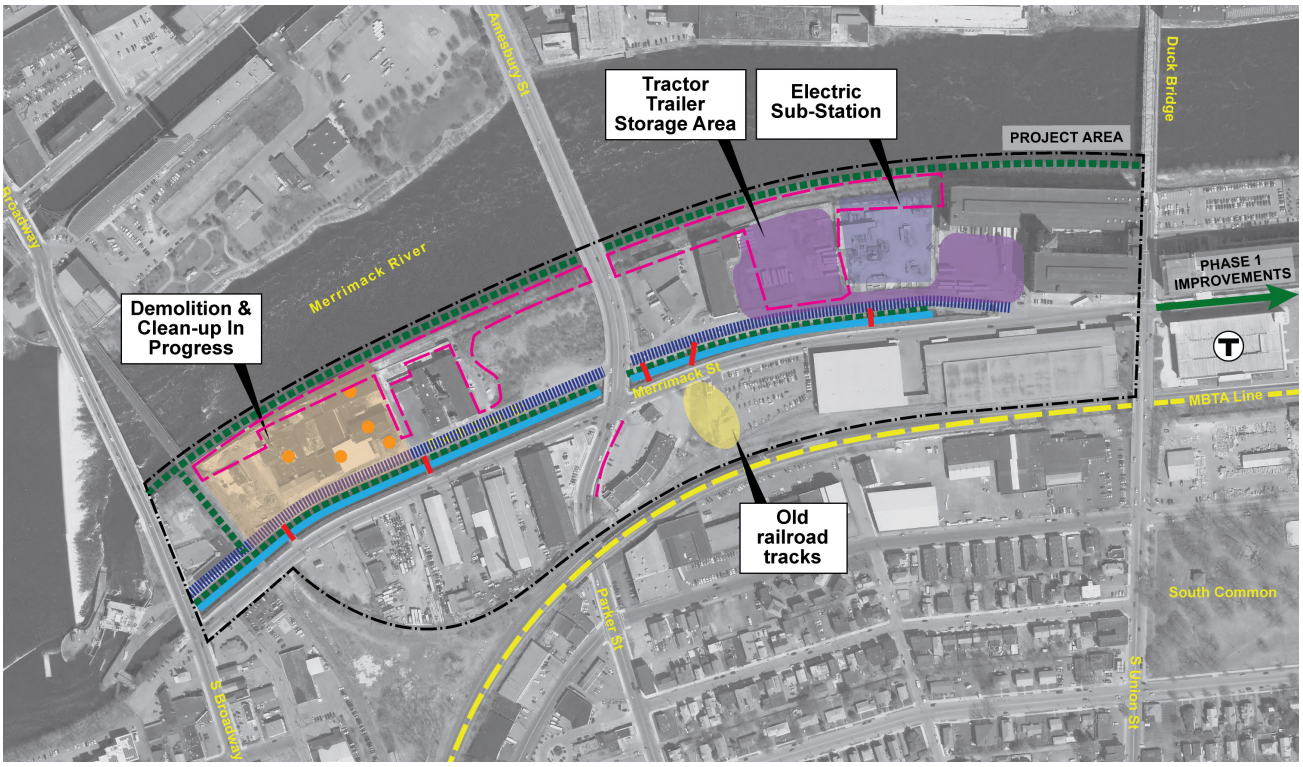
The Merrimack Street study area represents an urban area with a range of conditions including renovated mills re-purposed for manufacturing, storage and warehousing activities, some commercial office space, empty lots and abandoned structures. Prominent features are identified in Figure II.40.

On the north side of Merrimack Street, the Merrimack Paper site, once a large area employer sits on the western end of the study area. The site is now undergoing remediation and demolition after a large fire caused significant damage to the vacant building. Bounding the western edge of this site is the Mancherster Lawrence Rail Spur, an abandoned rail line with plans for conversion into a rail trail linking the north and south sides of the river. On the east side of the Merrimack Paper site is the Riverside Business Center, a cluster of mill buildings currently occupied by an auto-parts business, office space and a church.

On either side of the Amesbury Street bridge are vacant and underutilized parcels; the eastern parcel has a small vacant mill structure. Moving west, the river edge lots include: a storage facility, tractor trailer parking (used by a warehousing facility on the south side of Merrimack Street), an Eversource electric sub-station, and a large mill complex now in use by New Balance. The New Balance facility contains manufacturing space, offices and an outlet store; renovation of an existing vacant structure at the corner of Merrimack and South Union Streets is underway and will house expanded manufacturing operations.

On the south side of Merrimack Street, on the western end of the study area are a series of lots currently with auto repair and used car sales businesses. Next to this is the Helfrich Brothers Boiler Works complex, a long standing business that has recently expanded its facility. On the west corner of Parker Street and Merrimack Street is a mill building converted to office use and occupied by CLASS Inc. This facility has a parking garage at the corner that is in need of repairs.

Figure II.40. Existing Conditions.



On the east side of Parker Street is a retail/ office plaza, that was once a train depot. The original depot structure has been altered considerably and little to no existing features remain. Adjacent to this lot is an abandoned rail spur. Moving eastward is a large parking lot, once used for an MBTA commuter rail parking facility, and now used as parking for New Balance employees and trucks. Between this lot and South Union Street are a series of warehouse structures operated by B & D Advanced Warehousing. These warehouses are actively used and include an active rail spur used for shipments and a cold storage facility.

The northern edge of the study area is bounded by the Merrimack River. There is a pathway along the river which is overgrown and eroded in some places. Access to this area is not easy (it requires climbing over retaining walls or down steep slopes) and it is primarily hidden from view due to the site topography. The southern edge of the site is bounded by an active rail line used by the MBTA commuter rail as well as commercial freight.

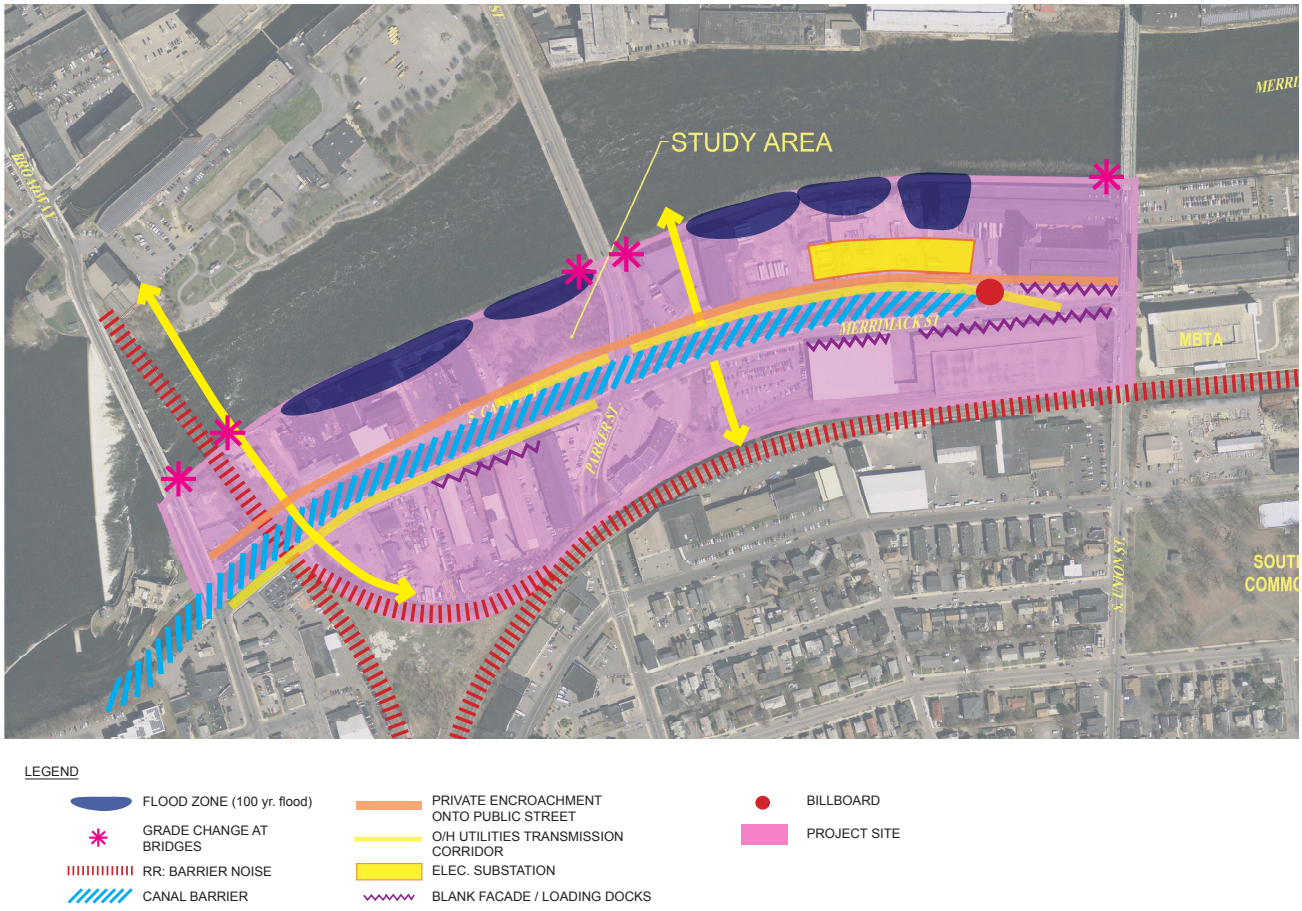
The South canal which bisects the study area from east to west has several original bridges for rail, pedestrian and vehicles, that are unusable or structurally unsound. Both the bridges and canal works are unique features that could be restored or preserved in order to capitalize on the industrial character of the area. They also represent a unique opportunity for an interpretive trail that highlights the history of the canal area and Lawrence's industrial history.

Constraints Analysis

The site has a number of physical constraints that impact land use in the area. These include the river way, topography, railways, and the power sub-station.

The river is both an asset and a constrain to development. Proximity to a water body is an asset, providing views and potential

Figure II.41. Constraints Analysis.



amenity areas for adjacent parcels. The topography along the river creates a challenge as there is a one to two-story difference in elevation across parcels on the water edge. This is significant in that a large percentage of these lots thus fall within flood plain levels. As such, the flood plain is a significant impediment to development on the site. This is discussed further in this section under " Build-Out Under Existing Conditions."

The railroad line presents a significant boundary separating the site from South Lawrence and making pedestrian access between these areas a challenge. At the same time, an active rail line is advantageous for industrial use and two of the local businesses actively use rail for transport of goods.

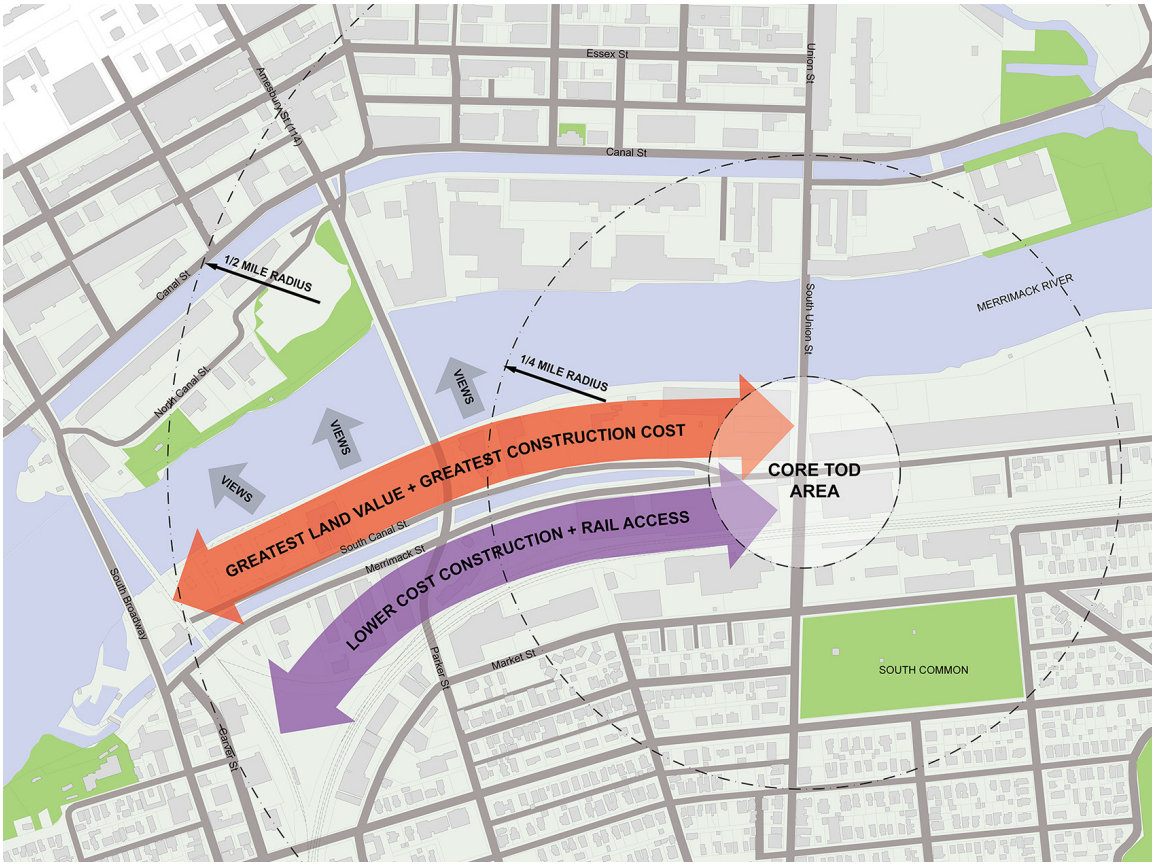
The electric sub-station is a prominent feature along the riverside parcels and presents a constraint to potential expansion of the New Balance site. It also detracts visually from the district which could limit potential adjacent uses.

Impacts on Land Use and Value

The fifty-five acre Merrimack Street Land Use Planning Study area district is striped with significant east-west horizontal features which define the district and the available land for development. The Merrimack River forms the northern district boundary. The South Canal spans one-half mile, nearly the entire east-west length of the district. The South Canal is framed on the north by South Canal Street and on the southern edge of the South Canal is Merrimack Street which is the roadway spine of the area. The railroad forms the southern boundary of the Merrimack Street Land Use Planning Study area.

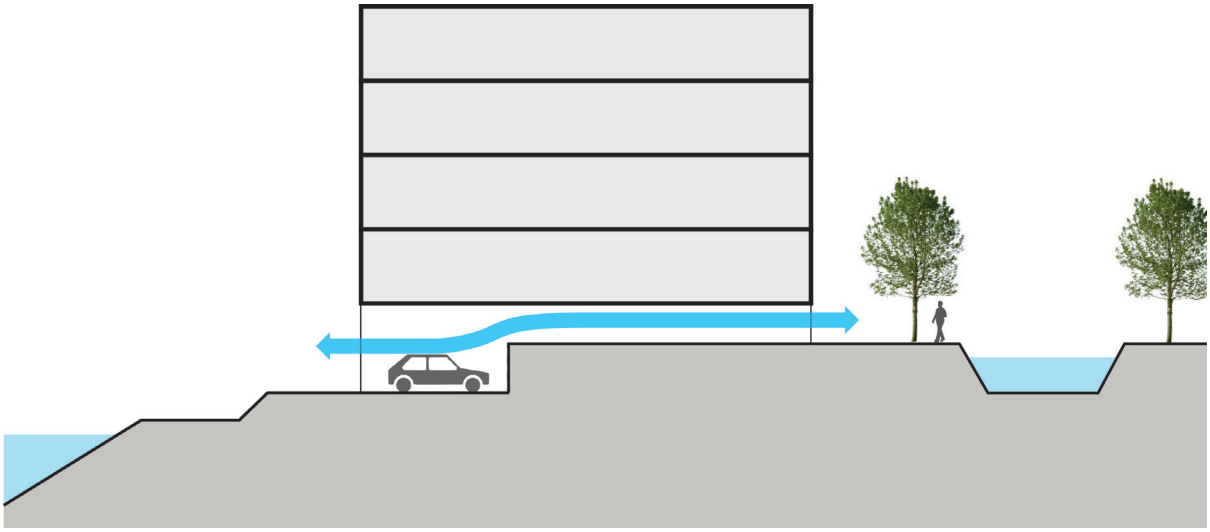
At present, there is a row of lots between the Merrimack River and South Canal Street, and a second row of lots between Merrimack Street and the railroad. Given the location of the flood plains as discussed on pages 14-16, construction in the flood plain will require buildings to be elevated, including the likely

Figure II.42. Land Values and Construction Cost along Merrimack Street



Figures II.43. Existing Section Between the Merrimack River and South Canal.

Figure II.44. Conceptual Section of an Elevated Building and Parking in the flood plain area between the Merrimack River and South Canal Street.



use of parking decks or parking structures. Parking decks and structures would need to be constructed so that flood storage and water wash could be accommodated in the case of flooding and heavy storms. Elevated buildings and parking decks or structures are generally more expensive to build.

Land uses which can support more costly construction are necessary on the north side of Merrimack Street, as noted in the map, Figure II.45. The south side of Merrimack Street is at a slightly higher elevation and there is less flood plain exposure. Figures II.43 and II.44 depict a section showing the topography of the land between the Merrimack River and the South Canal and how a multi-story building can utilize the topography to elevate the building above the flood plain and provide for parking.

Best practices for managing storm water and flood plains call for maximizing permeable surfaces. This can include use of permeable pavements on drives and parking areas. Permeable pavements enable rainwater to percolate through the paving into the ground. Most permeable pavement materials are designed for low-volume and lower load-bearing use, which can include some parking areas.

Two additional transportation features which can positively affect land and real estate values and opportunities in the Merrimack Street Land Use Planning Study area are I-495, the outer circumferential interstate highway in eastern Massachusetts, which is three-quarters of a mile east of the study area and the McGovern Transportation Center at the southeast corner of South Union and Merrimack Street. The McGovern Transportation Center is a transit center and a commuter rail stop on the MBTA's Haverhill Line with service to Boston. The McGovern Center can be a hub spawning transit-oriented-development with a focus on new uses that create employment opportunities.

Build-Out Under Existing Conditions

A preliminary examination of the potential additional new development under existing zoning conditions with the existing parcel boundaries was undertaken for the study area. A major existing building constraint is the presence of the 100 year flood plain. There are eight vacant parcels in the study area, exclusive of parcels currently being used as South Canal Street and the South Canal (which are privately owned). Three of the vacant parcels are on the south side of Merrimack Street, outside the 100 foot flood plain. The other five parcels look out on the Merrimack River and have a significant land area within 100 year flood plain. One parcel is nearly totally within the flood plain and is basically unbuildable.

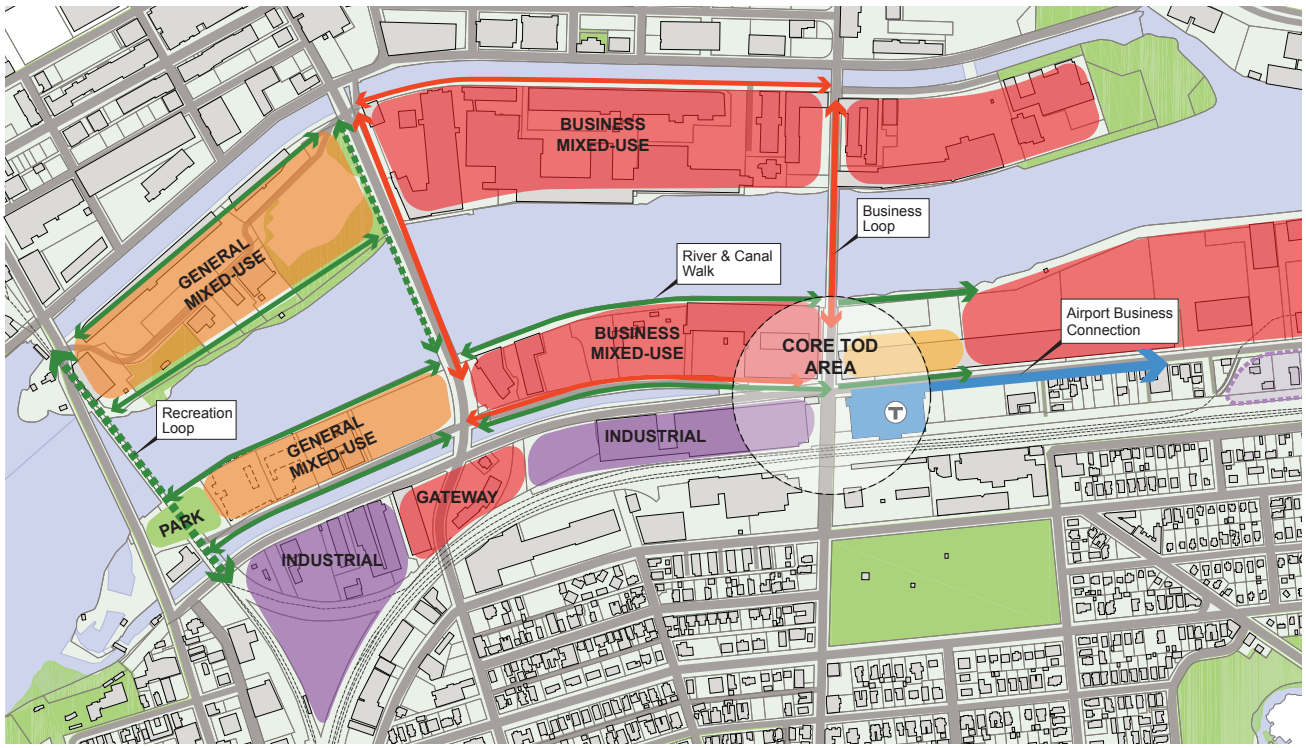
New construction for industrial use is generally single-story ground level construction with level sites. New industrial construction is highly unlikely to occur in a flood plain which requires elevating the building, increasing high construction costs. Industrial users are generally looking for lower cost space to accommodate machinery and operations. In addition the sites on South Canal Street have slopes and often have a ten foot plus differential from the street side to the rear of the lot.

An initial build-out analysis for single-story industrial construction allocating sufficient space for parking and loading indicates that under the existing zoning code, 130,000 SF of industrial space could be built out. Industrial building sizes would range from 1,800 SF (too small for most operations) to 50,000, with one parcel supporting a 25,000 SF building and three other parcels supporting buildings between 7000 SF and 9000 SF.

Another analysis of the potential build-out for new commercial construction used retail. Retail prefers street-level visibility and access. Retail also has higher parking requirements than industrial. The Lawrence Zoning Ordinance requires 1 space for every 300 gross SF for retail, compared to 1 space for every 550 SF of industrial space. The vacant triangular parcel set back from Merrimack Street, while usable for industrial purposes is not suitable for retail, since it has no street visibility. The maximum build out analysis for new retail on the existing vacant parcels in the Merrimack Street study area with street visibility indicates that a potential of 62,000 SF could be constructed by right on six parcels, with buildings ranging from 1300 SF to 18,000 SF.

This maximum build-out analysis which incorporated parking and loading requirements reveals that fostering new construction solely on the current vacant parcels in the Merrimack Street area will create marginal new development. Some of the vacant parcels are too small to be independently and cost-effectively developed. The flood plain constraints for parcels on South Canal Street limits their effective re-use for industrial purposes.

Figure II.45. Potential Land Use Based on Existing Conditions and Value.



Analysis of the South Canal

An analysis of the alternative uses of the land occupied by the South Canal was undertaken. Reuse of the South Canal for parking to facilitate development was posed and investigated. Three potential options for the future of the South Canal were framed, namely:

- Filling in the South Canal;
- Covering the South Canal;
- Retaining the South Canal; or
- Enhancing the South Canal.

Filling In the Canal Option

The Filling in the South Canal option would entail draining the South Canal to create more land area. Approximately 3.9 acres could be "created" by filling in the South Canal. Filling in the canal could enlarge existing properties along South Canal Street and provide Merrimack Street frontage to these properties, or provide parking for the area.

Creating frontage onto Merrimack Street requires acquisition of both South Canal Street and the South Canal. The South Canal is privately owned by Enel, the successor to the Essex Company, which created the hydropower system of the dam and canals for industry at the turn of the nineteenth to twentieth centuries. Most of South Canal Street is privately owned, as well. The City of Lawrence owns a small segment of South Canal Street immediately east and west of Amesbury Street, as shown in Figure III.65 on page 84. Voiding or acquiring existing utility easements and water rights may also be required.

The City of Lawrence currently receives a modest amount of real estate taxes ($9,585 annually) on the privately owned street and canal, as noted in Table II.32. The level of real estate taxes is based on valuing the canal and South Canal Street as undevelopable parcels of land, which typically have low valuations. Filling the canal to facilitate development or parking, an increased valuation and additional increment of real estate tax revenues would be anticipated.

A review of the valuations of land parcels used primarily for parking with no buildings along greater Merrimack Street area indicate that the average assessed valuation for land used as a parking lot is $4.67 per square foot, as determined by the City's Assessor for commercially zoned property in 2016. If the land area currently used by the South Canal was re-purposed for paved parking and was privately owned, the City of Lawrence could anticipate receiving approximately $26,825 in real estate taxes annually (after incurring costs for acquisition, filling the canal, and redevelopment into a surface parking lot).

Table II.32. South Canal and South Canal Street Properties.

South Canal Properties					
Parcel #	Owner	Size		Valuation	Taxes
		Acres	SF		
103-2	Essex Company	1.89	82,328	$ 59,200	$ 1,998
103-8	Essex Company	1.66	72,310	$ 71,300	$ 2,406
122-6	Essex Company	0.36	15,682	$ 10,200	$ 344
The South Canal Sub-Total		**3.91**	**170,320**	**$ 140,700**	**$ 4,749**
South Canal Street Privately Owned Parcels					
103-16	Essex Company	1.52	66,211	$ 114,800	$ 3,875
122-34	Merrimack St Redevelopment LLC	0.63	27,443	$ 5,800	$ 196
123-13	Essex Company	0.64	27,878	$ 22,700	$ 766
South Canal Street Sub-Total		**2.79**	**121,532**	**$ 143,300**	**$ 4,836**
South Canal & the Street TOTAL		**6.7**	**291,852**	**$ 284,000**	**$ 9,585**

Source: McCabe Enterprises and 2016 Lawrence City Assessor records.

There are significant costs to filling the South Canal, much of which is related to the cost of permitting and related mitigation. Filling a waterway, such as the South Canal, could easily take three to five years to permit. There are local, state and federal permits and reviews. Filling the South Canal will trigger the Massachusetts Environmental Protection Act (MEPA) and will at minimum necessitate an environmental review, and could very likely require a full-scale Environmental Impact Statement (EIS). An EIS is a detailed and lengthy document requiring a substantial amount of engineering and design detail, which are reviewed not only by state agencies but also often by advocacy groups who are concerned about a wide range of issues ranging from waterways, natural resources, wildlife, wetlands, to historic resources.

The Lawrence Conservation Commission would be required to review any proposal to fill the South Canal, and the MA Wetlands Protection Act will be triggered. It is important to note that any ten citizens or an abutter can legally appeal a Conservation Commission decision (which could substantially extend the review and permitting time). A Chapter 91 (Massachusetts Public Waterfront Act) review will also be prompted by a permit request to fill the South Canal. The Merrimack River is governed by Chapter 91 of Massachusetts General Laws (MGL).

The US Army Corps of Engineers has jurisdiction and a Section 104 review of a project to fill the South Canal per the Water Resources Development Act of 1986. Section 104 pertains to flood risk management. Since this is a federal action at a minimum, an overall environmental assessment will be required that conforms to federal standards, which typically is more detailed and stringent that state MEPA review. The Army Corps of Engineers, given the nature of the proposed project – filling the South Canal – could require a federal Environmental Impact Statement (EIS). A federal EIS would require additional time and expense, and is again more extensive than a state EIS.

The Army Corp of Engineers has been requiring proponents, including local governments, intending to fill waterways or wetlands to provide compensatory flood water storage. There is no nearby alternative water storage area if the South Canal area were to be filled. In cases where there is no alternative storage, the US Army Corps of Engineers has been levying an in-lieu-of fee, which could range from $550,000 to a fee in excess of $1.9 million.

An Army Corp of Engineers' review would include a historic resources review. The South Canal is not currently listed on the National Register of Historic Places. Nonetheless, the South Canal was an integral part of the historic hydroelectric system which powered the industrial development of Lawrence, and could be determined as potentially eligible for listing on the National Register of Historic Places. The Massachusetts Historical Commission would also review the potential filling of the South Canal.

An order of magnitude cost for just filling the South Canal is $3.1 million, exclusive of engineering, permitting, in-lieu of fees, as well as any acquisition and redevelopment costs. New curb cuts and access drives onto Merrimack Street are also not included in this estimate. $3.1 million is the conceptual order of magnitude estimate which has been prepared without the benefit of a survey, design, or geo-technical analysis. The cost estimate is based on professional experience and knowledge and was developed for the sole purpose of very preliminary discussion of broad conceptual options related to the South Canal. The cost estimates should not be relied upon for construction. Additional planning and design of preliminary conceptual options is required.

Covering the Canal

The Covering the South Canal option would cover the South Canal and encapsulate the water to enable some continued water storage in the canal. Depending upon the materials selected for "covering" the canal, the re-use of this space could be used for buildings, surface vehicle movements and parking or landscape. Heavier uses will require more structural support, and as a consequence are more generally expensive.

Many of the permitting and review requirements discussed in detail in the Filling the Canal option will be needed in the Covering the Canal option as well. A Section 104 review by the US Army Corp of Engineers will be part of the permitting process for covering the South Canal. However, an in-lieu-of fee to mitigate any loss of flood storage would likely not be incurred in the Cover the Canal option, thereby reducing some of the overall initial costs. The order of magnitude cost estimate for covering the canal option is $6.1 million, plus the costs of improvements, legal, land acquisition, and permitting.[1]

[1] *These cost estimates were prepared without the benefit of a survey, design, or geo-technical analysis. Cost estimates are based on professional experience and knowledge and were developed for the sole purpose of very preliminary discussion of broad conceptual options. These cost estimates should not be relied upon for construction. Additional planning and design of preliminary conceptual options is required.*

The benefits of covering the South Canal, would be the creation of additional surface land that could increase the size of the existing parcels and provide frontage onto Merrimack Street, or to be used for parking.

Retaining the South Canal

The Retaining the South Canal option is the status quo option. Maintaining the status quo option is not a do nothing option. Rather, the status quo option requires regular maintenance and clean-up of the South Canal in both the short- and long-term. At present, this responsibility lies with the private owner of the South Canal, Enel.

Although retaining the South Canal does not require a new capital investment, maintenance of the canal walls is required on a periodic basis.

The benefits of retaining the South Canal are several-fold. Retention of flood storage capacity on the south side of the Merrimack River as part of Lawrence's overall resiliency is key benefit.

The South Canal helps define a sense of place and convey the unique special qualities of Lawrence's history and the development of the mills. This history can be an asset and interpreted as an amenity that can add value to redevelopment, as noted in the discussion of Providence Lowell and Lechmere Canal on the following pages.

The South Canal today is used by some as a recreational resource. Workers and neighborhood residents take walks by the South Canal on lunch breaks and on weekends.

During the public engagement process, residents and business persons after a review and discussion of the options, clearly favored retaining the South Canal filled with water, and opted for enhancing the South Canal.

Enhancing the South Canal

Treating the South Canal as an amenity benefits from business, redevelopment and neighborhood residents. Development of a South Canal walkway along with a protected bike path, and landscaping could polish a distinctive feature of Lawrence and create an attractive environment that could help foster business development along Merrimack Street.

More and more, businesses, commercial developers and site se-

Figure II.46. The South Canal Today.
Regular maintenance of the South Canal includes trash removal and maintenance of the canal walls which is necessary to uphold good existing conditions.

Figure II.47. Residents uses the South Canal today as a recreational resource.

> The benefits of walkability are capitalized into office, retail and industrial property values with more walkable sites commanding higher property values.
>
> *– National Council of Real Estate Investment Fiduciaries*

lection specialists are looking for areas where employees can enjoy nearby amenities for walking or recreating on lunch breaks, as well as before and after work. This national trend is already evident in Lawrence. Many New Balance employees today take walks along Merrimack Street. Further enhancing the South Canal as an amenity for walking and bicycling would entail infrastructure investments approximating $9 million (an order of magnitude cost estimate).[2]

A South Canal walk and protected bike path will also advance the goals and work of the Mayor's Health Task Force (MHTF). The MHTF is encouraging active living and promotes low-cost activities, such as walking and bicycling for Lawrence residents. The South Canal walk and bicycle path would connect with the planned rail trail on the western edge of the Merrimack Street area on the former Manchester-Lawrence rail spur, as well as the complete street bicycle lanes recently constructed on Merrimack Street east of South Union. Constructing the protected bike path and walkway along the South Canal would complete the missing link of an overall bicycle network that connects Merrimack Street, an employment center, with bicycle paths connecting to the north side of Lawrence and the Arlington neighborhood (via the Manchester-Lawrence rail spur bike path and connections with the Spicket River bike path). This provides not only an amenity but also a low-cost, healthy commuting alternative for Lawrence residents to an employment center in Lawrence.

Alternatives & Cost Summary

The four alternatives for future treatment of the South Canal and a summary of the order of magnitude costs is detailed in Table II.33.

Acquisition cost estimates are based on the 2016 assessed valuation of the privately owned property. Actual acquisition costs may vary. The option for Enhancing the South Canal and South Canal Street includes municipal acquisition of both the South Canal and the adjoining private street – South Canal Street. Filling and Covering the South Canal Street options do not require acquisition of South Canal Street. Although, the City of Lawrence may opt to do so.

Design, Legal, Engineering and Permitting costs are budgeted at 15% of construction costs. However preparation of a full-scale federal or state Environmental Impact Statement (EIS) for filling or covering the South Canal may exceed estimated costs. !5% is a typical measure for the proportional costs of design, engineering, landscape architecture, permitting and legal costs in relationship to construction costs. However, the nature of the permitting in this case may exceed average proportional costs.

In-Lieu of Fee is the fee that the Army Corps of Engineers would assess as a fee payment in lieu of provision of alternative flood storage provisions. Estimates on the amount of the fee range from $550,000 to $1.9 million. For purposes of the budget estimate, the average of the low and high fee estimates is utilized. However, there is a significant range of potential costs.

Construction Costs. Order of magnitude construction cost estimates have been prepared each of the options. This cost estimate was prepared without the benefit of a survey, design, or geo-technical analysis of the South Canal, South Canal and Merrimack Street area. Cost estimates are based on professional experience and knowledge and were developed for the sole purpose of very preliminary discussion of broad conceptual options. These cost estimates should not be relied upon for construction. Additional planning and design of preliminary conceptual options is required. However, these cost estimates can be used for general planning and very preliminary evaluation of options.

Contingency. As conceptual cost estimates an additional ten percent contingency based on construction costs is included.

[2] *This cost estimate was prepared without the benefit of a survey, design, or geo-technical analysis. Cost estimates are based on professional experience and knowledge and were developed for the sole purpose of very preliminary discussion of broad conceptual options. These cost estimates should not be relied upon for construction. Additional planning and design of preliminary conceptual options is required.*

Table II.33. South Canal and South Canal Street Properties.

	Filling the South Canal	Covering the South Canal	Retaining the South Canal	Enhancing the South Canal & So. Canal St.
Acquisition Cost*	170,320	170,320	0	291,852
Design, Legal, Engineering, Permitting (15%)	465,000	915,000	75,000	1,357,500
In-Lieu of Fee	1,225,000	-	-	-
Construction (Order of Magnitude Estimate)	3,100,000	6,100,000	500,000	9,050,000
10% Contingency	310,000	610,000	50,000	905,000
SUB-TOTAL	**$ 5,270,320** + Cost of Any Improvements	**$ 7,795,320** + Cost of Any Improvements	**$ 625,000** + Cost of Any Additional Improvements	**$ 11,604,352** Includes cost of Canal Walk & Bike Path, and Roadways – Merrimack St and So. Canal St.

Re-Use of South Canal Area for Parking

If the South Canal was to be filled or encapsulated, enabling a non-water use for this land, one reuse option occasionally mentioned is surface parking. Based on the cost estimates in Table II.33., the base cost of preparing the 3.9 acre canal area for reuse ranges from a low of $5.3 million to a high of $7.8 million. Approximately 294 surface parking spaces could be constructed on top of the South Canal area.

The 2016 average cost nationally of surface parking, exclusive of land and acquisition costs is $5,000 per space. In Massachusetts, the cost per parking space in public construction projects can run higher ranging up to $5,900 per space. Applying the lower cost estimate per space to the base site preparation costs, the overall minimum cost for reuse of the South Canal to a 294 space public parking lot is $6.7 million in the Fill the South Canal option, and it could range up to $9.5 million with the Cover the South Canal option and the higher surface parking unit cost. The total development cost of each individual surface parking space would range between $22,926 and $32,415. Operating costs would be additional. The per space cost of parking exceeds the 2016 average median cost of constructing a structured parking garage in Boston, which is $22,368 per space.[3] Re-use of the South Canal for parking is not financially viable for either the public or private sectors.

[3] Average median cost data of surface parking and structured parking is from Carl Walker Parking's 2016 Parking Structure Cost Outlook.

6. Case Studies

The experience of other communities using forgotten or overlooked water features as a catalyst and amenity for economic development is reviewed in the following vignettes. Each of these municipalities has made significant highly visible improvements to the public realm relying upon a mix of public, foundation and private funding. The public realm and open space enhancements polished an existing natural feature which became a centerpiece of redevelopment attracting private investment and creating jobs. In many cases, these enhancements have become signature emblems of their respective communities, advancing the image and brand of each city. In some cases the natural feature had been covered and left to be forgotten as in the case of Providence and Yonkers.

Figure II.48. Riverwalk improvements, Providence, RI.
Figure II.49. Water Fire event, Providence, RI.

Providence

Providence, Rhode Island in the 1980s was suffering from disinvestment, and the effects of industry and mills moving to the South and oversees, leaving many residents unemployed and weakening the city's tax base. A maze of railroads traversed Providence disconnecting Downtown and the state capital with the City's neighborhoods. The river was partially covered by roadways. Former rail yards served as parking lots.

By 1980, the population of Providence had plummeted to 156,800 people. In 2014, the population had risen 14.2% to 179,200. In the 1980s, seventy percent (70%) of Providence's rivers were covered. Plus, there had been no new construction in downtown Providence since 1928.

In the 1990s, Providence leaders launched an ambitious $169 million infrastructure program involving four major projects. The infrastructure projects that transformed Providence were the relocation of the rail lines, the relocation of major highways, uncovering and relocating the Moshassuck and Providence Rivers, and the construction of a network of pedestrian walkways, including the Riverwalk. These public investments were the catalyst for $153.3 million of private investment in a hotel, offices, and housing. The new face of downtown Providence has since attracted additional private investment.

This program of infrastructure improvements significantly expanded the public realm and open space. Green space framed the future development sites in Providence. Commercial vacancy rates declined from over 25% to 10.75%, with Class A space reduced to less than a 5% vacancy rate

These highly visible public infrastructure projects changed the face and the attitude towards Providence. These improvements boosted Providence's profile amongst its residents, the business community, and investors, as well.

Complementing the significant public and private investments were improvements in the public realm. The river become a centerpiece for programming, civic events, and festivals. Trolley bus service connected area restaurants with riverfront events. Barnaby Evans, an artist and faculty member at Rhode Island School of Design developed Providence's signature public art installation at the confluence of Providence's rivers. WaterFire, which debuted in 1997 as part of a First Night Providence event. WaterFire now draws over one million visitors annually to Providence, creating significant positive local economic impacts.

Figure II.50. Revitalization along the Saw Mill River in Yonkers, NY.

Yonkers, NY

Yonkers is an inner suburb of New York City with 200,600 residents making it the fourth most populous city in New York State. Yonkers is a majority minority city extending over 20.4 square miles. The population density of Yonkers is 11,087 people per square mile. Downtown revitalization and strengthening the overall economy and tax base has been a major goal for the City. In 2011, the City of Yonkers with support from EPA, regional environmental partnerships and the state of New York removed a downtown parking lot to daylight a portion of the Saw Mill River in downtown Yonkers. The uncovered Saw Mill River has become a gathering place and centerpiece of Yonkers' downtown revitalization. The New York Times reported that the daylighting projects, in conjunction with rezoning and other pre-Great Recession waterfront development attracted developers to Yonkers, including a 22-story office building now under construction. In 2015, Yonkers was rated as the best city in the Lower Hudson area.

Revere, MA

The City of Revere, a gateway city with 51,770 residents spread over 5.9 square miles of land has been working to make Wonderland Station an attraction and local asset. Wonderland Station is located on Revere Beach, America's first public beach and a national landmark. Wonderland Station has been an eight acre sea of asphalt serving as parking lots for commuters to Boston at the terminus of the MBTA's Blue Line subway. Over $40 million of public infrastructure improvements, namely a parking garage, a pedestrian bridge connecting the subway station to the plaza and beach, and related roadway improvements are the public catalyst for over $350 million of private investment. Private development is constructing a hotel, office space, and 500 units of new housing at Revere Beach to capitalize of the waterfront location accessible by transit.

Figure II.51. New plaza and pedestrian bridge on Revere Beach navigates an elevation change to connect the MBTA Wonderland Station with the public park and beach.

La Guancha, Ponce, Puerto Rico

Ponce, Puerto Rico's second largest city on the southern coast of Puerto Rico, built La Guancha – the boardwalk, along its harbor. Ponce is building mega-port, named Rafael Cordero Santiago Port of the Americas, to be similar to Rotterdam and Singapore, but on a somewhat smaller scale. The Ponce mega-port is designed to be a foreign trade zone, a port welcoming cruise ships, as well as tanker and cross-shipments from the Caribbean to Asia and Europe. As a pre-cursor the development of the mega-port and part of the city's efforts to restructure its economy from dependency on the once thriving sugar cane industry, Ponce starting building La Guancha, the boardwalk in 1989 at a cost of $2.4 million. It opened in 2004. La Guancha is home to restaurants and many food stands drawing nearly three-quarter million people annually. Pedal boats, kayaks, an observation deck, and outdoor concert area further enliven the boardwalk. La Guancha is situated at the section of Ponce's harbor that caters to yachts and sail boats. Nearby is the larger harbor that serves tankers and industrial shipments.

Figure II.52. Restaurant and shop pavilions at La Guancha, Puerto Rico.
Figure II.53. Boardwalk at La Guancha, Puerto Rico.

Figure II.54. and Figure II.55. Boardwalks line the canals in Lowell, MA.

Lowell, MA

Lowell has been using its system of canals and history as an industrial city to spur its economic transformation and expand its economic base to include offices, educational institutions and tourism. Lowell is diversifying its former industrial base to provide a wider array of jobs and opportunities for residents. Two Lowell projects illustrate how the City has used open space and water amenities to spur private investment and redevelopment.

Point Park is a one acre park on the site of a former parking lot. Point Park sets framework for development of two new commercial buildings. One new building will be a fifteen story signature building. The second will be a six-story structure. In total, 425,000 SF of new commercial office is slated for construction, along with 55,000 SF of retail space and 725 housing units. The public investment in open space and infrastructure is the catalyst for this private sector development commitment.

The Western Canal Gateway in Lowell provides a pedestrian connection and walkway for the Acre neighborhood. This connection provides a vital connection between the Acre (Lowell's immigrant gateway neighborhood) and employment opportunities and services in Downtown. The Western Canal Gateway is part of Lowell's Canalway District and is integrated with the National Park Service's visitor activities, which strengthens the city's tourism offerings.

Lechmere Canal, Cambridge

Today, people think of Lechmere Canal in Cambridge as a lovely part of Kendall Square's vibrant and bustling economy – the international center of the biotech industry and home to nearby MIT. However, in the 1980s, Lechmere Canal area was quite different. It was an overlooked location where there was illegal dumping, crime, as well as homeless residents seeking refuge. The Lechmere Canal area was part of the environmentally degraded Millers' River. Many former industrial uses had been demolished and replaced with surface parking lots. Lechmere Canal area was basically a blighted, under-utilized and troubled section of East Cambridge.

The City of Cambridge embarked on a master planning process using open space and Lechmere Canal as an amenity (which at that time in the 1980s seemed dream-like). Within ten to twelve years, thanks to proximity to strong educational institutions and the tech boom and a strong master plan, the transformation of Kendall Square and Lechmere Canal took root and became fully built-out. The initial investment in infrastructure, pedestrian walkways and Lechmere Canal was $25 million. By year 10, the City of Cambridge was collected $25 million in real estate taxes annually. The recreational activity and visual amenities support the housing, retail and office/lab uses around Lechmere Canal.

Figure II.56. Aerial of the Lechmere area prior to improvements.

Figure II.57. Lechmere Canal and underutilized Miller's River area.

Figure II.58. Aerial of the Lechmere area redevelopment.

Figure II.59. New public parks and open space line the Lechmere Canal today.

III. Merrimack Street Tomorrow

1. Merrimack Street Improvements

The vision for the future of Merrimack Street is for a lively employment center with businesses and industry employing Lawrence residents with entry-level opportunities where an employee can grow and advance and businesses can flourish. Lawrence desires Merrimack Street to be an area of economic opportunity and prosperity, along with an array of amenities that support and serve the businesses, customers and the people who work along Merrimack Street and live in the nearby neighborhoods. Merrimack Street tomorrow builds upon Lawrence's historic past and creates a framework for future investment and innovation.

In the following pages, the future transportation system featuring a complete streets, multi-modal approach providing the critical circulation system for trucks, cars, buses, bicyclists and pedestrians along Merrimack Street is reviewed. The natural and built environment can make Merrimack Street special. The Ayer Mill clock tower is a widely beloved landmark of Lawrence and Merrimack Street. The South Canal has the potential to become a distinguishing asset and connection with the North South Canal Loop. And energy, which is often taken for granted, can be used to re-power Lawrence.

The analysis of market conditions, physical attributes, community and labor force needs discussed in the previous sections, along with input through community meetings and outreach events, has informed the development of the future land use plan for Merrimack Street from South Union west to South Broadway.

The Canal & Canal Street

North & South Canal Walk Loop

The North & South Canal Walk Loop is an important infrastructure investment that will enhance Merrimack Street's value as a business and employment center. The historic development of Lawrence is integrally related to the construction of both the North and South Canals which were part of the Essex Company's hydro-power system supporting industry.

The North Canal today is aligned with trees and a sidewalk. The South Canal is less polished, lacking pedestrian and landscape amenities. These two water features, the North Canal and the South Canal should be linked by a designated walking path with enhancements constructed along both the North and South Canals and across the bridges spanning the Merrimack River, namely the Duck Bridge (South Union), the Casey Bridge (Amesbury Street/Route 114), the abandoned Pan Am rail bridge, and the O'Leary Bridge (South Broadway). Recommended construction includes upgrades of the adjacent sidewalks to enable safe walking and cycling paths.

Figure III.1. The South Canal today.

Figure III.2. The South Canal is used as a place for lunchtime and weekend walks.

Figure III.3. CanalWalk improvements in Holyoke, MA.

The Duck, Casey and O'Leary Bridges have all been upgraded in the past fifteen years for motor vehicles and include sidewalks for pedestrian passage. The abandoned PanAm rail bridge spans the Merrimack River and is part of a planned transformation of the former Manchester-Lawrence rail spur of the Boston & Maine Railroad to a multi-use path. This multi-use path is intended to connect with Lawrence's existing bike path along the Spicket River Greenway and the Methuen Rail Trail corridor. This added connectivity would enable Lawrence residents living north of the Merrimack River to easily access jobs along Merrimack Street.

The North & South Canal Walk Loop is depicted in Figure XX. The larger loop is a 1.8 mile path, with a one mile loop on the eastern half encircling South Union, South Canal Street, Route 114 and Canal Street. The western loop is 0.8 miles and bene-

fits from planned multi-use path crossing the Merrimack River along the abandoned PanAm rail bridge and extension to Canal Street. The extension to South Broadway and the O'Leary Bridge which looks over the Great Stone Dam adds another quarter mile to the western loop.

Developing a multi-use path with a protected bike path along the South Canal will complement and reinforce economic development along Merrimack Street. With increasing frequency in both industrial and office parks, developers are adding walking paths and fitness centers, so as to attract tenants and create environments where businesses find it easier to attract and retain employees.

The North & South Canal Walk Loop can help showcase much of Lawrence's industrial history and architecture. The Loop can become an attraction not only for businesses and residents, but also visitors to Lawrence. Creation of the North & South Canal Walk Loop will create a highly visible amenity and positive image for Lawrence. Moreover, the North & South Canal Walk Loop contributes to Lawrence's unique sense of place along the Merrimack River.

The Merrimack River Bank

Developing the South Canal and the larger North South Canal Loop and related enhancements to the South Canal will contribute to developing a sense of place along the Merrimack Street corridor. This will help foster needed private investment in the vacant and under-utilized parcels along Merrimack Street and South Canal between South Union and South Broadway. The South Canal is a highly visible amenity in the rough today that could be a gemstone if polished. The focus on public infrastructure investments needs to be on highly visible improvements that will convey that things are happening and Lawrence is open for business and improve safety.

Since the southern bank of the Merrimack River is not visible from Merrimack Street nor South Canal Street, improvements, such as a Riverwalk, more highly visible investments should occur first. The phasing recommendations of the Merrimack Street Land Use Planning Study identifies the Riverwalk between South Union and the PanAm Manchester-Lawrence rail spur bridge as a later phase improvement.

Figure III.4. North-South Canal Loop.

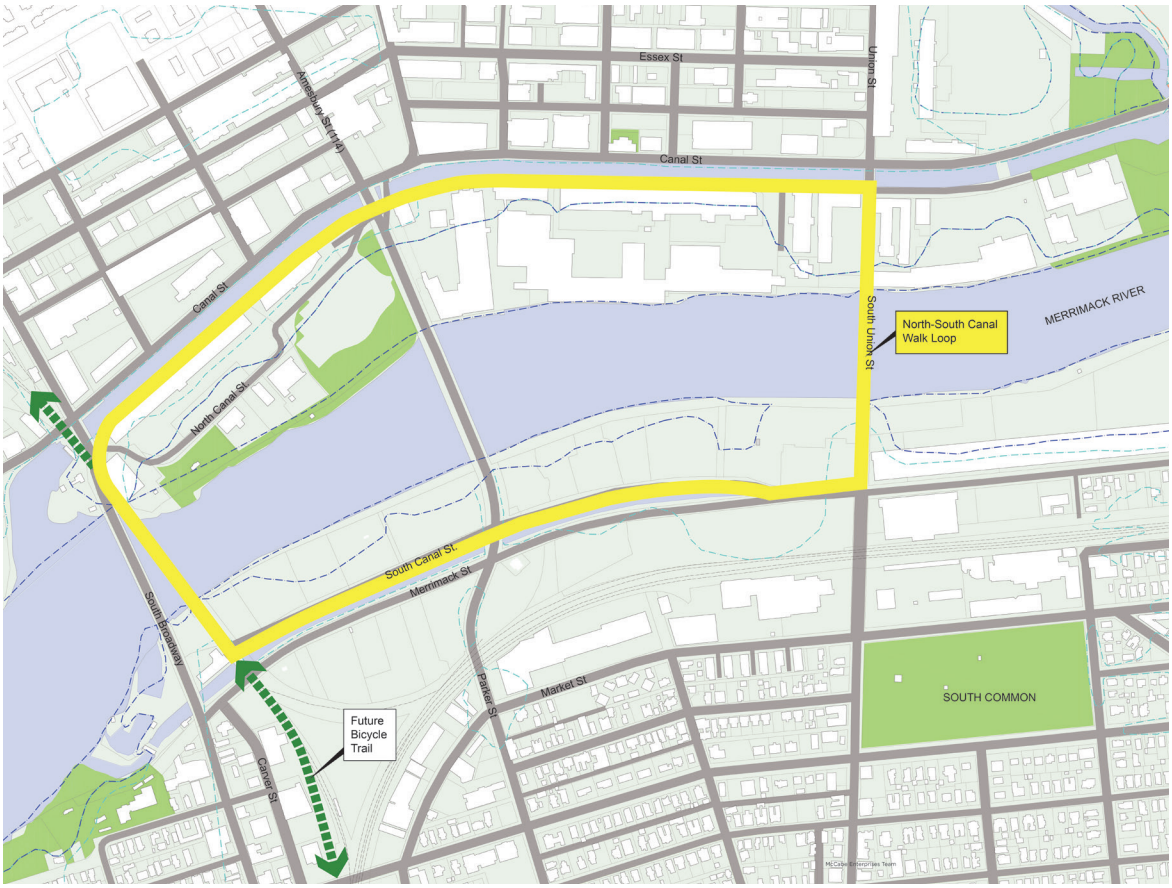


Figure III.5. The South Canal.

Figure III.6. Industrial relics: lock mechanisms on the South Canal.

Figure III.7. Industrial relics: lock mechanisms on the South Canal.

Figure III.8. Detail of the South Canal stone wall.

Figure III.9. The North Canal.

Figure III.10. The North Canal.

Figure III.11. The North Canal.

Source:

https://commons.wikimedia.org/wiki/File:Steel_bridge_over_North_Canal;_Lawrence,_MA;_2011-04-10.jpg

Recommended Improvements to Merrimack Street

Merrimack Street east of Union Street to I-495 has recently been upgraded to be a complete street, meaning that the street now accommodates pedestrians, bicyclists, buses, cars and trucks.

The stretch of Merrimack Street between South Broadway and South Union was assessed. The recommended future configuration and improvements to this length of Merrimack Street takes a holistic perspective of the corridor and included an examination of South Canal Street and how it functions in concert and parallel to Merrimack Street. South Canal Street in many ways functions as the access road for Merrimack Street enabling through traffic to pass on Merrimack Street proper. Transforming Merrimack Street from South Broadway to South Union to a complete street needs to incorporate the entire width of the Merrimack Street right-of-way as well as the South Canal and South Canal Street.

These travel-ways, since their historical conception by the Essex Company, have function as a singular street – or corridor – system. Thus, for complete streets/ green roads purposes, the width of the entire Merrimack Street corridor should be considered as one unit, as noted in Figure III.13.

The proposed improvements to Merrimack Street adhere to Lawrence's Complete Street Policy and the MassDOT Green Roads Policy, and provides accommodation for all modes of roadway transport. Parking lanes are explicitly added to both sides of

Figure III.12. The South Canal.

Merrimack Street. However, no new parking is proposed to be added on the south side of Merrimack Street by the cobblestone truck bays for B & D Advance Warehousing just west of South Union Street. Two through travel lanes are provided for the length of Merrimack Street. Travel for vehicles to access lots on the north side of the South Canal is also provided. Pedestrians are accommodated by a sidewalk on the south side of Merrimack Street and the north side of South Canal Street. Sidewalks are also provided on both sides of the canal, creating a walkway by the water, which can become part of the North & South Canal Walk Loop. The proposed walkways are depicted as partially cantilevered walks extending over the banks of the South Canal.

Street trees and a green buffer are recommended. Street trees need to be at least 10 feet away from the canal wall. The specific tree species needs to be carefully specified to ensure that a tree with a narrow root spread is selected that is appropriate for the

Figure III.13. Existing Conditions on the Merrimack Street Corridor.

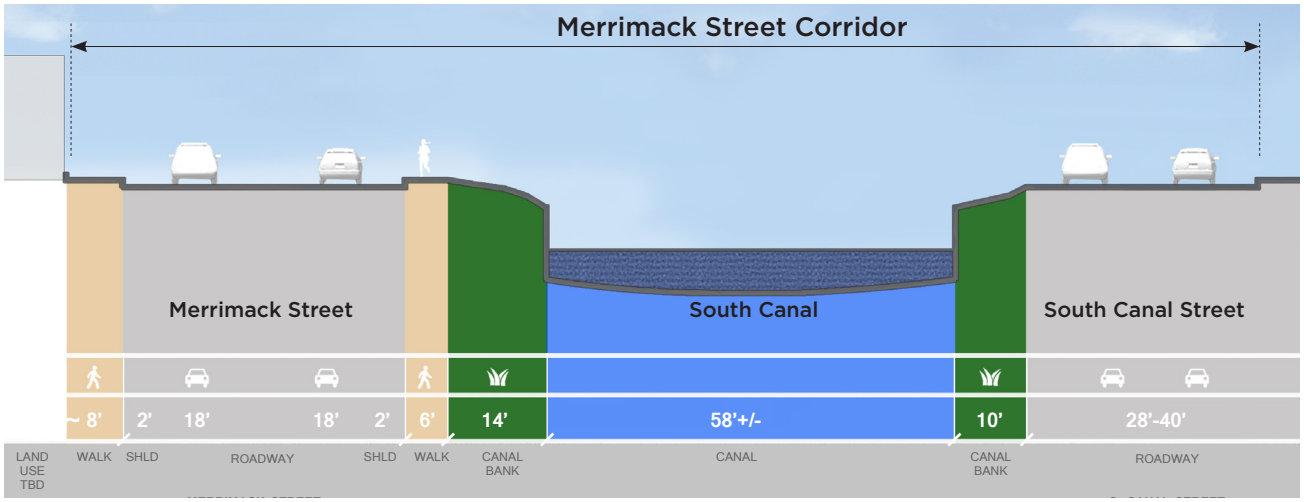


Figure III.14. Plan View: Preferred Alternative for the Merrimack Street Corridor from South Union to South Broadway.

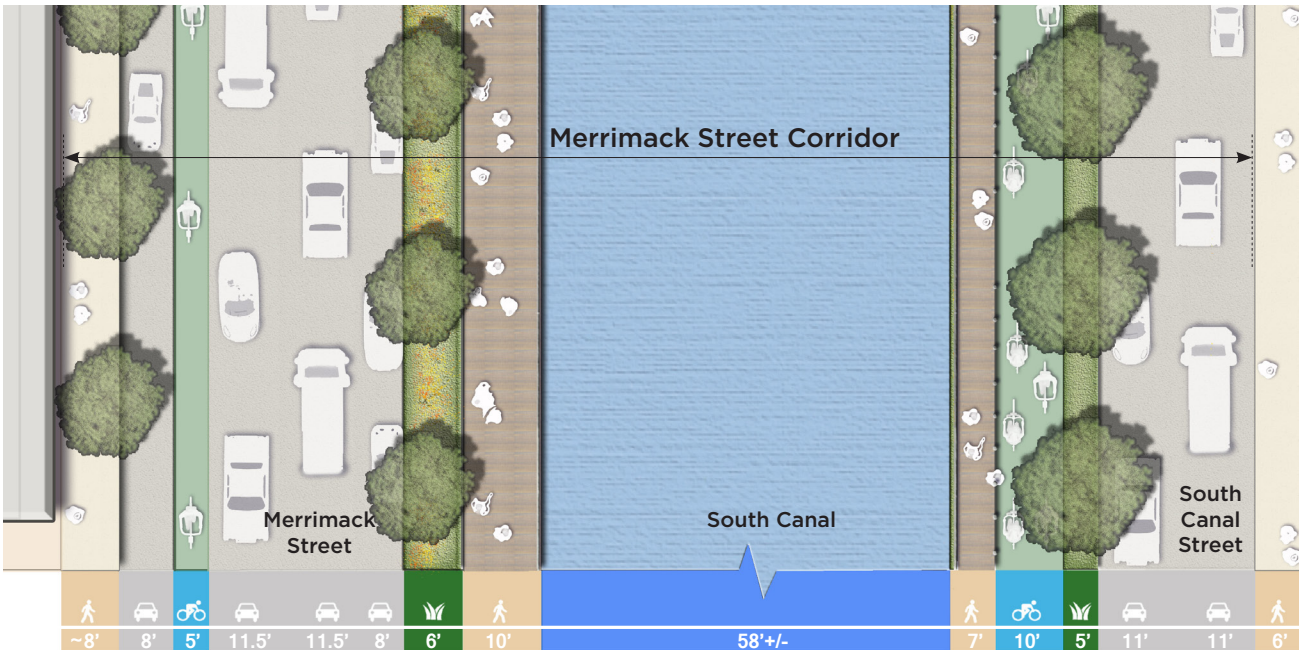


Figure III.15. Section View: Proposed Treatment of the Merrimack Street Corridor. This is the preferred alternative for Merrimack Street from South Union to South Broadway.

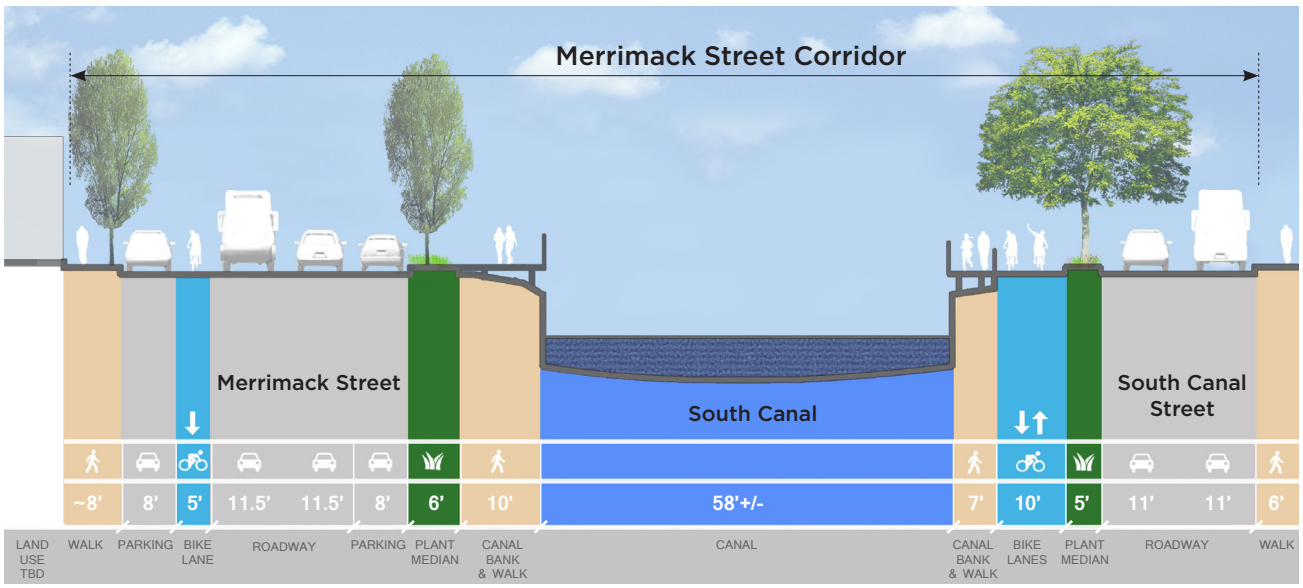


Figure III.16. Merrimack Street canal edge looking east.

Figure III.17. South Canal Street canal edge looking west.

urban environment is chosen. The selected species of trees also needs to avoid root entanglement with the canal wall. Since a significant portion of the Merrimack Street corridor area is within the 100 year and 500 year flood plains (see Figure II.8.), the inclusion of permeable surfaces such as the green swaths along both sides of the South Canal are particularly important resiliency features. Appropriate selection of urban street tree species will also be beneficial.

Accommodations for bicyclists is provided by a dedicated cycle path with two-way bicycle lanes on the north side of the South Canal. This approach connects with the planned Manchester-Lawrence rail trail which terminates at Merrimack Street and the South Canal, and crosses the Merrimack River and extends northward connecting with the Spicket River Greenway and the Methuen Rail Trail at Manchester Street Park. The bike path along the South Canal and connecting Manchester-Lawrence rail trail would provide needed low-cost bicycle commuting connecting for many Lawrence residents to the Merrimack Street area. The separated two-lane bicycle path north of the South Canal is the preferred approach to incorporating bicyclists in the traffic mix along the expanded Merrimack Street corridor. This style of a bike path separated from pedestrian sidewalks and vehicular travel lanes is sometimes called a cycle-track for bicycles.

A five-foot wide east-bound bicycle lane is also provided to serve seasoned cyclists between the parking lane and the vehicular travel lane on Merrimack Street. This on-street bike lane connects with the bike lane recently added to Merrimack Street east of South Union Street. Provisions for connecting bicyclists using the dedicated bike lane adjacent to the South Canal across the Merrimack and South Union intersection will be needed.

Figure III.18. Rain garden.

Table III.1. Recommended Improvements to the Merrimack Street Corridor.

CORRIDOR ELEMENT	EXISTING CONDITIONS	PROPOSED IMPROVEMENTS
South Canal Street	Unimproved	Paved
The Canal	Minimally Maintained	Enhanced with adjacent walk
Merrimack Street Travel Lanes	2 lanes of traffic 18 feet wide each	2 travel lanes 11.5' wide each
Merrimack Street Parking Lanes	Ad hoc – No formal parking lane	2 parking lanes on north & south side of Merrimack Street
Bicycle Lanes	None	1 lane eastbound between parking & travel lanes on Merrimack plus 2-way bike path separated and parallel to South Canal Street
Merrimack Street Sidewalks	North Side -- Yes South Side -- Sporadic	Both sides – Merrimack; Next to the South Canal & on the south side along the building side
South Canal Street Sidewalks	None	Canal-side and North Side
Streetscape / Landscape	Almost none, grass and scrub by Canal; few trees	Merrimack between parking lane & sidewalk; South Canal between bike path (cycle-track) and cars

Route 114 and the Merrimack Street Corridor

The intersection of Route 114 – Parker Street and Amesbury – and Merrimack Street was a topic of considerable discussion at the community meetings on Merrimack Street. Residents, workers and business people would all like to see this intersection function more effectively. Problems voiced included queuing, ability to easily make left turns, ingress and egress from the old train station shopping area and the CLASS parking garage, multiple curb cuts, and difficulty crossing the street.

After review and analysis of the intersection, the engineers found that the existing traffic volumes do not exceed capacity. Geometric improvements to the Route 114 and Merrimack Street intersection are constrained by the South Canal, existing buildings, the railroad bridge, the Casey (or Amesbury Street) Bridge spanning the Merrimack River, and grades, particularly the grade change enabling trucks to pass underneath the railroad bridge 400 feet south of the intersection.

No height limitations are posted on the Route 114 (Amesbury / Parker Streets) passage under the railroad bridge. As such, the underpass operates in accordance with Massachusetts guidance on standard bridge heights and regulations governing truck dimensions. The standard bridge clearance height in Massachusetts is thirteen feet six inches (13' 6"). Underpasses on the Mass Pike (I-90) and interstate highway system, such as I-93 and I-495 provide at least 13' 6" of clearance for trucks. Although standard size trucks can pass under the rail bridge on Route 114 between Merrimack and Market Streets, the road under the bridge and the approaches have been lowered to enable passage by standard size truck operations. As a result of the excavation and lowering of the Route 114 road bed, the portion of Route 114 under the bridge is considered to be in the flood plain. During heavy rain storms, ponding often occurs at this lowest point in the roadway making passage under the bridge difficult.

Traffic flow and traffic operations are classified as to Levels of Service or LOS, and are rated as to A, B, C, D, or F. The AM peak hour and the PM peak hour operations for Route 114 and Merrimack Street are both classified as Level of Service C. This means that vehicular traffic during morning and evening rush hours at this intersection generally flow, however drivers may need to wait for a least one signalized light cycle during peak periods. Overall, traffic flow is still stable and acceptable. During the balance of the day, Merrimack Street and Route 114 operates below capacity. See the informational insert on page 73 on Level of Service and Table XX for more detail on the Level of Service Rating System for Intersections. Please note that Level of Service pertains to traffic flow, not traffic volumes.

The traffic signal operations are in three phases with a North-bound (NB)/ South-bound (SB) cycle; an East-bound (EB)/ West-bound (WB) cycle; and a pedestrian cycle. Due to aging and malfunctioning traffic equipment, the pedestrian phase has been operating continuously. Recently, the pedestrian phase has been repaired to allow proper activation of the push-button detectors. This equipment repair is enabling the pedestrian phase to now be user-activated, in lieu of continuous, saving sixteen seconds every cycle. Additionally, albeit partial small improvements, have been further made by the City.

The existing intersection geometrics can be confusing to drivers. The lane assignment striping and signage is extremely worn and basically non-existent. There is a driveway and curb cut directly onto the intersection from the old train station retail/office area, contributing to the confusion. The signal equipment is also antiquated.

There are five short and mid-term recommendation for improving Route 114 and Merrimack Street. These short term improvements are depicted in Figure XX. The recommendations are:

- Upgrade the signal equipment;
- Provide accessible crossing accommodations and high visibility crosswalks.
- Delineate and clearly marking exclusive turn lanes;
- Add lane assignment signing and striping; and
- Remove or relocate the unsignalized driveway at Route 114 and Merrimack Street.

Highly visible crosswalks should be adopted as a standard component of a complete street. The parallel line crosswalk, as show in Figure XX, has low visibility to drivers, especially at night. High visibility crosswalks, such as the bar, ladder or "zebra" crosswalk considerably improves pedestrian safety. Two studies, one in San Francisco and a second in New York City found that high visibility crosswalks can reduce pedestrian vehicle collisions by 37 percent and 48 percent respectively. Lawrence should adopt a policy of using zebra or bar crosswalks, as shown in Figure XX, to improve pedestrian safety. This is particularly important in Lawrence, since nearly 4.4% of residents walk to work in Lawrence. Another 4.0% take transit, which requires walking to and from bus stops. Thus, safe crosswalks are critical for at least one in twelve Lawrence residents who walk or take the bus to work every day.

A lower-cost approach to eliminating unwanted driveways and curb cuts, such as the one at Route 114 and Merrimack Street,

is the use of planters as traffic control, as depicted in Figure XX. Planters can provide an aesthetically pleasing interim approach to eliminating curb cuts. Moreover, planters can be used to test out a solution, before making it permanent.

The existing intersection geometrics can be confusing to drivers. The lane assignment striping and signage is extremely worn and basically non-existent. There is a driveway and curb cut directly onto the intersection from the old train station retail/office area, contributing to the confusion. The signal equipment is also antiquated.

There are five short and mid-term recommendation for improving Route 114 and Merrimack Street. These short term improvements are depicted in Figure XX. The recommendations are:

- Upgrade the signal equipment;
- Provide accessible crossing accommodations and high visibility crosswalks.
- Delineate and clearly marking exclusive turn lanes;

LEVEL OF SERVICE

Level of Service (LOS) is a termed used by transportation planners and engineers to describe the operating conditions of a roadway based on several factors including speed, travel time, maneuverability, delay and safety. LOS is rated as to A, B, C, D, E, or F, with A being the best, and F being the worst. LOS is calculated differently as to the type of road. For example, interstate highways, such as I-495 has different operating conditions and the focus in moving the most vehicles at the posted speed limit safely. Whereas the LOS for a major collector street, such as Merrimack Street, the focus is on balancing access and mobility. The LOS for intersections is rated in accordance with standards established by the Transportation Research Board. Intersections are rated as to traffic volumes and capacity. The following table, Table XX, describes the various levels of service for intersections.

LOS as a metric for transportation service is undergoing review. LOS was developed to measure traffic operations focusing on automobile and motorized vehicles. LOS does not typically consider other modes of transport, such as transit, bicycling, and walking. LOS is being reformed and new standards reflecting the needs of complete streets are being developed. Metrics for pedestrian and bicycle level of service include network continuity, network quality, road crossings, traffic protection, congestion and user conflicts, to name a few. These pedestrian and bicycling service factors were are considered in the development of the recommended option for the Merrimack Street Corridor improvements.

Table III.2. Level of Service Rating System for Intersections.

Level of Service	Description
A	Uncongested operations; all queues clear in a single signal cycle.
B	Very light congestion; an occasional approach phase is fully utilized.
C	Light congestion; occasional backups on critical approaches.
D	Significant congestion on critical approaches, but intersection functional. Cars required to wait through more than one cycle during short peaks. No long-standing queues formed.
E	Severe congestion with some long-standing queues on critical approaches. Blockage of intersection may occur if signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es).
F	Total breakdown, stop-and-go operation.

- Add lane assignment signing and striping; and
- Remove or relocate the unsignalized driveway at Route 114 and Merrimack Street.

Highly visible crosswalks should be adopted as a standard component of a complete street. The parallel line crosswalk, as show in Figure XX, has low visibility to drivers, especially at night. High visibility crosswalks, such as the bar, ladder or "zebra" crosswalk considerably improves pedestrian safety. Two studies, one in San Francisco and a second in New York City found that high visibility crosswalks can reduce pedestrian vehicle collisions by 37 percent and 48 percent respectively. Lawrence should adopt a policy of using zebra or bar crosswalks, as shown in Figure XX, to improve pedestrian safety. This is particularly important in Lawrence, since nearly 4.4% of residents walk to work in Lawrence. Another 4.0% take transit, which requires walking to and from bus stops. Thus, safe crosswalks are critical for at least one in twelve Lawrence residents who walk or take the bus to work every day.

A lower-cost approach to eliminating unwanted driveways and curb cuts, such as the one at Route 114 and Merrimack Street, is the use of planters as traffic control, as depicted in Figure III.21. Planters can provide an aesthetically pleasing interim approach to eliminating curb cuts. Moreover, planters can be used to test out a solution, before making it permanent.

Figure III.20. Bar or Zebra Crosswalks improve pedestrian safety and are more visible to drivers.

Figure III.21. Planters can be used as part of traffic control, blocking entries or unwanted driveways. Planters also can shield pedestrians from traffic, and provide a low-cost aesthetic improvement.

Figure III.19. Parallel Line (or Traverse Line) Crosswalk is less visible to drivers, particularly at night.

Figure III.22. To accommodate bikes at the intersection a sharrow and a bike box will be needed for the east-bound bike lane on Merrimack Street. Similar markings will be needed for the cycle track crossing of Route 114 at South Canal as part of overall corridor improvements.

Figure III.23. Recommended Short-Term Improvements to Merrimack Street and Route 114.

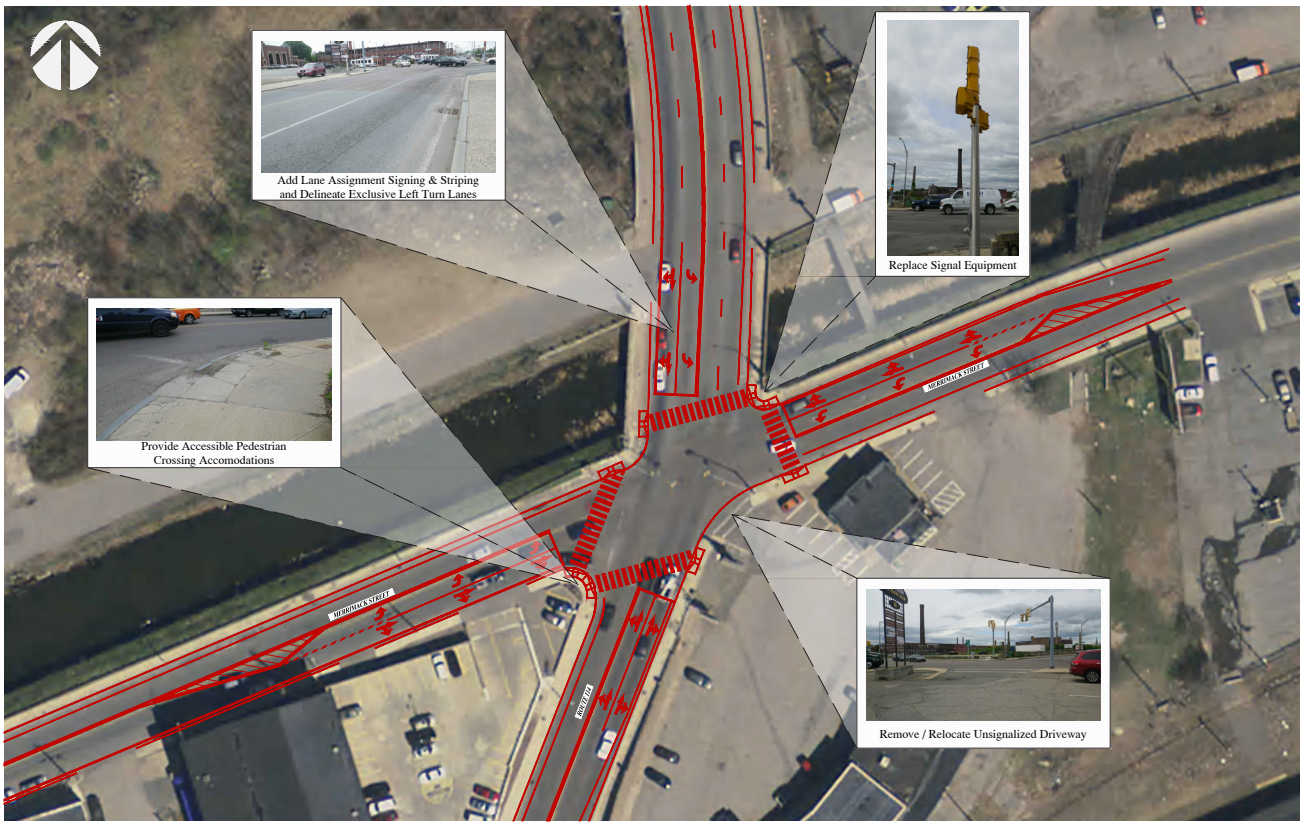
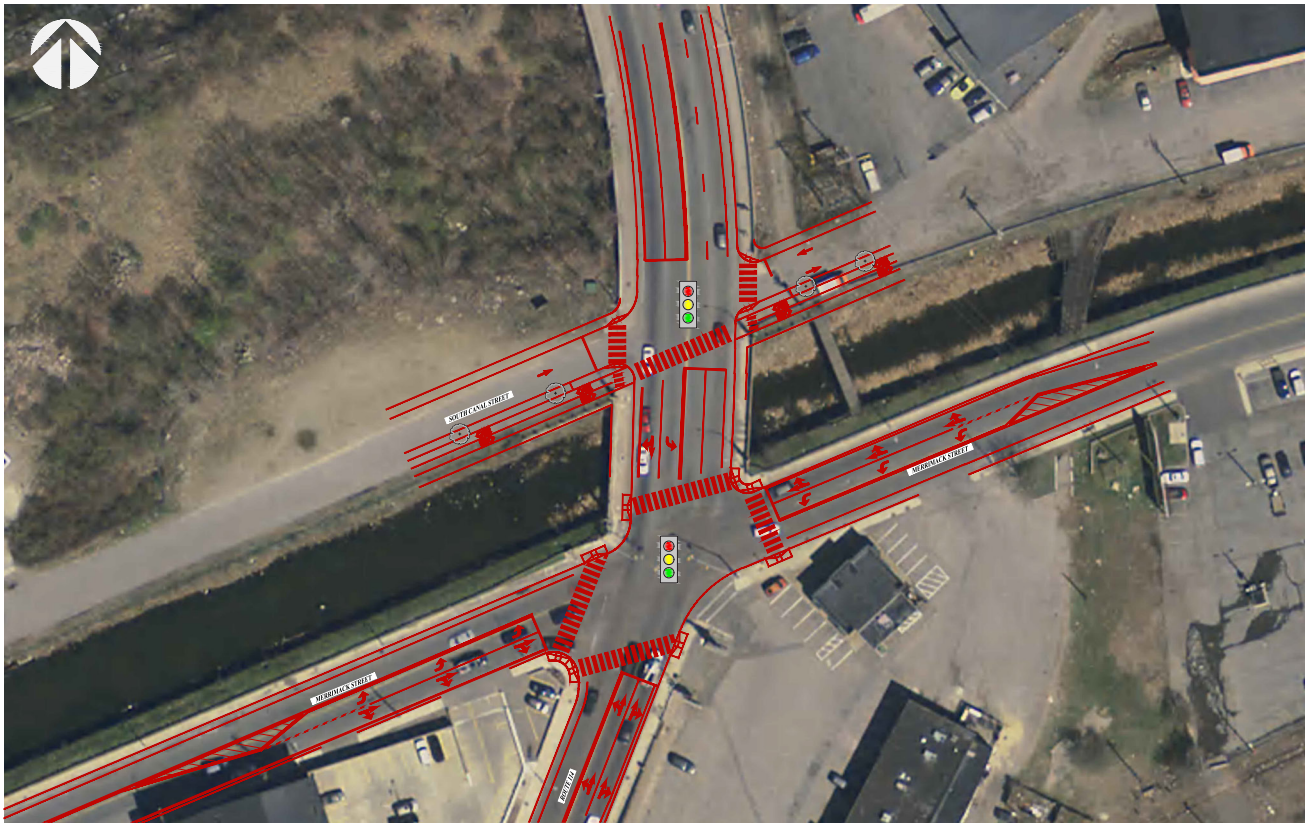


Figure III.24. Recommended Long-Term Improvements to the Merrimack Street Corridor and Route 114.



Short-Term Improvements to the Corridor's Infrastructure

Over the near-term, there are several key infrastructure investments needed to spur new private investment and development along the Merrimack Street corridor. Merrimack Street and the corridor should be upgraded to a green, complete street as described in the recommended preferred alternative. The intersection of Route 114 and Merrimack Street should be upgraded with signal repairs, striping, a left-turn lane and cross-walks. The City of Lawrence should acquire, pave and upgrade South Canal Street as part of the overall Merrimack Street corridor. The Canal Walk along the South Canal should be designed and constructed as part of the North and South Canal Walk loop, which would link both sides of Lawrence across the Merrimack River.

Mid-Term Improvements for the Merrimack Street Corridor

Construction of mid-term improvements should be undertaken in four to seven years. Some of the mid-term improvements will be necessitated as changes in the land use to the properties north of the South Canal are made. Use of the South Canal Walk and bicycle path could also trigger the need for some of the mid-term improvements as well.

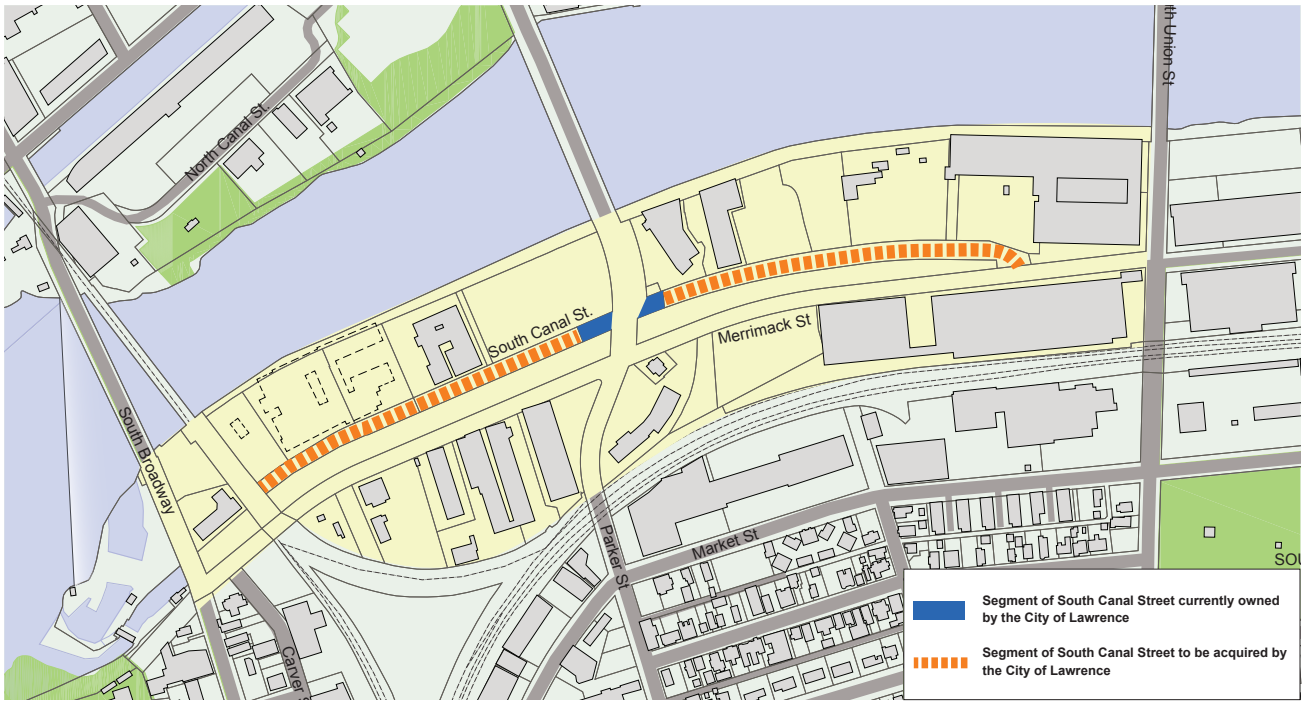
Mid-term improvements include a pedestrian-activate light across Amesbury Street at the South Canal Walk and bicycle path. Also changes in the circulation of South Canal Street will be needed. West of Amesbury Street (Route 114), the traffic should be directed east bound towards the Casey Bridge. This will likely also require repair of the Merrimac Paper bridge over the South Canal. On South Canal Street east of Amesbury Street (Route 114), there should be two-way traffic serving New Balance, National Grid, and site 2.

Another mid-term improvement is upgrades to the public realm. The access area to the Manchester-Lawrence Rail Trail should be enhanced with landscape amenities as the southern entry to the rail trail system in Lawrence. Some access points and vistas along the Merrimack River could also be upgraded.

Long-Term Infrastructure Improvements

Over the long-term, ten to fifteen years, the intersection of Amesbury-Parker, Merrimack Street and the South Canal may need to be reconstructed. This will depend on traffic counts and the rate of new development along the Merrimack Street corridor. Over the very long-term, development of the multi-use path along the south bank of the Merrimack River should be

Figure III.25. Ownership of South Canal Street.



constructed following build-out of the development sites. The construction of a proposed river-side multi-use path has been slated as a very long-term improvement, since initial investments in the corridor need to be highly visible and signal that the public sector is making investments to spur and support private sector development. A riverside multi-use path is not visible from Merrimack Street, and would likely be on the below grade shelf along the Merrimack River.

Trucks and Bicyclists

Many of the existing businesses generate truck and large vehicle traffic, including New Balance, Simpson Moving, B & D Advance Warehousing, Helfrich Brothers Boiler Works, CLASS, as well as some of the smaller warehousing/storage facilities used by business. The mixing of truck traffic and bicyclists poses significant safety challenges for the design of complete streets. In Boston, between 2000 and 2014, there were eleven fatalities with bicyclists and vehicles, seven of which were with large trucks.

The overall street design of Merrimack and Canal Streets working as a complete street unit providing a distinct and separate path for bicyclists along the canal away from trucks was developed to provide maximum safety to bicyclists and to minimize challenges to truck drivers servicing local employers. Provisions for a highlighted east bound bike path along Merrimack Street was included in the overall design anticipated that experienced cyclists might bypass the separated bike path along the canal and ride along Merrimack Street. A highlighted bike path is suggested to increase the awareness of truckers and motorists that they may encounter bicyclists who are sharing the road along Merrimack Street.

The Volpe National Transportation Systems Center reports that in a recent five year period, "556 bicyclists and pedestrians were in the US were killed after side-impact accidents with trucks." This prompted the Volpe Center to research approaches to improving truck-bicyclist safety and how to reduce fatal accidents. The Volpe Center identified research which found that the use of sidebars on trucks reduced 61% of the bicyclist-truck fatalities and 20% of pedestrian fatalities in side –impact accidents with trucks.

The City of Lawrence with the City Council's adoption of a complete streets policy may wish to consider adding sidebars to trucks and large vehicles owned and operated by the City. Consideration of adopting an ordinance similar to the Boston model (a copy of which can be found in the Appendix) could further safeguard Lawrence residents. In addition, the companies along Merrimack Street should be encouraged to install side guards on their trucks.

Table III.3. Infrastructure Improvements for the Merrimack Street Corridor.

Short-Term	Mid-Term	Long- Term

• Merrimack Street
• Intersection: Parker –Amesbury at Merrimack
• Signal Repaired
• Striping
• Left-turn lane
• Cross-Walks
• South Canal Street -- acquire, pave and upgrade
• Canal Walk – North and South Canal Walk
	• Pedestrian Activated Light
	• Change South Canal Street Circulation
	• **West of Amesbury** – traffic to be East-Bound toward Casey Bridge
	  • Repair of Merrimac Paper bridge needed
	• **East of Amesbury**–
	  • 2-way traffic serving New Balance, NGrid, and Site 2
	  • **Office:** 2-way traffic
	• Public Realm Access points to Rail Corridor and River
		• Reconstruct Amesbury-Parker / Merrimack Street and So Canal Street as vehicle counts increase
		
		Very Long-term
		• Multi-use path along the south bank of the Merrimack River (after build-out)

2. District Energy

Energy

Energy and electricity are essential for business and contemporary living. Lawrence grew and prospered as a result of the Great Stone Dam and the power it supplied to the growing textile industry and smaller industries along Merrimack Street. Today, the Great Stone Dam, just west of the study area, still generates electricity. Power generated by the Great Stone Dam is sold on the open market and not used exclusively in Lawrence, as it once was.

Lawrence has the opportunity to utilize energy to re-power twenty-first century economic renewal and growth along Merrimack Street.

Massachusetts is a particularly high cost state for electricity, as is much of New England. This places the Commonwealth, including Lawrence, at a disadvantage when seeking to attract and grow industry. The cost of electricity is often a key determinant in site selection for industrial users. To position Merrimack Street as a more competitive location for business and industry, strategies to conserve energy and foster competitive energy costs are important.

Utilizing power and energy to re-boot Merrimack Street will require the City, businesses and property owners to work individually as well as collaboratively on a comprehensive energy approach aimed at saving money and assuring a stable source of power. The elements of the comprehensive energy approach are:

- Energy Conservation;
- Green Community;
- Development of Renewable Energy Sources; and
- District Energy.

Energy Conservation

Conservation is typically the first step. Energy audits and utility incentives can help businesses identify and make financially smart energy conservation investments. Investor-owned utilities, such as National Grid, frequently offer businesses assistance with energy audits and offer tailored incentives for energy conservation. The Massachusetts Clean Energy Center periodically sponsors initiatives and incentives for renewable and clean energy improvements that can assist businesses, as well.

Merrimack Street businesses and property owners should be encouraged to use cool roofs, as an energy conservation measure. Cool roofs can be used by using a lighter roof color, such as white, or using a reflective material or pigment that reflects the sunlight on the roof. Cool roofs help reduce cooling costs and overall energy use by seven to fifteen percent annually. Cool roofs tend to prolong the overall life of a building's roof, as well as the air conditioning system. Moreover, cool roofs contribute to reducing the urban heat island effect. Some businesses are leading the way and have already installed cool roofs. Others need to be encouraged.

Green Communities

Massachusetts has developed a "Green Community" program to use "clean" and renewable energy, to reduce energy costs over the long-term, and to support cities and towns developing strong sustainable local economies. The Green Communities program is aimed at municipalities and the Commonwealth has designated 155 Green Communities. Green Communities are eligible for annual grant funding related to clean energy and conservation. Ten Gateway Cities have chosen to be a Green Community.

Any city can become a Green Community by demonstrating its commitment to five criteria. The criteria are:

1. Provide as-of-right siting in designated locations for renewable/alternative energy generation, research & development, or manufacturing facilities;
2. Adopt an expedited application and permit process for as-of-right energy facilities;
3. Establish an energy use baseline and develop a plan to reduce energy use by twenty percent (20%) within five (5) years;
4. Purchase only fuel-efficient vehicles; and
5. Set requirements to minimize life-cycle energy costs for new construction; which is typically done by adopting the new Board of Building Regulations and Standards (BBRS) Stretch Code.

The as-of-right siting criteria could easily be met by creating a zoning overlay district allowing solar photo voltaic panels on rooftops and as solar canopies along Merrimack Street. Solar panels can be defined as an energy facility. There are already several energy-related businesses along Merrimack Street.

Being a green community can enhance a municipality's brand as an environmentally-friendly, energy-smart community. These are attributes that many businesses seek to adopt, as well. Business tenants are increasing expecting buildings to be green and energy efficient.

Renewable Energy Sources

The use and generation of renewable energy is another important tool in using energy to power Lawrence's twenty-first century renewal. As noted, the Lawrence Zoning Ordinance needs to be amended to enable renewable energy to be a by-right permitted use along Merrimack Street, particularly on building roof tops. Solar canopies can also be used as a parking lot feature that provides parking and generates energy simultaneously. Some of the more inaccessible parts, lacking street visibility, in the study area, such as the triangular parcel that was once a former concrete plant are candidates for solar panels, particularly as an interim use. There are state and federal incentives currently available that makes investment in solar particularly attractive.

Advances in energy battery storage are making the production and use of renewable energy more practical and effective for business applications, as well.

Some of the existing businesses generate heat as a part of their production processes. Capturing excess thermal energy into usable energy for heat and electricity can help individual businesses save, and perhaps fuel energy for multiple properties. Sewer collection and sewer trunk lines are another source of heat, which some locales have successfully used to power geo-thermal style systems. The large trunk sewer line conveying wastewater to the Greater Lawrence Sanitary District's treatment facility extends the length of the study area is another heat source that could be potentially tapped for energy.

Figure III.26. The Great Stone Dam, Lawrence MA.

District Energy

District energy is the local production and distribution of energy. Key features are a source of energy generation and a distribution system, so that thermal energy can be distributed for heating and cooling businesses, commercial, institutional as well as residential buildings.

Downtown Boston has a district energy system using steam. Institutions and colleges often utilize district energy, including MASCO, the Medical and Scientific Community Organization) in the Longwood Medical area of Boston and U-Mass Worcester. The City of Seattle recently completed a feasibility study for district energy systems for five neighborhoods. Seattle is now embarking on development of a district energy system in one neighborhood serving both businesses and residents. Coop City in the Bronx has a district energy system that operated throughout Hurricane Sandy, when others lost power in New York. Coop City's district energy system sells excess energy to Consolidated Edison, producing $15 to $25 million annually in excess revenues that goes to support the district energy system as well as Coop City, a residential neighborhood.

A variation of district energy is the development of micro-grids. In the wake of long electric outages, municipalities in Connecticut began developing micro-grids to increase overall community resiliency (in the case of outages and natural disasters), so that essential services, police, fire, hospital, local pharmacies and food, can operate and serve residents and businesses. Micro-grids operate in conjunction with the larger grid system, but provide a closed loop for essential services in the Connecticut example.

There are four financial models for operating a District Energy system. They include private development; public project development entities (such as a redevelopment authority or a special district like a Business Improvement District); public-private partnerships; or specialized organizations, such as coops.

The Massachusetts Clean Energy Center as well as the International District Energy Association (IDEA), which is based in Westborough, can be resources to Lawrence in the development of a district-energy approach to Merrimack Street. Other resources could include local firms and property owners, such as Enel and Solectria Solar, a division of Yaskawa, which is headquartered in Lawrence on Merrimack Street, east of the study area.

By utilizing local area resources, renewable energy with innovative technology using a district energy approach, Lawrence has the potential to re-power itself. Lawrence can use energy to develop its competitive advantage, power new industries and create jobs opportunities for Lawrence residents today by harnessing and managing power, innovation and sustainability in new ways. Merrimack Street can be the locus of this effort. Re-powering Lawrence, will require new partnerships and collaboration, as well as further exploration as to the best management and financial model for the Merrimack Street area. Technical aspects of energy generation, storage and distribution will also need to be evaluated.

3. Future Land Uses

Several alternative scenarios for the future of Merrimack Street have been developed. Reconfiguration of existing lots and parcels was examined. As previously discussed, the option of filling the South Canal and forming new land area was explored. The conclusion is that the South Canal should be retained as a canal, and developed as an amenity for the district. Retention of the existing 26 businesses and over 550+ jobs in the study area has been a key consideration in developing a future land use scheme.

Existing physical conditions, regional and local demographic and work force data, as well as market conditions were analyzed to inform the future land use plan. Organizing the land into parcels which are sized for new construction was also reviewed as a part of developing fa preferred future land use scheme.

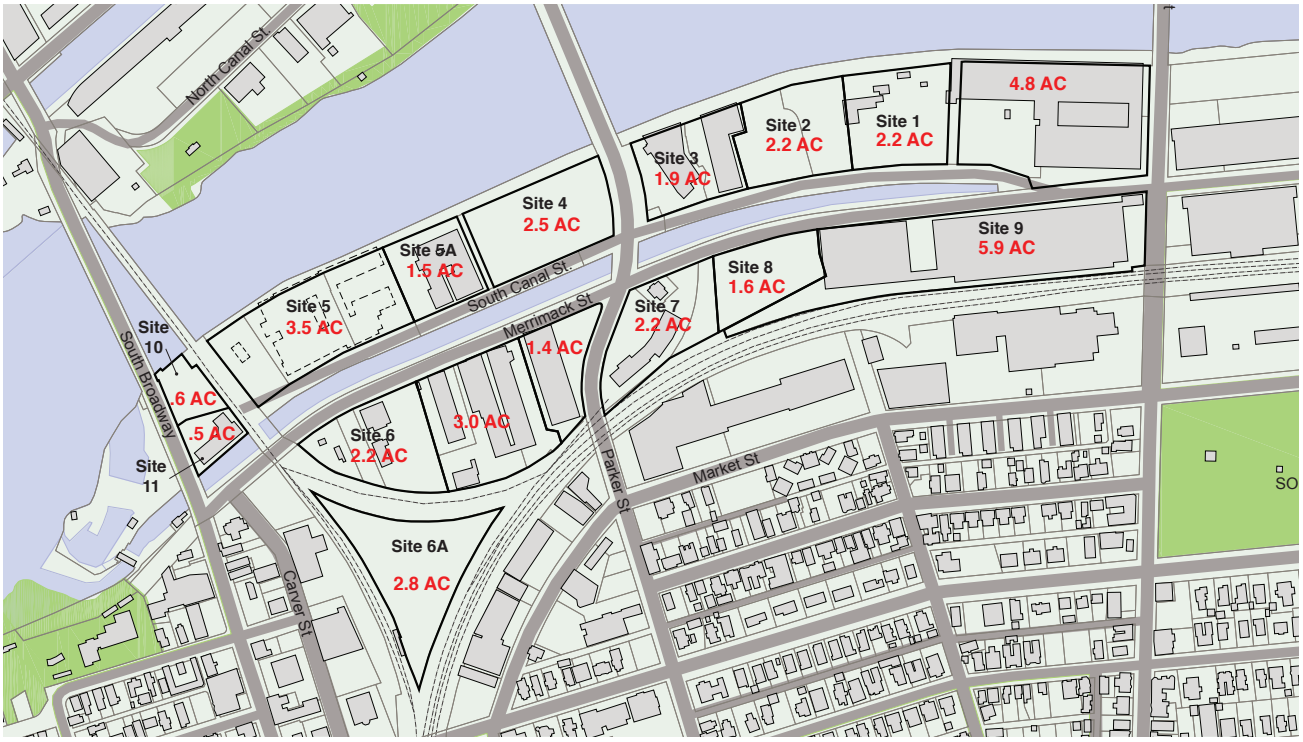
Parcelization

The thirty-seven land parcels in the Merrimack Study area range in size from 1,380 SF to 5.6 acres (244,807 SF). As noted earlier, the condition of the parcels ranges from a fire-ravaged brownfields site with a condemned mill building to vital manufacturers, such as New Balance based in 1909 historic Ayer Mill building, as well as vacant lots, and vacant and under-utilized buildings in varying states of repair. The Merrimack River and the MBTA rail line constrain and define the depth of land parcels. A central public realm corridor – Merrimack Street and the South Canal with South Canal Street, albeit privately owned, functioning as an access road.

The average depth of lots on the Merrimack River side of the study area (north of Merrimack Street) is approximately 250 feet for parcels west of Amesbury Street (the Casey Bridge). For property east of Amesbury Street, the average depth begins at 250 and slowly widens to over 300 feet closer to South Union Street.

The depth of land between southern edge of Merrimack Street and the MBTA commuter rail line varies from an average of 235 feet between Parker and South Union Streets to over 300 feet west of Parker Street. The curvature of the rail right-of-way creating the southern bound causes the existing parcels to be non-rectilinear. The physical constraints of the river, canal, street and rail line, clearly limit reorganization of existing parcels largely to recombining parcels as to east-west width.

Figure III.27. Merrimack Street Redevelopment Sites.



Existing lots and building density along the Merrimack River, 2015.

During the course of this assignment an additional parcel was added to the study area, namely the triangular parcel just south and west of the study area, and east of Carver Street. This 2.76 acre site is flanked on all sides either active or abandoned rail right-of-way, with no street frontage and only an unimproved dirt lane for access. This isolated parcel provides some opportunity for creating new or larger parcels, or improving access to this parcel so that uses such as nearby employee surface parking or a site for a growing business. Providing a hard-surface service lane will be needed to facilitate redevelopment of this particular parcel. A service lane could be extended over the surplus MBTA right-of-way, and if desired provide a rear service lane for the businesses on the south side of Merrimack Street using the edge of the MBTA right-of-way.

Ten potential future redevelopment parcels were delineated in the Merrimack Street corridor on vacant and under-utilized parcels, as illustrated in Figure III.27. Larger sites are needed to spur redevelopment. Existing parcels are proposed to be aggregated or paired. Existing uses, such as New Balance, the electric sub-station, Helfrich Brothers Boiler Works, and CLASS, were not included in prospective redevelopment parcels, as they are vital business operations.

The Redevelopment Parcels

The description of each of the redevelopment parcels is found in Table III.4. The average size is 2.7 acres or 118,000 SF. Many of the proposed redevelopment parcels are contiguous and within one block area, enabling further merging of lots to create even larger parcels if warranted.

Two parcels, Site 10 and Site 11, as identified in Figure III.27., are squeezed between South Broadway and the Manchester-Lawrence rail spur and bridge, the Merrimack River and South Canal. Both of these parcels were not included in the re-parcelization review. Site 10 or 8 South Broadway consists of 23,880 SF. It is home to a small strip retail center which includes an adult bookstore, as well as pizza shop, lingerie store and a hair/nail salon. This parcel is zoned I-2, like the balance of the district. It has a Special Use permit granted by the Zoning Board and the Planning Board approved the site plan. An adult book is not the ideal use adjacent to a planned rail trail that will hopefully attract families and children, however, it is an existing use. The City has a litigious history with the owner. Efforts to work with

Table III.4. Redevelopment Parcels.

New Parcel #	New Parcel Size		Existing Parcel Reference (Map-Lot #)	Current Use
	Acres	SF		
1	2.2	95,944	103-7	Electric Sub-Station
2	2.2	96,732	103-6B and a portion of 103-6A	Vacant, abandoned building; Tractor-trailer parking
3	1.9	82,901	103-4, 103-5 and 103-6	Warehousing; Self-storage; Simpson Moving; Utility lines
4	2.5	110,756	123-5 and 123-6	Vacant land
5	3.5	151,958	123-2; 123-1	Former Merrimac Paper site; vacant condemned building and brownfield site
5A	1.4	62,290	123-4	Riverside Business Center
6	2.2	95,888	122-23; 122-20	Used car sales lots
6A	2.8	122,361		Vacant; former concrete batching area
7	2.2	94,046	103-9; 103-10; 103-11	Mr. Tux retail outlet; former train station building with some offices and vacant retail.
8	1.6	68,183	103-12	Parking lot for New Balance
9	5.9	258,979	83-4	B & D Advanced Warehousing; warehousing and office at corner in former stationmaster house
10	.5	23,880	122-4	Vacant land.
11	.6	26,280	122-5	Retail strip center with adult books.

Figure III.28. The vacant lot on South Broadway is overgrown and has remnants of prior structures.

Figure III.29. A retail strip center with adult bookstore sits at the corner of South Broadway and the South Canal.

the business and property owners to remove graffiti and better maintain the exterior of the building would be an achievable improvement.

Site 11, or 2 South Broadway, consists of 26,280 SF of land, and is an overgrown parcel covered with failing pavement and remnants of a building foundation. This parcel is situated at the southern approach to the O'Leary Bridge on South Broadway. The Greater Lawrence Sanitary District has an easement along the riverfront on this site. Site 11 is adjacent to the planned rail trail, and should become part of a larger open space area servicing the southern terminus of the rail trail.

Business Trends to Consider

When considering industrial and manufacturing as a future land use, it may be useful to note that in some industrial parks, the specific lots sizes are often not predetermined at the outset enabling parcels to be right-sized for prospective business and industrial users upon demand and need. Industrial park developers do invest and build the transport network, and in some cases parking; provide for storm water management, utilities, and amenities – all setting the stage for new business development. Redeveloping this section of Merrimack Street is somewhat similar but in an urban environment.

There are two concurrent, countervailing trends regarding facility size. One trend is towards smaller scale facilities, 10,000 to 70,000 SF, which can easily be part of an urban environment. Businesses choosing smaller scale facilities can be family-owned businesses, contractors and tradesmen, as well as early stage businesses seeking to scale-up. Businesses capitalizing on specialized niches or miniaturization often favor smaller spaces. Some of these businesses may start small, and then grown and expand. A good local example is Helfrich Brothers Boiler Works, which is growing and expanding on Merrimack Street, and is located on 93,000 SF of land.

The related size trend is towards bigger and bigger facilities, where industry is seeking economies of scale for production requiring larger facilities – 500,000 and one million plus SF physical plants. Changes in distribution and logistics are prompting the demand for larger centralized distribution facilities to better respond to demands for next-day delivery with e-commerce and just-in-time inventory needs. This mega-facility approach is simultaneously creating the need for more last-mile delivery services and a demand for smaller-scale distribution satellites and depots. FedEx, UPS, and the US Post Office are attempting to meet much of this demand.

Another trend is the development of hybrid space. Restaurants and retailers are incorporating manufacturing, such as brew pubs, coffee roasters, or stores adding custom-fitting and personalized products. Manufacturers are incorporating factory stores to their facilities. Disruptive technologies, such as 3-D printing, is enabling manufacturing and fabrication to occur in homes and offices. The future land uses along Merrimack Street will need to be flexible to enable new hybrid forms of land use and commercial/ industrial spaces to develop.

The internet is providing a valuable platform for aspiring entrepreneurs and persons who may be just initially tinkering to sell goods and services. The rise of Etsy as a platform for crafters and artisans over the last decade to easily sell goods and grow, is just one example. Sales and success on the web, whether on Etsy, EBay , Spotify, or other platforms, prompt individuals to become small businesspeople, including the need to move out of a home-based environment and expand to a space that can accommodate fabrication, office, storage or shipping activities. Initial e-commerce success can breed businesses' need to lease real estate. Success requires support and technical assistance to small businesses, as well. Scaling a business requires more than leasing space, it requires developing systems to handle growth, as well. For Lawrence to capture this new entrepreneurial energy along Merrimack Street, appropriately sized leasable space will be needed as well as supports for small business growth and new entrepreneurs.

Land Use Scenarios

Three alternative future land use scenarios were initially developed and shared at meetings with the community and stakeholders. These scenarios along with the analysis and feedback have informed the development of the preferred scenario which is an amalgamation of the desired features of alternative land use approaches to Merrimack Street.

The initial scenarios were conceptual approaches to land use and redevelopment. The maps for each of these initial options can be found in Figures III.30, III.31, and III.32 on pages 95-97. References to specific parcels or sites is key to the proposed future development parcel numbers; see the map in Figure III.27 on page 89.

Made In America

The first future scenario, named Made In America and mapped in Figure III.30, uses the theme that Lawrence historically and today is a place where goods are developed and manufactured. This future land use scenario looks to grow more manufacturing in Lawrence. Merrimack Street is home to New Balance, a premier manufacturer of athletic footwear and fitness apparel, priding itself as being the only major company manufacturing over 4000 pairs of shoes in the US annually, including manufacturing shoes In Lawrence. Helfrich Brothers Boiler Works fabricates and manufacturers vessels and boilers. Lanford Manufacturing is a contract manufacturer of precision parts. CLASS, too, is engaged in manufacturing using historic looms to weave handbags from recycled VHS and Betamax tapes that are sold in specialty markets.

Some of the specific features of the Made In America scenario include the development of a Made In America Trail that can be used to promoted and link factory stores, outlets and related points of interest for Lawrence residents, workers and visitors. A Made In America Center can be developed at South Union and Merrimack, and feature maker-space, training facilities, as well as interpretative materials on Lawrence as a center of manufacturing and innovation.

Commercial, industrial, and light industrial/flex space uses were proposed along Merrimack Street, with commercial uses on the north side of Merrimack Street, between the river and the South Canal. Industrial and light industrial were proposed along the south side of Merrimack Street. At the southeast corner of Merrimack and Parker Streets, the former train station site, local commercial and retail is specified. Institutional uses on the western edge of the district on Sites 5, 6, and 6A were identified, with some green space abutting the planned rail trail. A recreation amenity along the riverfront was incorporate with two green access paths between Amesbury and South Union Street, as well.

Transit-Oriented Development

This alternative focused on transit-oriented development as an organizing theme taking advantage of the MBTA commuter rail station at the corner of Merrimack and South Union Streets, as well as the close proximity to Lawrence Municipal Airport just 5 minutes east on Merrimack Street. Two different approaches to the Transit-Oriented Development theme were developed. One focused on TOD that concentrates on employment, and the second on housing. Input during the community process and with stakeholders emphasized the importance of jobs to Lawrence.

The business-focused TOD scenario suggested a business/co-working center on the first floor at South Union and Merrimack Street. Adaptive redevelopment of the historic freight warehouse and freight master's house at the southwest corner of South Union and Merrimack Streets into space for a fresh market and small retailers was posed. The suggested relocation of the existing B & V Advanced Warehousing, which now occupies the corner, is to the eastern portion of Merrimack Street closer to I-495, where rail access for freight is also possible.

Commercial land uses are outlined for the north side of South Canal Street west of New Balance (sites 2, 3, and 4), as well as on the south side of Merrimac Street (site 8). A future hotel site at the corner of South Canal Street and Amesbury is one of the commercial land uses. Local commercial retail is the future land use for site 7 at the southeast corner of Merrimack and Parker Street.

The TOD Business scenario land use plan largely concentrates higher traffic generating retail uses on the south side of Merrimack Street for easier ingress and egress onto a major street, which is typically preferred by large-format retailers. New retail building construction typically entails lower value buildings, which cannot support higher construction costs required for decked or structured parking. Land uses that typically use higher-value buildings, such as a hotel, are proposed along South Canal Street.

The TOD housing land use scenario is shown as an inset to Figure III.31. Although similar to the business TOD, there is more housing and land uses containing services for residents depicted. A restaurant on the first floor at the corner of South Union and Merrimack Street diagonally across from the train station is shown.

The variations in the suggested housing TOD land use scheme (compared to the business-focused TOD scheme) are found between Route 114 and South Broadway. Site 4 is proposed to be an institutional use in the housing TOD scheme, and site 5 would be a housing development. Both would take advantage of river views and be situated on South Canal Street. Site 6 on the south side of Merrimack Street would be a local commercial/retail site, and site 6A would be slated for parking (which could include solar power-generating canopies, as well).

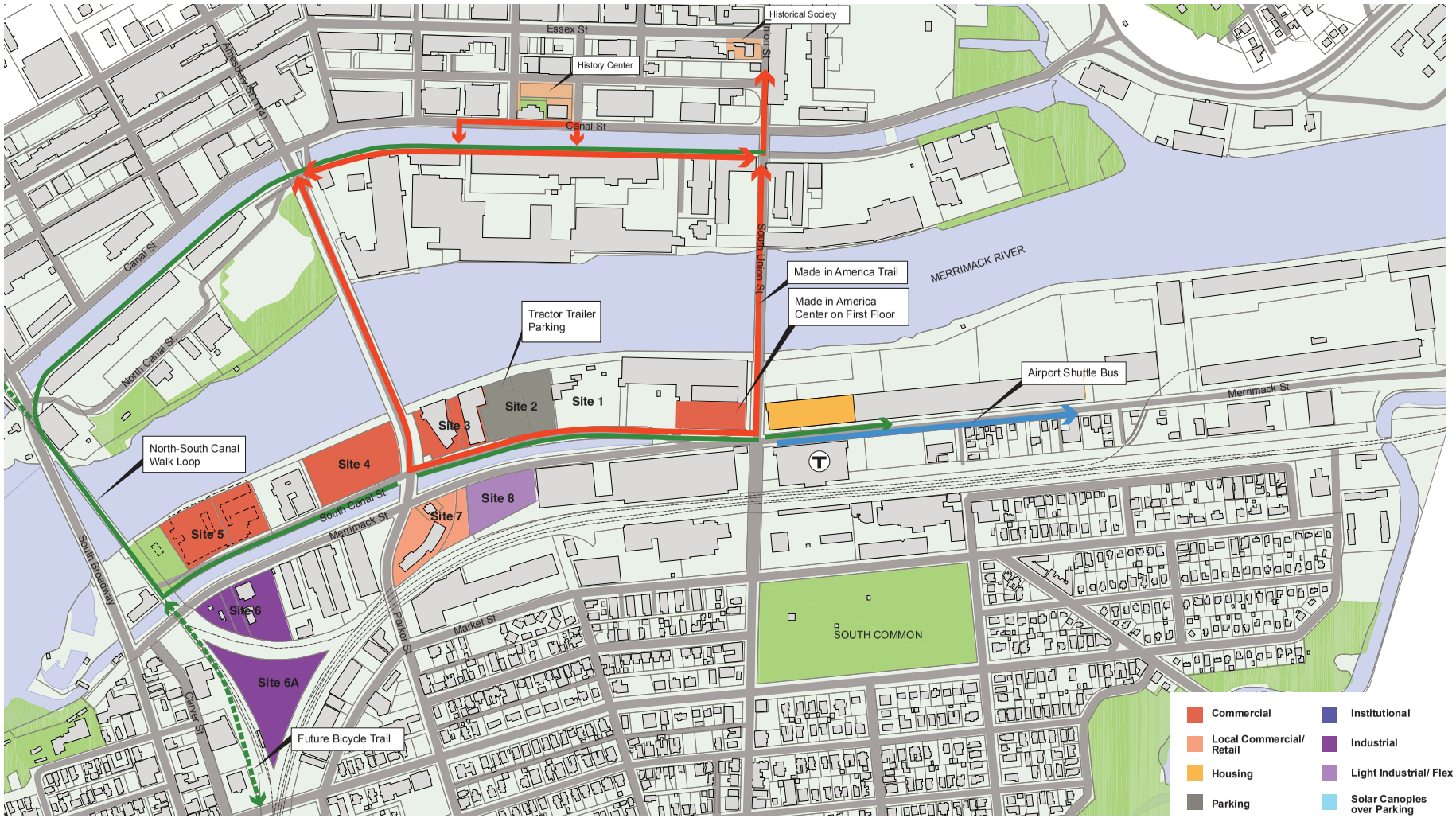
Supportive Infrastructure

A third alternative examined the role of the south bank of the Merrimack River and Merrimack Street in the context of Downtown, Essex Street, and the Island and the North Canal District, and posited whether the future of Merrimack Street should be one of Supportive Infrastructure? The Supportive Infrastructure concept views the Merrimack Street area as part of a larger redevelopment framework centered around downtown Lawrence and the Island with extensive mix of buildings that are ripe for redevelopment. This scenario is depicted if Figure III.32.

Lawrence in its downtown area and on the Island has well over 4 million SF of vacant and underutilized mill space. Much of the mill space is incrementally being redeveloped, sometimes for housing, and office, with the interim use being warehousing or vacancy. The five-story Wood Mill stretches for over one-quarter mile along Merrimack Street just east of South Union. The Wood Mill is partially vacant, and is being rehabbed for a mix of uses, housing on the western section, as well as commercial uses in the eastern third of the building. The existing mills were built when people walked to work, and few had cars.

Today, it is difficult to recruit employers or find re-uses that have minimal parking demand. The Supportive Infrastructure Scenario projected Merrimack Street as a support area providing parking for the island, North Canal District, and the Wood Mill. The use of solar canopies over parking would provide an additional function, power generation that could enhance Lawrence's overall sustainability. Sites 1, 2, 4, 6 and 6A would be used for parking with solar canopies. Commercial uses were slated for site 6. The corner of Parker and Merrimack Streets would be the site of local commercial and retail businesses. Site 8 could become a tractor trailer staging area with parking and a waiting area for tractor trailers.

Figure III.30. Scenario 1: Made In America.



MERRIMACK STREET LAND USE PLANNING

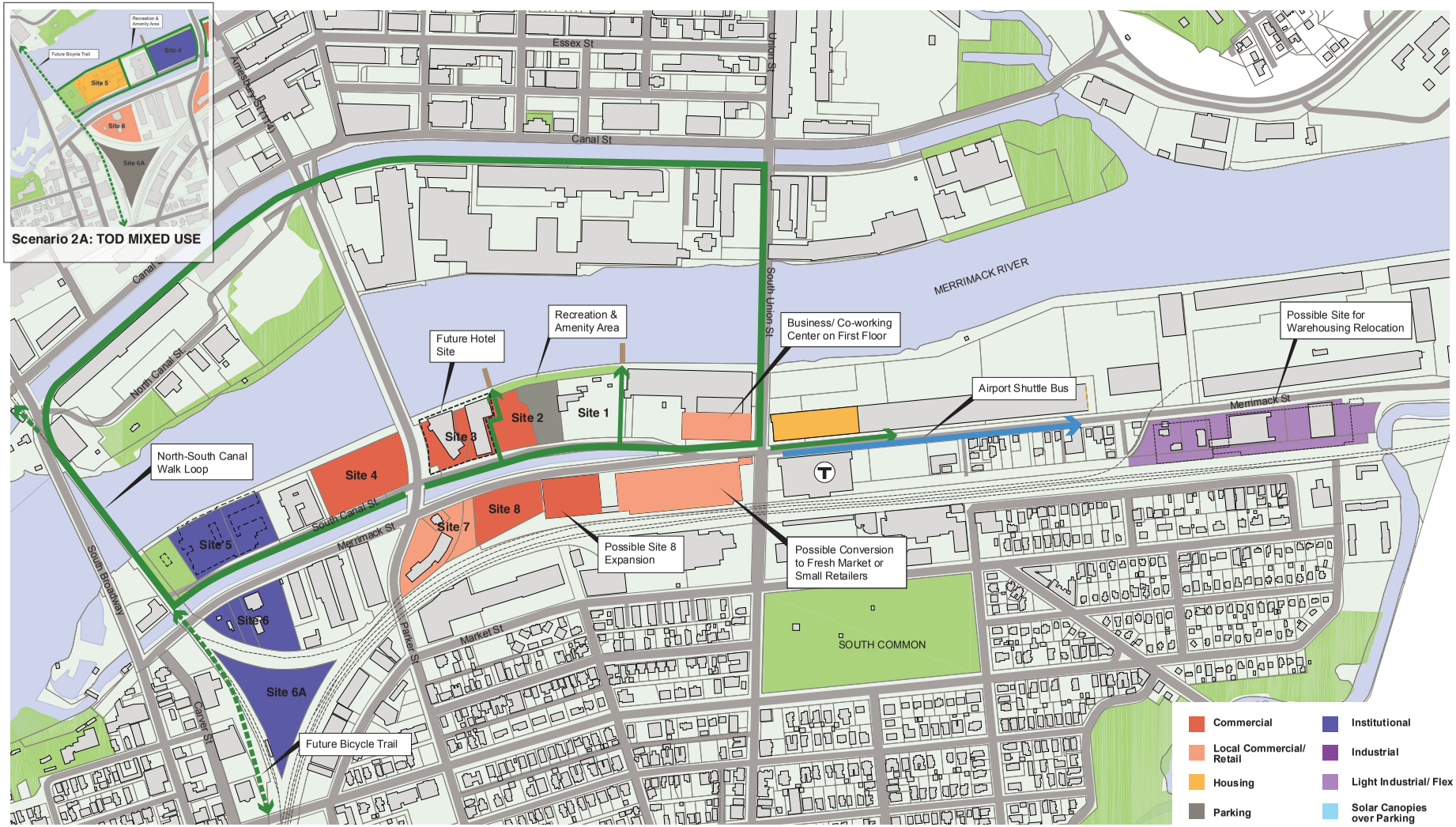
City of Lawrence • Daniel Rivera, Mayor
Supported by the Office of Planning & Development

Scenario 1: Made in America

September 2015

McCabe Enterprises • CRJA-IBI Group • PARE Corporation

Figure III.31. Scenario 2: Transit-Oriented Development.



MERRIMACK STREET LAND USE PLANNING

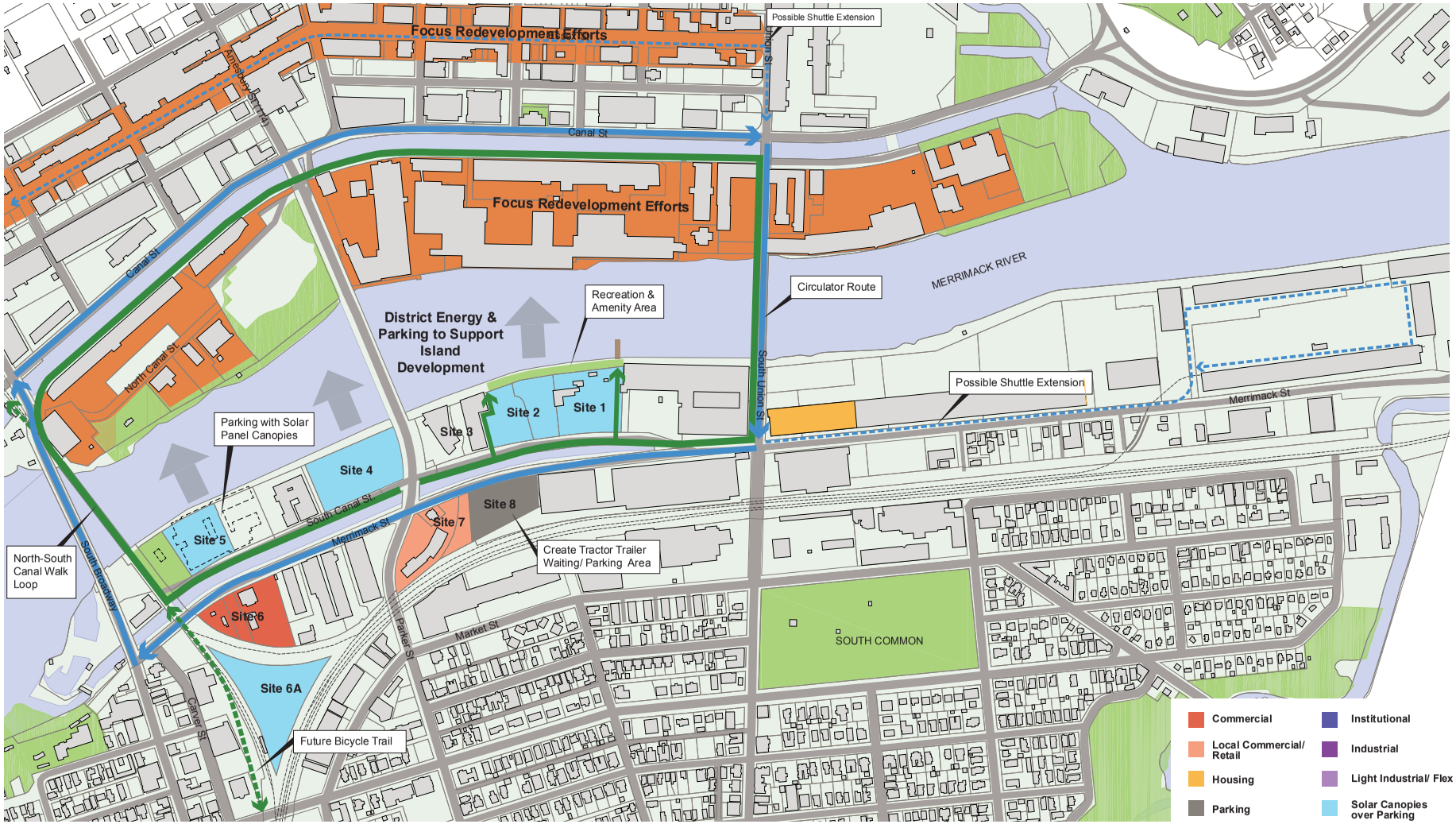
City of Lawrence • Daniel Rivera, Mayor
Supported by the Office of Planning & Development

Scenario 2: TOD - General Business

September 2015

McCabe Enterprises • CRJA-IBI Group • PARE Corporation

Figure III.32. Scenario 3: Supportive Infrastructure.



MERRIMACK STREET LAND USE PLANNING

City of Lawrence • Daniel Rivera, Mayor
Supported by the Office of Planning & Development

Scenario 3: Supportive Infrastructure

September 2015

McCabe Enterprises • CRJA-IBI Group • PARE Corporation

The Optimal Land Use Scenario

The Optimal Scenario focuses on maintaining Merrimack Street as an employment center with jobs for Lawrence residents. The focus is to support existing businesses and provide space, services and amenities for them to grow, and employees to have an attractive and healthful work environment. The optimal scenario is pragmatic. It draws upon Lawrence's assets and seeks to create a sense of place with a land use framework that is job-centered for the future. Figures III.33 and III.34 illustrate the future land use framework in two- and three-dimensional formats. Tables III.5 and III.6 describe the specific uses for each of the development sites.

This is a land use framework to guide development over the next fifteen to twenty years. The optimal land use scenario when fully built-out will erect 700,500SF of new building space, which would be a net addition of 372,000 SF. The overall building area in the Merrimack Street study area would be just over 1.7 million SF. The optimal land use scenario anticipates that some of the existing structures will be demolished and replaced with more contemporary buildings meeting the needs of today's businesses.

Both permanent and construction jobs would be created implementing the optimal approach. Approximately 190 to 261 permanent jobs would be created augmenting the 500+ jobs currently in the study area. Construction jobs, based on both public and private construction, would create about 490 to 500 construction-related jobs over the build-out period.

The current assessed valuation of the study area, including undevelopable parcels and tax exempt properties is $24,716,700. The optimal scenario projects new construction and development would add a net increase of $39 million to the assessed value of the Merrimack Street study area, based on conservative projections. This would increase the overall assessed valuation in current dollars to $59.6 million. This translates into approximately $1.7 million dollars annually in new real estate taxes for the City of Lawrence. Personal property taxes, hotel and meals taxes would be additional revenue to the city. As the overall area benefits from infrastructure improvements and enhancements, values will likely rise on properties not highlighted for redevelopment, as well.

Development Phasing

The phasing of new land uses along Merrimack Street starts with transportation improvements to Merrimack Street along with clean-up the South Canal. Enhancements to the South Canal, including the development of the North-South Canal Loop, the canal walk and protected bicycle path aligning the South Canal should be early physical improvements. These highly visible public infrastructure investments will help create more a sense of place along Merrimack Street, and signal the development community that this area is ready for new investment.

As public infrastructure improvements are underway, brownfields site assessment and remediation should continue, particularly on the fire-ravaged Merrimac Paper site. Both above and below ground site remediation is likely needed, and could take considerable time.

Acquiring the MBTA right-of-way on the south side of Merrimack Street leading to the triangular parcel is another early phase action step that the City could undertake to facilitate development.

The land use framework was developed to complement and support the growth of existing businesses along Merrimack Street. Existing businesses are a good source of new jobs and investment. Several employers are expanding and growth in the district – New Balance, Helfrich Brothers Boiler Works and CLASS. The City's Office of Planning & Development should continue to work with local businesses and property owners to encourage new investment and development along Merrimack Street to advance implementation of the optimal land use framework.

Total New Build-out:
632,550 sf

Total Additional Parking:
1,308 parking spaces including 619 structured parking spaces

Potential Job Creation:
190 to 310 jobs

Figure III.33. Optimal Land Use Scenario.

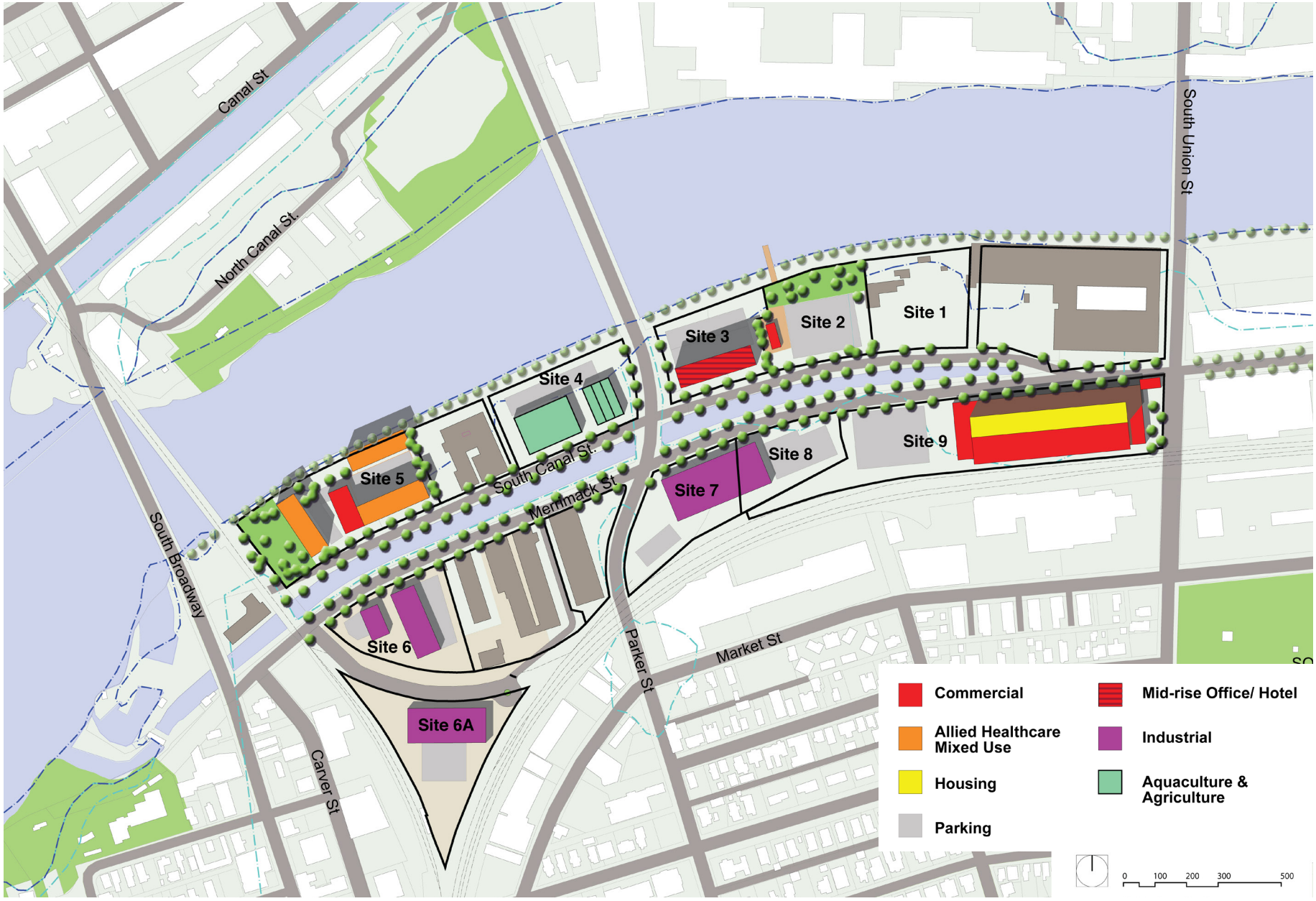


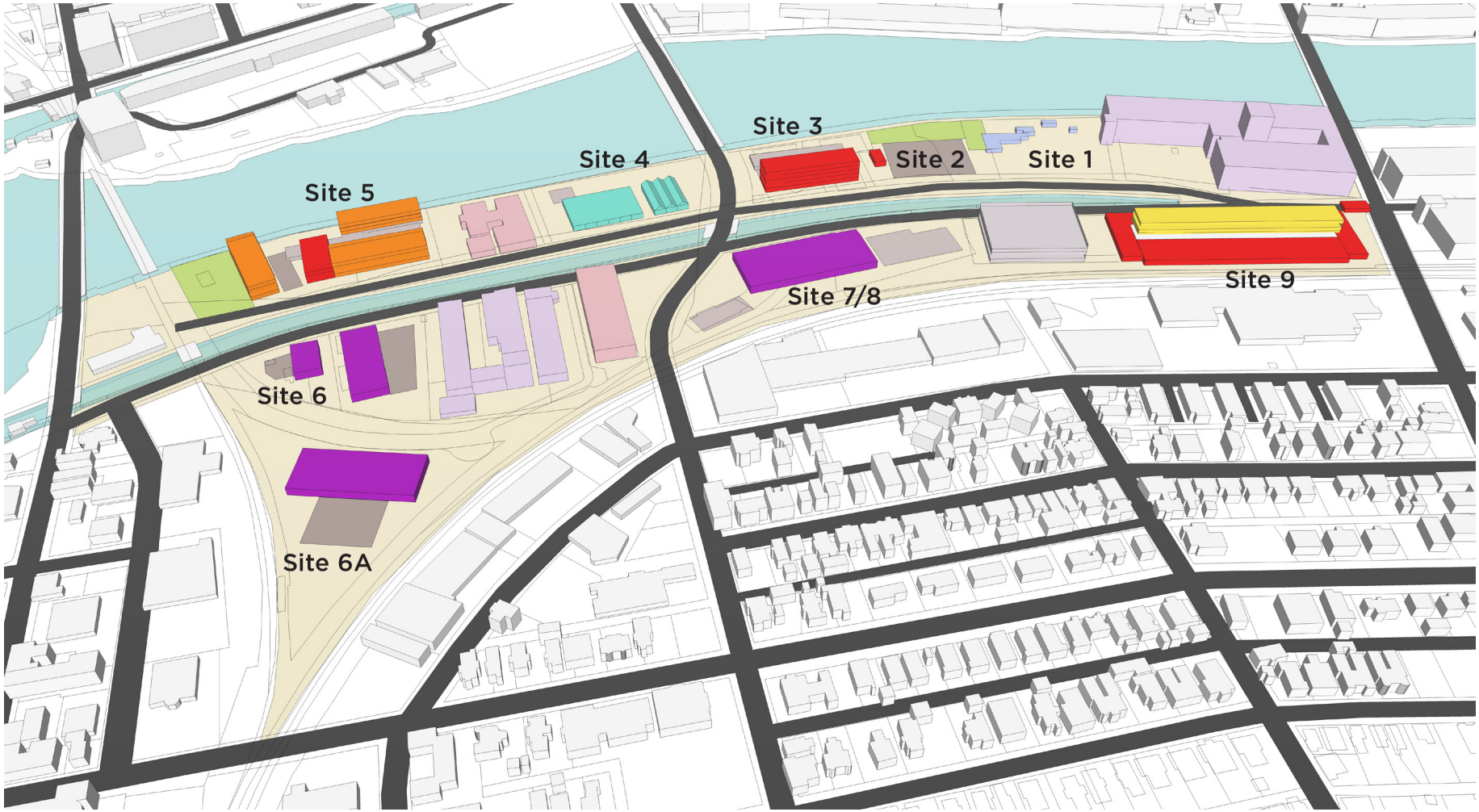
Table III.5. Land Uses for the North Side of Merrimack Street.

Site #	Short-Term Use	Long-Term Build-out Scenario
	New Balance	New Balance
1	National Grid	National Grid
2	Tractor Trailer Parking; Warehousing; Solar/ Energy	• Tractor Trailer Parking for New Balance (in lieu of Site #8) • Riverfront access with a concession area
3	Warehousing	Hotel/ Mid-rise Office -- long-term use
4	Solar; Urban Aquaculture or Agriculture	Urban Aquaculture or Agriculture
5	Brownfield Site Remediation	Allied Health Mixed-Use Development
5A	Riverside Business Center	Use flexibility, with Riverside Business Center remaining initially. expansion space for Allied Health/ Mixed-Use
10	Green space and public access at terminus of rail trail	Green space and public access at terminus of rail trail
11	Retain retail strip center	Redevelop retail strip center

Table III.6. Land Uses for the South Side of Merrimack Street.

Site #	Short-Term Use	Long-Term Build-out Scenario
6	Industrial - smaller scale manufacturing space	Industrial - smaller scale manufacturing space
6A	Leave as is - could be a solar field site as an interim or longer-term use	Industrial - smaller scale manufacturing space
	Helfrich Brothers Boiler Works	Helfrich Brothers Boiler Works
	CLASS Inc. plus office space	CLASS Inc.
7	Retail and Offices (Men's Tux, Employment & Insurance Offices)	Combine Sites 7 & 8 to create a parcel that can host a 50,000 SF industrial user
8	New Balance parking area	
9	Leave as is (B & D Advanced Warehousing)	• Mixed-use with housing and hybrid space (production with retail) • Parking Garage

Figure III.34. Optimal Land Use Scenario.



4. Recommendations

The following table provides an itemized list of recommendations broken out by topic. A general timeline for recommended implementation is provide along with the agencies, municipal entities and partners that will need to be involved in order to carry out the recommendation.

Table III.7. Recommendations.

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
1	Brownfields	Action	Where appropriate, the City and property owners should utilize phytoremediation on brownfield sites, as an interim measure following site assessment and prior to full-scale remediation.	Consult with LSP, EPA, MA DEP regarding use of phyto-remediation.	Brownfields funding		X				OPD	Lawrence Groundworks; EPA; MA DEP; Brownfields; Conserv, Commision; MVPC
2	Brownfields	Policy, Action, Investment	The City of Lawrence should pursue brownfields site assessment and clean-up funds to target properties along Merrimack Street, and most specifically complete the below ground site assessment and clean-up of the former Merrimac Paper site.	Apply for site assessment funding	US EPA Brownfield Site Assessment & Cleanup Funds; MassDevelopment; Brownfields Tax Incentives	X	X				OPD	EPA; MassDevelopment; MA DEP; MVPC
3	Brownfields	Policy; Action	The City should work with US EPA so that the liens on the Merrimac Paper site do not delay or hinder re-use of the property.	Consult with EPA.			X				OPD	EPA
4	Economic Development; Marketing	Policy; Action	A Made In America path capitalizing on the history of Lawrence, the North and South Canal walks, and marketing goods made in Lawrence (e.g., New Balance).	Recruit partners. Identify path and prepare brochure/ web site.	MOTT; ENHA; LHSP		X				OPD/ LHC	MVCC; LCW; LHSP; LHC

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
5	Economic Development & Marketing	Policy, Action	Lawrence should develop a branding strategy for marketing the Merrimack Street corridor as a good place to do business.	Secure assistance with branding strategy	Boston Ad Club; Boston University's College of Communication's Public Relations program		X				OPD	Mass-Development; MassEcon;
6	Economic Development	Action; Organization	Build upon existing job training programs to enable Lawrence residents to be more competitive for a range of manufacturing and other job types, including entry-level and promotional opportunities, along Merrimack Street, the city and region.	• Work with New Balance to create career paths for Lawrence residents as NB expands. • Link job training resources with Merrimack Street employers to foster hire local opportunities for Lawrence residents.	MVWIB; Commonwealth Corporation	X					OPD	MVWIB, VWCC, LCW, MOBD, Lawrence Partnership, NECC
7	Economic Development		Lawrence and the Merrimack Valley have the elements of a strong eco-system to support manufacturing. The City and its regional partners should better package and market the manufacturing eco-system.		Identify a lead entity for implementing this recommendation. This could be a part of the CEDS.	X					OPD	MOBD; MVRPC, MVEDC; NECC; AIM; UMass Lowell; MVPC

Table III.7. Recommendations (continued).

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
8	Economic Development	Program; Investment	The City should work to establish non-traditional, flexible workspace using existing vacant space in the Merrimack Street corridor to support start-ups and fledgling entrepreneurs.	Develop a working committee to form a business incubator.	MassDevelopment; EOHED; EDA	X					OPD	E for All; U-Mass Lowell; NECC; MassDevelopment; MOBD;
9	Economic Development	Organization	The City should continue its business visitation program, annually visiting businesses in the District to address concerns, solve problems and support business growth.	Visit businesses.		X					OPD	Mayor
10	Economic Development	Action	Promoting sites on Merrimack Street to create manufacturing job opportunities for Lawrence residents	Enter site information on MassEcon's site finder inventory.	EDA; Private		X				OPD	MOBD; LRA; MassEcon; NAMC; MassDevelopment; private owners
11	Economic Development	Policy	A link between Merrimack Street, the McGovern Transportation Center and the Greater Lawrence Airport should be made and promoted.	Continue conversation with Lawrence Airport and partners to develop link.	FAA		X				OPD	Airport; MVTA; MVPC
12	Energy	Action/ Organization	Institute a program of energy conservation, partnering with National Grid, MA Clean Energy Center to assist businesses and property owners to institute energy conservation measures and use incentives.	Contact National Grid and arrange individual visits with businesses.	National Grid	X					OPD	National Grid

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
13	Energy	Action	City of Lawrence should explore a power-purchase agreement for energy working with Merrimack Street businesses.	Speak to other municipalities using power purchase agreements.		X					OPD	DOER, MassCEC
14	Energy	Action, Policy	City of Lawrence should become a Green Community, which will enable Lawrence to access additional funding sources.	Review Green Communities requirements and prepare application.	DOER	X					OPD	DOER
15	Energy	Policy, Action	City of Lawrence should work to diversify and develop new energy sources, enabling the use of renewables for more cost competitive energy.				X				OPD	MassCEC, DOER
16	Energy	Organization and Investment	The property owners and City should develop a District Energy approach for Merrimack Street to generating, recapturing and purchasing energy at competitive pricing for business, including establishing a micro-grid.	Become more knowledgeable of district energy and micro-grids.	MassCEC; DOER		X				OPD	Property Owners; Enel; MassCEC, IDEA, DOER
17	Environment	Action & Policy	Plant trees where possible in the District as part of the streetscape. Trees in the district within twenty feet of the South Canal should have narrow root systems, so as to not to interfere with the integrity of the canal wall.	Identify appropriate trees and tree locations and seek funding for complete streets and Canal Walk design and construction.	MassWorks; DCR; Alliance for Community Trees; National Forest Foundation	X					OPD	DPW; Enel

Table III.7. Recommendations (continued).

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
18	Environment & Infrastructure	Policy; Organization	To incorporate the South Canal Walk and the overall Canal Walk and loop in an amendment and update to the Lawrence Open Space Plan. Plans for walkways along South Canal should be incorporated into the open space plan.	Amend existing Open Space Plan.		X					OPD	DCR
19	Environment & Infrastructure	Investment & Action	The City should seek additional funding for design and construction of the Canal Walk Loop, and specific resources for the South Canal, canal walk and street improvements.	Identify potential funding source deadlines.	DCR; Enel; MassWorks; MHC; TIP; TIGER	X					OPD	MVPC; Legislative Delegation; Enel; DCR
20	Infrastructure	Investment	The City of Lawrence should upgrade the Merrimac Paper bridge across the South Canal for vehicular traffic.	Ascertain bridge ownership and seek funding. Place on TIP			X	X			OPD	DPW, MVPC, LRA, Enel, Legislative Delegation
21	Infrastructure	Policy: investment	The City should consider a service lane from the unimproved roadway that extends westward adjacent to the rail line to serve local businesses, as well as paving the unimproved roadway south of Merrimack Street to open up additional land for redevelopment at the former concrete batching plant.	Notify MBTA so that right-of-way for potential service lane and access option is maintained as an available alternative.	Chapter 90, MassWorks		X TIP	X Build			OPD	DPW

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
22	Infrastructure	Investment; Construction	To upgrade Merrimack Street between South Union and South Broadway as a complete street, extending the complete street the entire length of Merrimack Street.	Seek project funding.	MassWorks; EDA.	X					OPD	PWD, EOHED
23	Infrastructure	Investment	Upgrade the intersection of Merrimack Street and Route 114, with land and signal repair, signal replacement, crosswalk striping, left-turn signalization. Add lane assignment striping.	Procure design.	MassWorks	X					OPD	DPW; MVPC
24	Infrastructure	Action & Policy	As the City repaves or upgrades a street, water, sewer, storm water should be replaced and upgraded.	Develop and implement policy of utility replacement prior to paving.		X					DPW	GLSD, DPW, Water & Sewer
25	Infrastructure	Action; Policy	The City should notify its utility partners of its intent to upgrade Merrimack Street and request utilities upgrade their underground facilities as soon as possible, so as to avoid utility cuts following street repaving.	Send letter		X					DPW	OPD; Columbia Gas; Comcast; Enel; GLSD; National Grid; Verizon;

Table III.7. Recommendations (continued).

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
26	Infrastructure	Policy; Investment; Action	Provide accessible crossing accommodations & high-visibility crosswalks.	Use high visibility crosswalk design and paint crosswalk markings		X					DPW	
27	Infrastructure	Investment, Action	Delineate exclusive turn lanes at Merrimack Street and Route 114.	Stripe lanes		X					DPW	MVPC
28	Infrastructure	Policy, Action, Investment	To accommodate bicycles along Merrimack Street at intersections, a sharrow and bike boxes will be needed	Incorporate provisions for bicycles in complete street design.		X					OPD	DPW, MVPC, Design Engineer
29	Infrastructure	Policy	Merrimack Street and South Canal Street should be considered as a singular corridor in planning and improvements, particularly as to application of MassDOT's green road policies.	Initiate conversation with MassDOT		X					OPD	MVPC, DPW

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
30	Infrastructure	Investment; Construction	The bicycle component of the complete street along Merrimack & South Canal Streets should be designed and constructed, so that there is a east bound bike lane along the south side of Merrimack Street connecting with the McGovern Transportation Center and the bicycle lane under construction east of South Union Street. A two-way cycle track on the north side of the South Canal (southern edge of South Canal Street) should be designed and constructed to handle east and west bound bicycle traffic and connect with the larger community bike path system, including the planned bike path crossing of the Merrimack River.	Incorporate approach in complete street design. Provide recommendation to design engineer.		X					OPD	
31	Infrastructure	Policy; Maintenance	The City should adopt a systematic approach to upgrading water lines throughout and adjacent to the district, so as to minimize (eliminate) service disruptions (traffic and utility) due to accidental water line breaks.	Develop a systematic replacement and upgrade plan.		X					DPW	Water & Sewer

Table III.7. Recommendations (continued).

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
32	Infrastructure	Investment	The Amesbury-Parker Streets (Route 114) intersections with Merrimack Street and South Canal should be reconstructed to accommodate future growth or build out scenarios.	List project on TIP	MassDOT, TIP, MassWorks		X		X		DPW	OPD, MVPC
33	Infrastructure	Action, Investment	The City of Lawrence should acquire, pave and upgrade South Canal Street.	Contact Enel.	MassWorks, EDA, TIGER		X				OPD, DPW	OPD, Enel, DPW
34	Infrastructure	Investment	The City of Lawrence should develop and build a Canal Walk loop on both the North and South Canals.	Seek funding for preliminary design and construction.	DCR, EDA, TIP, LAWCON			X	X		OPD	Enel, DPW, MVPC, GWL
35	Infrastructure	Action	Remove/ relocated unsignalized driveway at the southeast corner of Merrimack Street and Route 114.	This driveway could be initially eliminated with planter installations. Consider incorporating in Complete Street improvements.	MassWorks		X				OPD	DPW
36	Infrastructure	Policy	Commercial property owners should be encouraged to install bike racks.	Develop policy statement			X				OPD	MVPC, DPW, Groundworks Lawrence; MHTF

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
37	Infrastructure	Policy & Action	The vehicular traffic circulation of South Canal Street should be altered so that western section of South Canal Street (west of Amesbury Street) should be east-bound towards of the Casey Bridge. The eastern section of South Canal Street (between Amesbury Street and South Union Street) should be two-way, as part of the overall traffic plan.	The Merrimac Paper Bridge needs to be repaired and upgraded first. Monitor traffic counts.			TIP	X	Build		DPW	MVPC
38	Infrastructure	Investment	A multi-use path along the south bank of the Merrimack River should be developed (after major build-out and redevelopment).	An access easement to a prospective multi-use path along the south bank of the Merrimack River should be preserved.	LAWCON					X	OPD	Groundworks Lawrence
39	Infrastructure	Policy; Action	The City should consider using District Improvement Financing to help finance needed infrastructure, amenities and parking in the District.	Preliminarily designate a DIF district.	DIF; Chapter 23L	X					OPD	MassDevelopment
40	Infrastructure	Policy, Program	The City should work with Enel to enhance the maintenance and edges of the South Canal.	Contact Enel.		X					OPD	OPD, Groundworks Lawrence

Table III.7. Recommendations (continued).

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
41	Infrastructure & Development	Policy	Consider the use of rain gardens and other LIDS tools to help address storm water management and drainage, where appropriate.	Provide design engineer recommendation.		X					OPD	DPW
42	Infrastructure & Development	Policy	The City should strongly encourage the use of permeable pavement and other permeable surfaces within the 100 year and 500 year flood plain areas.	Develop policy statement.			X				OPD	
43	Infrastructure & Development	Policy, Investment	The City should consider developing a series of incentives to foster higher-value development on the south bank of the Merrimack River, particularly parking incentives, that can support businesses in multi-level structures.	OPD should develop a range of incentive options.	DIF, MassWorks, EDA; MassDevelopment			X			OPD	Mayor, MOBD
44	Land Use	Policy	Granting of zoning variances for properties within the District should advance the goals and vision of the Merrimack Street Land Use Plan.	Orient ZBA as to vision and goals of Merrimack St. Land Use Plan.		X					OPD	ZBA

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
45	Land Use	Policy	The City should consider lowering its parking requirements for office and residential development within a half-mile of a transit station (a transit-oriented development zone) to 0.75 to 1 space per residential unit and per 1000 SF of commercial development.	Develop zoning proposal.		X					OPD	Mayor, Planning Board, Council
46	Land Use	Policy	Clarify the ability to redevelop using a mixed-use strategy enabling hybrid space (production and fabrication with retail) and housing in the same building per the Lawrence Zoning Ordinance.	Develop zoning proposal.		X					OPD	Mayor, Planning Board, Council
47	Land Use	Policy	The Merrimack Street District as a whole is land constrained. The Zoning Ordinance should be amended to recognize that all lots within the District in direct sight-line of the South Canal are in compliance with percent of lot open space requirements. Existing set back requirements should remain intact.	Develop zoning proposal.		X					OPD	Mayor, Planning Board, Council

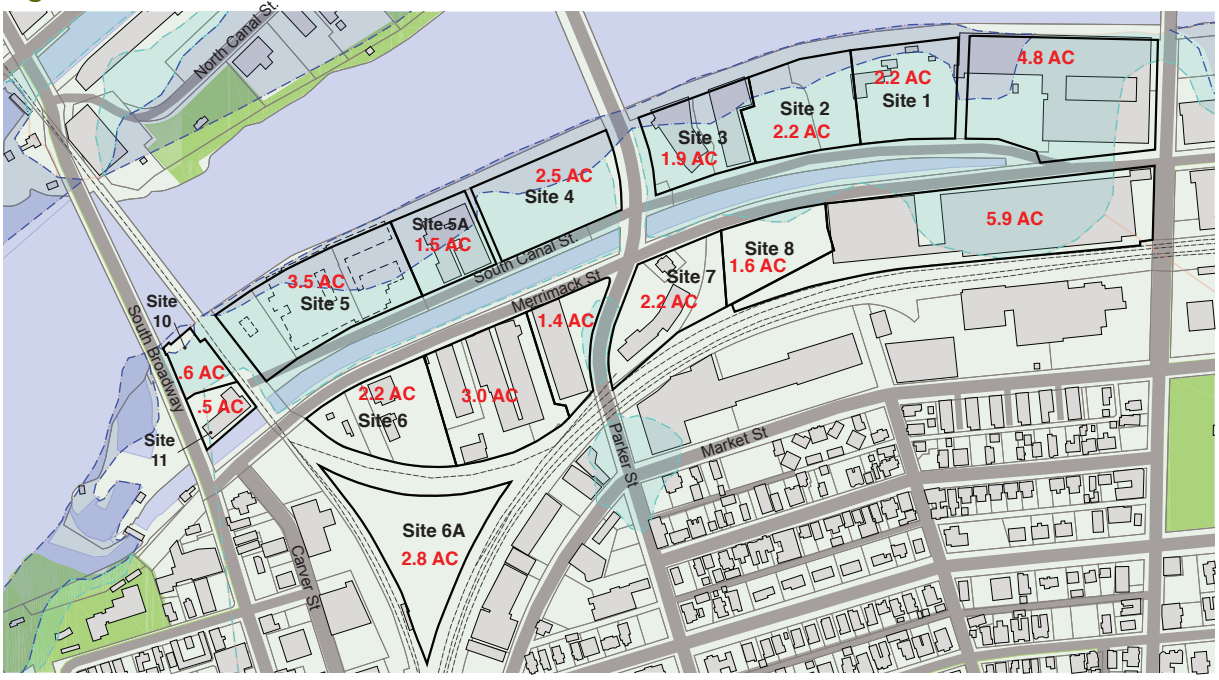
Table III.7. Recommendations (continued).

Recommendation #	Topic	Type	Recommendation	Initial Steps	Potential External Resources	Immediate (<2 Yrs)	Short-Term, 2-5 Yrs	Mid-Term, 6-10 Yrs	Long Term, 10-15 Yrs	Very Long Term, 16+ Yrs	Lead Agency	Partners
48	Land Use	Policy	The City should explicitly add renewable energy as permitted uses in the Merrimack Street area in the Zoning Ordinance, perhaps as an overlay district.	Develop zoning proposal.		X					OPD	Mayor, Planning Board, Council
49	Redevelopment	Policy	The Merrimack Street study area from South Broadway to South Union from the south side of the Merrimack River to the railroad should be designated as an urban renewal area and made a part of an urban renewal plan (either as part of the larger Lawrence Urban Renewal Plan or a separate urban renewal area).	Adopt the plan.		X					OPD	Mayor
50	Site Redevelopment	Organization & Policy	Disposition and leasing of properties within the District should be in accordance with vision for Merrimack Street and the Plan for reuse and redevelopment.	Adopt and implement the plan.		X	X	X	X	X	OPD	LRA, Mayor

Table III.8. Agency and Program Acronyms.

AIM	Associated Industries of Massachusetts
DCR	Massachusetts Department of Conservation & Recreation
DEP	Massachusetts Department of Environmental Protection
DOER	Massachusetts Department of Energy Resources
DPW	Lawrence Department of Public Works
ENHC	Essex National Heritage Center
EOEA	Massachusetts Executive Office of Environmental Affairs
EOHED	Massachusetts Executive Office of Housing & Economic Development
EPA	US Environmental Protection Agency
GLSD	Greater Lawrence Sanitary District
GWL	Groundworks Lawrence
IDEA	International District Energy Association
LRA	Lawrence Redevelopment Authority
LCW	Lawrence Community Works
LHC	Lawrence History Center
LHSP	Lawrence Heritage State Park (division of DCR)
LSP	Licensed Site Professional
MassCEC	Massachusetts Clean Energy Center
MassDOT	Massachusetts Department of Transportation
MHC	Massachusetts Historical Commission
MHTF	Mayor's Health Task Force
MOBD	Massachusetts Office of Business Development
MOTT	Massachusetts Office of Travel & Tourism
MVCC	Merrimack Valley Chamber of Commerce
MVEDC	Merrimack Valley Economic Development Council
MVPC	Merrimack Valley Planning Commission
MVTA	Merrimack Valley Transit Agency
MVWIB	Merrimack Valley Workforce Incentive Board
NAMC	Northeast Advanced Manufacturing Consortium
NECC	Northern Essex Community College
OPD	City of Lawrence Office of Planning & Development
TIP	Transportation Improvement Plan
UML	University of Massachusetts Lowell
VWCC	Valley Works Career Center
ZBA	Zoning Board of Appeals

Figure III.35. Sites.



5. Implementation Tools

Implementing a land use framework for future development generally means reviewing and updating zoning to align with the desired land use framework. While zoning is a very important land use tool, the focus is on land. Although real estate and development are important fulfilling the goal of creating jobs for Lawrence residents requires a focus on people, as well as real estate. Yes, spaces – land and buildings for business and industry – need to be present and available, but more is needed. Businesses, often need assistance with growth and expansion, training, and adaptation to the rapidly changing business environment. Prospective employees as well as incumbent workers need support, as well. This could be job readiness, help with transportation or child care, networking opportunities and additional training for jobs with career ladders. All will be needed to enable the Merrimack Street corridor to be a truly prosperous employment center serving Lawrence residents and the region.

Zoning

The optimal development scheme was developed in accordance with the parking and setback requirements of the I-2 district in Lawrence's Zoning Ordinance. Most of the uses are permitted according to the Zoning Ordinance. Some may require a special permit, and are not automatically by right.

Consideration of defining the Merrimack Street Study Area to be a Planned Industrial Development District (PID) would be beneficial. It would orient the Planning Board to the goals and optimal land use framework for the Merrimack Street corridor. It would lead to streamlining of the permitting process for business growth and expansion in the study area. It would enable parking to be addressed as a whole throughout the district, and not piecemeal. The parking requirements in a PID are more flexible than the specific parking and loading requirements for specific uses and districts.

In addition, it would enable the study area to have a front set back that corresponds with the existing industrial buildings, so that a more walkable urban edge to the street along Merrimack Street can be developed and the re-use of the historic freight warehouse more easily adapted using the cobblestone loading area along Merrimack Street as an amenity.

The setback for new development along South Canal Street should be consistent and provide for a sidewalk area and some landscaping. Ideally, the setback would be twelve feet, in lieu of the requisite 20 feet specified in the I-2 dimensional regulations. This would accommodate a 6 foot sidewalk and a 6 foot planting area. This can be easily implemented using the PID provisions of the city's zoning ordinance.

The reduced parking requirements of 1 space per 2000 feet would provide for greater flexibility, as well as additional development (hence potentially more jobs and tax revenues). However, market requirements will also dictate needed parking. A parking structure is among the uses suggested in the optimal land use scenario to address needed parking.

The specific changes and relief from zoning that are needed to implement the optimal land use plan include enabling the use of photo voltaic panels for solar power generation as part of solar canopies in parking areas. The current zoning ordinance does not address the issue of solar panels, and this would require an amendment. The use of solar panels should be an allowed by-right use in parking areas and on roof tops in the study area, Authorizing by-right solar panels in the district, would also enable the City of Lawrence to meet one of the criteria for a Green Community designation in Massachusetts (which is a potential funding source).

The proposed use of site 4 is for agriculture and aquaculture. Site 4 consists of 2.64 acres. The minimum threshold for agricultural uses in Lawrence's zoning ordinance is 5 acres. An amendment to the ordinance to allow agricultural and aquaculture on smaller parcels is needed. Aquaculture is also not an explicitly mentioned in Lawrence's ordinance. Although it can be classified as an agricultural use. Aquaculture in Lawrence at this setting would be within a building. The Zoning Ordinance is silent about agricultural and aquaculture uses within buildings. There is an implicit assumption that agriculture is outdoors, which is not always the case. The urban agriculture trend today has many successful examples of produce and small-scale agriculture occurring on smaller lots, on roof tops, and on remnant parcels in cities.

Approach to Chapter 91

The Merrimack River is governed by Chapter 91, the Massachusetts Public Waterfront Act, which provides for public access and use of waterfronts. The aim of Chapter 91 is to ensure that water dependent uses can be located adjacent to the Common-

wealth's waterfronts. Only one use outlined in the optimal land use format where proximity to the waterfront is advantageous is the aquaculture use for site 4. The other proscribed uses are not water dependent. This requires provisions for waterfront access by the public. It should be noted that the sites between South Union and the abandoned Manchester-Lawrence rail bridge (the soon-to-be rail trail) do not directly abut the Merrimack River. The Greater Lawrence Sanitary District owns the parcel of land directly adjacent between the Duck Bridge and the railroad bridge.

However, Parcel 10, which is the overgrown vacant lot between the abandoned Manchester-Lawrence rail spur/ rail bridge and South Broadway does directly abut the Merrimack River and is clearly subject to Chapter 91. Since the City is actively planning the transformation of this rail spur into a publicly-accessible multi-use rail trail connecting with the larger bike trail network to the north, the optimal land use framework calls for this parcel to be used as for green space and public access to the rail trail. This would include public access to water views of the Merrimack River.

This optimal land use plan responds to the spirit of Chapter 91 in multiple ways. The development of the canal walk and protected bike path along the South Canal as part of the larger North South Canal Walk Loop provide public access and enjoyment of waterways, including connections across the Merrimack River. The future land use of Site 2 calls for a hybrid use with parking for trucks and vehicles, as well as a recreational amenity and riverfront access with concessions. Site 2 is envisioned to be a key access to a later public improvement, a future river walk, which would provide public waterfront access in the long-term.

Complete Streets Approach

To comply with MassDOT's green roads and complete streets policy, Merrimack Street and South Canal Street need to be viewed as a singular central transportation spine through the Merrimack Street study area. Merrimack Street is the primary roadway. The South Canal with the canal walk and protected bike path is the median (if you will), and South Canal Street is the lane that provides access management. This will enable compliance with MassDOT's regulations, as well as providing for the safe accommodation of all modes – trucks, buses, cars, bicycles and pedestrians through the Merrimack Street corridor between South Union and South Broadway.

Urban Renewal

Urban renewal, as created by Chapter 121B of Massachusetts General Laws, is a powerful tool that can be used for land assembly and redevelopment. The Merrimack Street Land Use Planning study area meets the eligibility requirements for urban renewal as to a decadent area. The Lawrence City Council must make an official finding to the same along with an adoption of the urban renewal plan following a public hearing, before the provisions of urban renewal can be utilized. The Lawrence Redevelopment Authority is working to develop an urban renewal plan, and the Merrimack Street area is one of several areas under review.

Under the auspices of an approved urban renewal plan,[1] the Lawrence Redevelopment Authority can acquire property by eminent domain for redevelopment. Market price as determined by two appraisals must be paid for all parcels acquired. A key benefit to acquiring land by eminent domain in lieu of a sale between two parties is that eminent domain cleans the title. In cases, where there may be title problems, multiple claims, deceased owners or defunct companies, eminent domain can be very helpful.

Another benefit of urban renewal is the ability to do negotiated sales. Under Chapter 121B and Chapter 30B of Massachusetts General Laws (M.G.L.), the sale or lease of real property by public agencies engaged in the development and disposition of commercial and industrial real estate in accordance with an approved plan is exempt from public disposition procedures. Once an approved urban renewal plan is officially adopted and approved, the Lawrence Redevelopment Authority may exercise this authority. It will be able to negotiate directly with regional or national development entities of new business that wish to relocate to the Merrimack Street area and negotiate directly with them regarding the redevelopment of land made available after the redesign and re-parcelization, provided such negotiations are in the best interest of the LRA and the City and further provided they meet the requirements of the urban renewal plan.

[1] Both the City of Lawrence's City Council and the MA Department of Housing & Community Development must approve any urban renewal plan before it becomes effective. The Lawrence Planning Commission must also find that the plan is consistent with the City's master or comprehensive plan.

Disposition of development parcels under urban renewal require that the LRA solicit developer interest for each redevelopment parcel. Each potential redeveloper should be required to provide at a minimum, the following information to the LRA:

- A full description of the proposed development
- A detailed description of the nature and location of any public improvements being sought;
- Financial strength of the developer(s), including financial resources;
- Proposed job creation (construction and permanent positions);
- Timetable for design, permitting and construction;
- Past experience and references;
- Partners, if any, and development team; and
- Financial disclosure statements for the redeveloper, all partners, and key personnel.

All redevelopment proposals for these properties must be consistent with the objectives and requirements set forth in the urban renewal plan and advance the plan's goals and objectives.

Designated developers are then required to enter into a Land Disposition Agreement (LDA) with the LRA that need to be in accordance with the provisions of 760 CMR 12.05 and approved by the Massachusetts Department of Housing & Community Development. The LDA typically contains language to ensure that the LRA and the City of Lawrence's interests are protected, including a right of reversion and additional performance standards as applicable.

Moreover, the Housing and Urban Renewal Regulations, 760 CMR 12.04, provide that the Massachusetts Department of Housing & Community Development (DHCD) approves any Land Disposition Agreement (LDA) for each disposition parcel.

It should be noted that while urban renewal is a powerful tool, it is not a funding source.

Financing Tools

District Improvement Financing

District Improvement Financing (DIF) is a tool that municipalities, such as Lawrence can use, to set aside future tax revenues for financing improvements in a designated area, such the Merrimack Street Land Use Planning study area. The projected annual tax revenues with development under the optimal land use framework is $1.7 million Of this $1.7 million, just over one million dollars ($1,006,284) is new taxes resulting from new growth and development. This $1 million is considered the increment. Under DIF, the City of Lawrence can use all or a portion of the increment to pay for improvements, ranging from land assembly, public amenities, streetscape, the canal walk, infrastructure, services, including work force training, to support redevelopment in the designated DIF district.

DIF financing of projects can be done on a pay-as-you-go basis, where the municipality sets aside the incremental new revenue from the DIF District to a separate fund that finances the desired improvements and programs. More frequently, municipalities bond against future incremental tax revenues, so as to enable an infusion of capital for major public investments. The creation of DIF districts and their financing plans must be approved by City Council as by the state Economic Assistance Coordinating Council, which is staffed by the Executive Office of Housing & Economic Development.

DIF can be used with other financing tools and can provide cities, such as Lawrence, with funds to match and leverage state and federal funding opportunities. DIF is similar to the state's Tax Increment Finance (TIF) incentive which is part of the Economic Development Incentive Program (EDIP). Although both DIF and TIF address the incremental new taxes stemming from increased assessed valuations, DIF utilizes the funds for public investments in infrastructure and improvements, whereas TIF is used as a financial incentive to the business to spur job growth under the EDIP program. The incremental new value can be used by either TIF or DIF, along with the allied state tax incentives of the EDIP program for business.

Economic Development Incentive Program

The Massachusetts Economic Development Incentive (EDIP) program is particularly beneficial for Gateway Cities, such as Lawrence, working with manufacturers growing and locating in Gateway Cities. The state incentive for a Gateway City with a company that is creating at least 100 new jobs over a two year period may receive a per job tax credit up to $5,000 in a Gateway City, capped at $1,000,000. The recent revisions in the EDIP program no longer link state tax credits with investment in real estate. The focus is on job creation.

EDIP also provides for special incentives for manufacturers in Gateway Cities. Manufacturers creating at least twenty-five new permanent full-time manufacturing jobs may be eligible for a tax credit. Applications must be supported by the local municipality. Typically, the state wishes to see a concurrent local tax incentive from the municipality. However, in the case of Gateway Cities for Manufacturing Retention & Job Growth Projects, the Commonwealth will accept a municipal commitment not to raise the assessment of real estate taxes for the manufacturer for five years.

Use of the state tax credits under the EDIP program requires a local application by the company supported by the City to the state's Economic Assistance Coordinating Council.

Chapter 23L

Another financing tool for public infrastructure and improvements is Chapter 23L, the Local Infrastructure Development Program. Chapter 23L enables municipalities to establish an assessment on individual property owners for improvements, similar to a betterment. The municipality then borrows through MassDevelopment for the desired infrastructure improvements. The annual proceeds from the special assessment are used to repay the indebtedness for improvements. Unlike betterments which can be used for sidewalks, water and sewer lines, a wider range and type of infrastructure can be financed through Chapter 23L's special assessments, including roadways, signalization and intersection improvements, streetscape, waterway enhancements, brownfields mitigation, and parking garages, for example.

Chapter 23L can be used in conjunction with other financing programs, such as DIF. In fact, the special assessments provide an additional revenue stream in the case of DIF bonds that enhances the attractiveness of the DIF bond to investors.

I-Cube

I-Cube is the acronym for the Infrastructure Investment Incentives Act, and it is a program where the state will participate in the investment in local infrastructure based on the anticipated value of new taxes to be paid to the Commonwealth. State taxes include sales tax, payroll taxes, business taxes, hotel and meals taxes, as well as construction wage and sales taxes. I-Cube requires that the project include revenue that is generated as a result of sales external to the Commonwealth, e.g., sales of goods manufactured in Lawrence that are sold and distributed outside of Massachusetts. The MA Department of Revenue prefers to see a robust tax stream that is not primarily reliant on retail sales.

A detailed application, which undergoes a rigorous review by the state's Administration & Finance Office is required for the use of I-Cube by the municipality. I-Cube applications often are undertaken by a City in conjunction with a single developer. Infrastructure financing applications can be made at any time and should be for infrastructure support between $10 million and $50 million. There is a limit of three projects per community I-Cube might be a useful financing tool for Lawrence for the Merrimack Street corridor or a broader area, inclusive of the study area as well as the area east of South Union Street. I-Cube can be used with the other public financing tools, such as DIF and Chapter 23L.

Grants

Many of the projects detailed in this report for public realm improvements can be financed in part through state and federal grants. MassWorks can be a very useful funding program. Incorporating the open space and public realm improvements in Lawrence's Open Space Plan will enable open space funding through DCR's grant programs, Land and Water Conservation(LAWCON) funding, as well as rail trails funding. Acquisition funds for the canal, if needed, could also come from open space funding. The Green Communities program also holds an annual funding round for designated communities for sustainability-related initiatives.

US EPA was just reauthorized for brownfields site assessment and site remediation funding. This annual grant program can be used to assess and clean-up brownfields sites. MassDevelopment also has a brownfields assistance program. The states brownfield tax incentive and covenant-not-to-sue can be very helpful as well.

A new funding focus is resiliency planning and hazard mitigation preparation. This could be an opportunity for enhancements and the use of permeable surfaces along the Merrimack River in the study area, as well as other initiatives related to energy security, for example.

Incentives for Development

The best incentive for development is a well-managed city and a business area, such as the Merrimack Street study area that is appropriately zoned for business, well maintained with up-to-date infrastructure and enhancements making the area attractive to investments. A predictable and timely streamline permitting process is important to both developers and business.

Businesses are also increasingly looking a ready and trained work force. Education and training are important incentive tools in economic development. High quality secondary schools including vocational education programs, such as the Greater Lawrence Technical High School, and community colleges such as Northern Essex Community College, are important elements in the "incentive package".

Tax incentives are usually the first thought when the topic of incentives is discussed. Tax incentives can be important. Some companies view tax incentives and the tax climate for business, including the local commercial tax rate, as an indicator of how business friendly a community may be. However, businesses prefer a well-run, well-educated city, and smart businesses realize that this requires tax dollars. What businesses typically desire is tax fairness and tax predictability. In some corporate site selection searches, local taxes can make a difference in closing a final deal for a major project. So local real estate tax incentives have a role, but should not be the first tool in the tool box. Creating a business friendly environment with sites that are well served and an educated work force needs should be the priority.

IV. Appendix

Appendix 1:
Community Input

Communication Tools

The Merrimack Street project team used a series of tools to build project awareness. Among the tools used were:

- **Website:** The team set-up a project website where meeting notices, documents and information were made available to the community.
- **Postcards:** Postcards were produced and distributed at events, local businesses, and City Hall. They were also distributed by Every Day Direct Mail to the study area addresses. Postcards included information in English and Spanish.
- **Fliers:** Fliers were printed and distributed at events and at City Hall.
- **Survey:** The Team developed a survey that residents and businesses were encouraged to complete in order to provide input on the project.

Figure A.1. Postcard graphic

Appendix 1: Community Input (cont'd)

Outreach Activities

Community outreach included formal meetings and event outreach activities. The project team set up booths at local festivals and events, where they were able shared information on the project, made residents aware of upcoming meetings, and gathered input as to concerns and ideas for the Merrimack Street district. All materials were presented in both English and Spanish, and a Spanish-speaking team member was present at each event.

Event outreach included the Kite Festival on the South Common in May 2015, the New Balance Factory Sale in July 2015, and the Bread and Roses Festival on Labor Day, September 2015.

Community Meetings

The McCabe team, working with City staff, held a series of public meetings together input from a broad base of users within the Merrimack Street corridor and surrounding area. All presentation materials were provided in English and Spanish. A PowerPoint translated into Spanish was shown concurrently with the English PowerPoint presentation at all meetings. Community meetings included:

Community Meeting 1: Business owners, property owners and residents came together to hear a presentation on existing conditions observations by the team. They then had the opportunity to voice concerns and provide ideas about the future of the Merrimack Street area in July 2015..

Community Meeting 2: Alternative development scenarios were presented to the community on September 17, 2015. Attendees then met as small groups to evaluate the scenarios and provide additional comments and ideas.

Community Meeting 3: In a public presentation on December 4, 2015 the team shared final ideas with businesses, property owners and residents. The final community meeting included live polling via mobile phone to gauge response to the final scenario.

Event Outreach

Figures A.2. - A.4. Residents learned about the project at the Kite Festival, the New Balance Factory Sale, and the Bread and Roses Festival during the spring and summer of 2015.

Survey Card

MERRIMACK STREET
LAND USE PLANNING

City of Lawrence • Daniel Rivera, Mayor
Supported by the Office of Planning & Development

Merrimack Street Phase 2 Survey

2015

www.SouthCanalDistrict.com

McCabe Enterprises • CRJA-IBI Group • PARE Corporation

1 Please fill in the circle that most accurately reflects your connection to the Phase 2 Merrimack Street Land Use Study Area in Lawrence (Union to South Broadway, the river to the railroad on the south). You may fill in more than one circle.

- *Visitor / Shopper* ◯
- *Resident* ◯
- *Worker/ Professional* ◯
- *Property Owner* ◯
- *Business Owner* ◯
- *Other* _____ ◯

2 What is the zip code for where you reside?

- ◯ *01840 (Lawrence)*
- ◯ *01841 (Lawrence)*
- ◯ *01843 (Lawrence)*
- ◯ *01810 (Andover)*
- ◯ *01844 (Methuen)*
- ◯ *01845 (North Andover)*
- ◯ *Other, please specify* ___ ___ ___ ___ ___

Please see reverse for additional questions.

Please check up to 3 things you most like about and/or like to do along the Merrimack Street area between S. Union and S. Broadway, from the river to the railroad on the south edge.

- ◯ *Walk / Jog / Bike*
- ◯ *Shop*
- ◯ *Go out to Eat*
- ◯ *Work*
- ◯ *Fish*
- ◯ *The Merrimack River*
- ◯ *The Canal*
- ◯ *The Clock Tower*
- ◯ *Historic Architecture*
- ◯ *Old Mills*
- ◯ *MVRTA – transit center*
- ◯ *Commuter Rail*
- ◯ *Other, please specify* _____

Please check the three things you think would make the Merrimack Street area – the area between S. Union and S. Broadway and from the river to the railroad on the south – better.

- ◯ *More jobs*
- ◯ *More retail*
- ◯ *More restaurants*
- ◯ *More business*
- ◯ *More industry*
- ◯ *Housing*
- ◯ *River / canal walk*
- ◯ *Trees*
- ◯ *Open Space / Parks*
- ◯ *Traffic Improvements*
- ◯ *Better Bus Service*
- ◯ *Lighting*
- ◯ *Bike path*
- ◯ *Parking*
- ◯ *More Safety*
- ◯ *Clean-up*
- ◯ *Other, please specify* _____

Other comments:

Please leave completed card at with a member of the consultant team at the table before you leave today. Thank you!

Figures A5.. - A.6. Survey card with questions was distributed throughout the area for input.

Appendix 1: Community Input (cont'd)

Community Meeting 1

Figures A.7. - A.9. Community Meeting 1.

Business owners, property owners and residents came together to hear a presentation on existing conditions observations by the team. They then had the opportunity to voice concerns and provide ideas about the future of the Merrimack Street area in July 2015..

Community Meeting 2

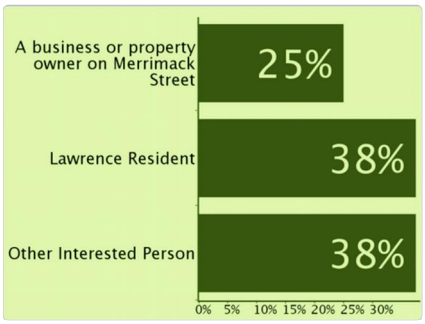
Figures A.10. - A.11. Community Meeting 2.

Alternative development scenarios were presented to the community on September 17, 2015. Attendees then met as small groups to evaluate the scenarios and provide additional comments and ideas.

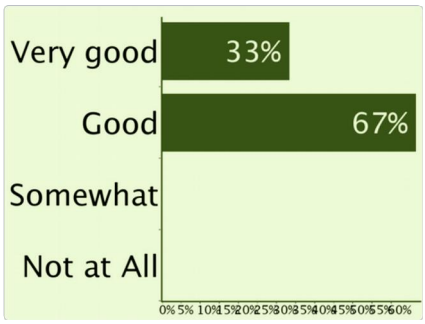
Community Meeting 3

In a public presentation on December 4, 2015 the team shared final ideas with businesses, property owners and residents. During the meeting live polling was used to spur discussion and gather feedback on the ideas presented.

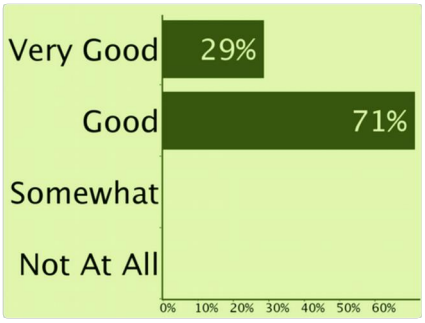
How would you best describe yourself?



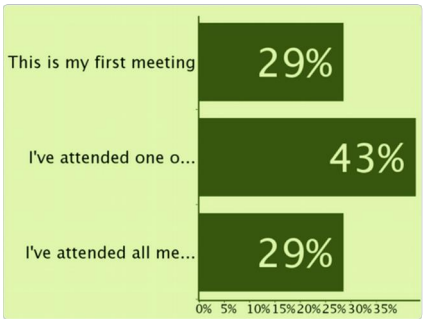
Overall, how do you feel that the proposed scenario supports Lawrence's vision and goals?



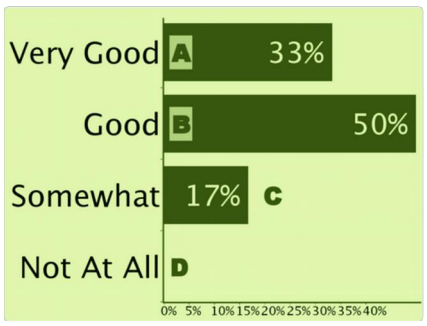
How well does this scenario add to jobs and the Lawrence economy?



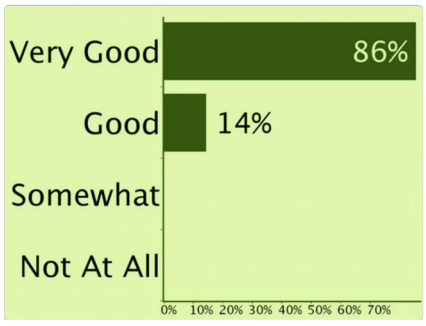
How many meetings have you attended on the Merrimack Street Land Use Planning Project?



Overall, how well do you feel that this scenario supports and adds to the liveability of the neighborhood and Merrimack Street?



How well will the proposed improvements to Merrimack Street and the Route 114 intersection, to Merrimack Street overall, and to the South Canal make it safer for pedestrians, bicyclists and driver?



2. Zoning Uses in the General Industrial District

Permitted uses for the I-2, General Industrial District are detailed in the following table. Readers should check with the City of Lawrence to ascertain if there have been any updates or revisions to the Zoning Ordinance since the publication of this table. This table is for reference only.

Table A.2: The I-2 Zone, General Industrial District.

Status	Uses

Permitted	• Agriculture, horticulture, floriculture or viticulture on 5 acres+ and their accessory structures
	• Awnings and canopies – commercial
	• Book bindery
	• Bowling alley
	• Convenience store
	• Frozen food locker
	• Massage therapy
	• Mixed-use (excluding residential uses)
	• Office
	• Retail sales establishment
	• Roofing shop
	• Upholstery shop
	• Accessory uses to manufacturing or wholesale use
	  • Garage for storage and repair of motor vehicles used in connection with manufacturing or wholesale uses;
	  • Employee's athletic field and facilities
	  • Employee's in-house day care
	  • Employee's restaurant
	  • Showroom for display of products
	• Freight handling or operations
	• Lumber yard
	• Manufacturing, processing, fabrication, assembly
	• Warehouse
	• Wholesale sales
	• Church or other place of worship, religious denomination or sect
	• Day care facility adult
	• Day care facility, child
	• Day care child home facility
	• Dormitory, non-profit or public
	• Federal use
	• Halfway house and group home with educational component
	• Municipal use
	• School, college, library, or accessory educational building or structure, non-profit or public
	• State use

Permitted with Site Plan Review	

Status	Uses
Special Permit by Board of Appeals	• Adult uses; • Assembly / function halls • Athletic field • Automobile or other vehicle sales and service • Banks (main or branch) • Bars and Cafes • Billiard or pool parlor • Car Wash • Drive-thru facility • Auto Repair Garage, filling station, or vehicle storage/ impoundment facility • Home Occupation • Liquor stores and Liquor sales • Monument works • Parking Garage • Pawn Shops • Public transit passenger station • Recreational use • Retail service establishments • Restaurants • Self-service laundromat; dry clean establishments; hand laundry; • Shopping center • Tattooing and Body Piercing Establishment • Telephone exchange building, electric substation, or other similar public facility • Telecommunications and Wireless Facility • Theater • Undertaking establishment • Accessory uses to scientific development and/or research • Heliport • Indoor warehousing and recovery of used automobile and machine parts • Refuse treatment and disposal • Research and development facility, research laboratory or research facilities for scientific or medical research • Printing establishment • Sign making establishment • Club or lodge • Museum
Special Permit & Site Plan Approval by Planning Board	• Planned Unit Development • Rehabilitation of commercial uses and mixed use development • Charitable, philanthropic and eleemosynary institution • Dormitory, private • Hospice • Hospital • Rest home • Sanitarium
Prohibited	• Automobile or other vehicle sales, used • Billboards • Conference Center • Massage Parlor • Temporary parking for other uses • Storage, outdoor • Commercial hazardous waste and infectious waste disposal and transfer • Junkyards • Publishing establishment • Sand, gravel pit, quarry, or soil removal • Community garage • Fraternity or sorority house

Table X-XX. Retail Opportunity Analysis for the Merrimack Street Study Area.

Merrimack Street Study Area, Lawrence, MA	5 Minute Drive Time			10 Minute Drive Time			20 Minute Drive Time		
	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity
Retail Stores	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus
Total Retail Sales & Eating, Drinking Places	1,456,374,108	1,246,642,098	209,732,010	3,276,243,761	2,804,432,852	471,810,909	11,362,386,116	9,726,092,204	1,636,293,912
Motor Vehicle & Parts Dealers-441	273,724,019	214,740,246	58,983,773	615,766,652	483,077,382	132,689,270	2,135,548,806	1,675,367,324	460,181,482
Automotive Dealers-4411	229,045,334	190,004,603	39,040,731	515,257,956	427,432,341	87,825,615	1,786,973,216	1,482,383,991	304,589,225
Other Motor Vehicle Dealers-4412	22,807,208	12,132,114	10,675,094	51,306,854	27,292,275	24,014,579	177,938,007	94,652,713	83,285,294
Automotive Parts/Accessories, Tire Stores-4413	21,871,476	12,603,530	9,267,946	49,201,841	28,352,766	20,849,075	170,637,584	98,330,620	72,306,964
Furniture & Home Furnishings Stores-442	29,622,564	23,633,037	5,989,527	66,638,606	53,164,631	13,473,975	231,110,269	184,380,988	46,729,281
Furniture Stores-4421	15,816,599	11,500,623	4,315,976	35,580,853	25,871,679	9,709,174	123,398,445	89,725,926	33,672,519
Home Furnishing Stores-4422	13,805,966	12,132,415	1,673,551	31,057,754	27,292,952	3,764,802	107,711,824	94,655,062	13,056,762
Electronics & Appliances Stores-443	27,229,052	16,140,266	11,088,786	61,254,188	36,308,972	24,945,216	212,436,493	125,923,647	86,512,846
Appliance, TV, Electronics Stores-44311	20,981,022	12,998,278	7,982,744	47,198,685	29,240,788	17,957,897	163,690,408	101,410,380	62,280,028
Household Appliances Stores-443111	3,567,573	2,530,864	1,036,709	8,025,574	5,693,406	2,332,168	27,833,603	19,745,379	8,088,224
Radio, Television, Electronics Stores-443112	17,413,449	10,467,413	6,946,036	39,173,111	23,547,382	15,625,729	135,856,805	81,665,001	54,191,804
Computer & Software Stores-44312	5,628,262	2,607,234	3,021,028	12,661,278	5,865,207	6,796,071	43,910,754	20,341,204	23,569,550
Camera & Photographic Equipment Stores-44313	619,769	534,754	85,015	1,394,225	1,202,978	191,247	4,835,331	4,172,064	663,267
Building Material, Garden Equipment Stores -444	150,211,483	124,424,527	25,786,956	337,914,162	279,904,097	58,010,065	1,171,924,758	970,739,256	201,185,502
Building Material & Supply Dealers-4441	129,471,249	111,269,427	18,201,822	291,257,149	250,310,523	40,946,626	1,010,112,929	868,105,374	142,007,555
Home Centers-44411	52,774,683	37,558,469	15,216,214	118,721,368	84,491,134	34,230,234	411,739,213	293,024,864	118,714,349
Paint & Wallpaper Stores-44412	2,218,914	2,351,254	-132,340	4,991,646	5,289,356	-297,710	17,311,597	18,344,088	-1,032,491
Hardware Stores-44413	12,901,296	9,423,010	3,478,286	29,022,618	21,197,903	7,824,715	100,653,741	73,516,738	27,137,003
Other Building Materials Dealers-44419	61,576,355	61,936,695	-360,340	138,521,516	139,332,132	-810,616	480,408,379	483,219,685	-2,811,306
Building Materials, Lumberyards-444191	23,499,324	23,164,589	334,735	52,863,830	52,110,814	753,016	183,337,776	180,726,234	2,611,542
Lawn/Garden Equipment/Supplies Stores-4442	20,740,235	13,155,100	7,585,135	46,657,013	29,593,574	17,063,439	161,811,829	102,633,882	59,177,947
Outdoor Power Equipment Stores-44421	5,834,587	5,616,092	218,495	13,125,425	12,633,902	491,523	45,520,466	43,815,808	1,704,658
Nursery & Garden Centers-44422	14,905,648	7,539,008	7,366,640	33,531,588	16,959,672	16,571,916	116,291,363	58,818,074	57,473,289

Merrimack Street Study Area, Lawrence, MA	5 Minute Drive Time			10 Minute Drive Time			20 Minute Drive Time		
	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity
Retail Stores	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus
Food & Beverage Stores-445	181,466,076	206,164,677	-24,698,601	408,224,163	463,785,872	-55,561,709	1,415,767,841	1,608,462,170	-192,694,329
Grocery Stores-4451	116,972,614	111,409,634	5,562,980	263,140,354	250,625,933	12,514,421	912,600,685	869,199,249	43,401,436
Supermarkets, Grocery Stores-44511	109,396,758	102,783,016	6,613,742	246,097,787	231,219,583	14,878,204	853,495,125	801,895,820	51,599,305
Convenience Stores-44512	7,575,857	8,626,619	-1,050,762	17,042,567	19,406,350	-2,363,783	59,105,560	67,303,428	-8,197,868
Specialty Food Stores-4452	14,492,291	41,275,040	-26,782,749	32,601,704	92,851,893	-60,250,189	113,066,419	322,020,927	-208,954,508
Beer, Wine & Liquor Stores-4453	50,001,171	53,480,002	-3,478,831	112,482,105	120,308,047	-7,825,942	390,100,737	417,241,994	-27,141,257
Health & Personal Care Stores-446	72,831,134	82,960,806	-10,129,672	163,840,148	186,627,750	-22,787,602	568,216,273	647,246,270	-79,029,997
Pharmacies & Drug Stores-44611	57,817,814	72,694,583	-14,876,769	130,066,342	163,532,963	-33,466,621	451,084,873	567,150,923	-116,066,050
Cosmetics, Beauty Supplies, Perfume Stores-44612	4,989,477	3,424,288	1,565,189	11,224,275	7,703,242	3,521,033	38,927,063	26,715,719	12,211,344
Optical Goods Stores-44613	3,558,188	2,797,719	760,469	8,004,461	6,293,720	1,710,741	27,760,383	21,827,336	5,933,047
Other Health & Personal Care Stores-44619	6,465,655	4,044,216	2,421,439	14,545,069	9,097,825	5,447,244	50,443,953	31,552,292	18,891,661
Gasoline Stations-447	131,079,087	81,273,113	49,805,974	294,874,124	182,831,133	112,042,991	1,022,657,012	634,079,171	388,577,841
Gasoline Stations with Convenience Stores-44711	95,853,794	50,549,340	45,304,454	215,631,680	113,715,259	101,916,421	747,835,199	394,377,456	353,457,743
Other Gasoline Stations-44719	35,225,292	30,723,773	4,501,519	79,242,445	69,115,874	10,126,571	274,821,813	239,701,715	35,120,098
Clothing & Clothing Accessories Stores-448	71,827,594	53,955,746	17,871,848	161,582,594	121,378,274	40,204,320	560,386,819	420,953,663	139,433,156
Clothing Stores-4481	36,596,511	30,034,292	6,562,219	82,327,123	67,564,824	14,762,299	285,519,830	234,322,497	51,197,333
Men's Clothing Stores-44811	1,907,969	1,205,928	702,041	4,292,146	2,712,843	1,579,303	14,885,652	9,408,447	5,477,205
Women's Clothing Stores-44812	8,173,579	6,994,902	1,178,677	18,387,197	15,735,658	2,651,539	63,768,892	54,573,052	9,195,840
Children's, Infants' Clothing Stores-44813	1,999,702	2,142,113	-142,411	4,498,508	4,818,875	-320,367	15,601,338	16,712,407	-1,111,069
Family Clothing Stores-44814	19,731,435	16,669,534	3,061,901	44,387,628	37,499,608	6,888,020	153,941,344	130,052,906	23,888,438
Clothing Accessories Stores-44815	1,624,295	940,582	683,713	3,653,996	2,115,924	1,538,072	12,672,475	7,338,266	5,334,209
Other Clothing Stores-44819	3,159,531	2,081,232	1,078,299	7,107,647	4,681,917	2,425,730	24,650,129	16,237,420	8,412,709
Shoe Stores-4482	5,235,582	3,986,789	1,248,793	11,777,910	8,968,638	2,809,272	40,847,134	31,104,255	9,742,879
Jewelry, Luggage, Leather Goods Stores-4483	29,995,501	19,934,666	10,060,835	67,477,560	44,844,812	22,632,748	234,019,856	155,526,911	78,492,945
Jewelry Stores-44831	27,233,469	18,733,111	8,500,358	61,264,122	42,141,807	19,122,315	212,470,946	146,152,582	66,318,364
Luggage & Leather Goods Stores-44832	2,762,032	1,201,555	1,560,477	6,213,438	2,703,005	3,510,433	21,548,910	9,374,329	12,174,581
Sporting Goods, Hobby, Book, Music Stores-451	27,089,685	18,872,313	8,217,372	60,940,668	42,454,955	18,485,713	211,349,171	147,238,615	64,110,556

Merrimack Street Study Area, Lawrence, MA	5 Minute Drive Time			10 Minute Drive Time			20 Minute Drive Time		
	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity
Retail Stores	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus
Sporting Goods, Hobby, Musical Inst Stores-4511	22,850,290	14,236,330	8,613,960	51,403,770	32,025,896	19,377,874	178,274,123	111,069,452	67,204,671
Sporting Goods Stores-45111	11,981,513	7,534,045	4,447,468	26,953,486	16,948,508	10,004,978	93,477,755	58,779,354	34,698,401
Hobby, Toy & Game Stores-45112	6,452,904	4,030,463	2,422,441	14,516,384	9,066,887	5,449,497	50,344,470	31,444,995	18,899,475
Sewing,Needlework & Piece Goods Stores-45113	1,867,657	1,161,500	706,157	4,201,460	2,612,898	1,588,562	14,571,143	9,061,828	5,509,315
Musical Instrument & Supplies Stores-45114	2,548,216	1,510,321	1,037,895	5,732,440	3,397,603	2,334,837	19,880,755	11,783,274	8,097,481
Book, Periodical & Music Stores-4512	4,239,395	4,635,983	-396,588	9,536,898	10,429,059	-892,161	33,075,048	36,169,164	-3,094,116
Book Stores & News Dealers-45121	3,689,227	3,865,622	-176,395	8,299,246	8,696,061	-396,815	28,782,730	30,158,931	-1,376,201
Book Stores-451211	3,307,684	3,320,062	-12,378	7,440,932	7,468,777	-27,845	25,805,998	25,902,569	-96,571
News Dealers & Newsstands-451212	381,543	545,559	-164,016	858,314	1,227,284	-368,970	2,976,732	4,256,362	-1,279,630
Prerecorded Tape, CD, Record Stores-45122	550,168	770,362	-220,194	1,237,652	1,732,998	-495,346	4,292,318	6,010,233	-1,717,915
General Merchandise Stores-452	165,886,467	94,399,730	71,486,737	373,176,439	212,360,633	160,815,806	1,294,218,348	736,490,837	557,727,511
Department Stores, Excl Leased Departments-4521	70,861,712	60,661,952	10,199,760	159,409,757	136,464,484	22,945,273	552,851,175	473,274,355	79,576,820
Other General Merchandise Stores-4529	95,024,755	33,737,779	61,286,976	213,766,682	75,896,149	137,870,533	741,367,173	263,216,481	478,150,692
Miscellaneous Store Retailers-453	38,972,692	22,647,304	16,325,388	87,672,555	50,947,134	36,725,421	304,058,397	176,690,458	127,367,939
Florists-4531	1,482,099	1,217,934	264,165	3,334,115	2,739,851	594,264	11,563,089	9,502,115	2,060,974
Office Supplies, Stationery, Gift Stores-4532	19,056,776	12,278,877	6,777,899	42,869,922	27,622,431	15,247,491	148,677,768	95,797,732	52,880,036
Office Supplies & Stationery Stores-45321	9,329,737	5,442,430	3,887,307	20,988,076	12,243,233	8,744,843	72,789,037	42,460,927	30,328,110
Gift, Novelty & Souvenir Stores-45322	9,727,040	6,836,446	2,890,594	21,881,846	15,379,197	6,502,649	75,888,731	53,336,805	22,551,926
Used Merchandise Stores-4533	3,173,516	1,370,380	1,803,136	7,139,109	3,082,792	4,056,317	24,759,241	10,691,472	14,067,769
Other Miscellaneous Store Retailers-4539	15,260,300	7,780,114	7,480,186	34,329,410	17,502,061	16,827,349	119,058,299	60,699,139	58,359,160
Non-Store Retailers-454	125,482,711	143,545,284	-18,062,573	282,284,578	322,917,951	-40,633,373	978,995,032	1,119,916,192	-140,921,160
Foodservice & Drinking Places-722	160,951,543	163,885,048	-2,933,505	362,074,885	368,674,067	-6,599,182	1,255,716,896	1,278,603,611	-22,886,715
Full-Service Restaurants-7221	73,109,255	76,965,906	-3,856,651	164,465,804	173,141,687	-8,675,883	570,386,121	600,475,071	-30,088,950
Limited-Service Eating Places-7222	63,754,937	56,954,712	6,800,225	143,422,431	128,124,716	15,297,715	497,405,310	444,351,094	53,054,216
Special Foodservices-7223	17,525,757	23,847,435	-6,321,678	39,425,757	53,646,937	-14,221,180	136,733,012	186,053,681	-49,320,669
Drinking Places -Alcoholic Beverages-7224	6,561,594	6,116,995	444,599	14,760,892	13,760,727	1,000,165	51,192,453	47,723,766	3,468,687
GAFO *	340,712,139	219,279,970	121,432,169	766,462,418	493,289,896	273,172,522	2,658,178,868	1,710,785,482	947,393,386
General Merchandise Stores-452	165,886,467	94,399,730	71,486,737	373,176,439	212,360,633	160,815,806	1,294,218,348	736,490,837	557,727,511
Clothing & Clothing Accessories Stores-448	71,827,594	53,955,746	17,871,848	161,582,594	121,378,274	40,204,320	560,386,819	420,953,663	139,433,156

Merrimack Street Study Area, Lawrence, MA	5 Minute Drive Time			10 Minute Drive Time			20 Minute Drive Time		
	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity	2015 Demand	2015 Supply	Opportunity
Retail Stores	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus	Aggregate Consumer Expenditure Demand	Retail Sales	Gap/Surplus
Furniture & Home Furnishings Stores-442	29,622,564	23,633,037	5,989,527	66,638,606	53,164,631	13,473,975	231,110,269	184,380,988	46,729,281
Electronics & Appliances Stores-443	27,229,052	16,140,266	11,088,786	61,254,188	36,308,972	24,945,216	212,436,493	125,923,647	86,512,846
Sporting Goods, Hobby, Book, Music Stores-451	27,089,685	18,872,313	8,217,372	60,940,668	42,454,955	18,485,713	211,349,171	147,238,615	64,110,556
Office Supplies, Stationery, Gift Stores-4532	19,056,776	12,278,877	6,777,899	42,869,922	27,622,431	15,247,491	148,677,768	95,797,732	52,880,036

Source: Nielsen Site Reports.

4. Truck & Bicycle Safety Concerns

Tractor trailer trucks and bicycles traveling along the same street poses serious safety issues to be considered. This report has recommended the development of a separate, segregated bike path along the South Canal, parallel to Merrimack Street and South Canal Street to provide for safe movements of both vehicle types. Many of the existing businesses receive and ship products by truck, including tractor trailers. In addition, the City of Lawrence wishes to encourage additional industrial employment for local residents. New light industrial employers will also likely rely on trucks for deliveries and shipping.

The US Department of Transportation's Volpe National Transportation Systems Center reports that in a recent five year period, "556 bicyclists and pedestrians were in the US were killed after side-impact accidents with trucks." This prompted the Volpe Center to research approaches to improving truck-bicyclist safety and how to reduce fatal accidents. After the United Kingdom mandated the installation of sidebars on trucks, bicyclists' fatalities were reduced by 61% and pedestrian fatalities by 20% in side-impact accidents with trucks. Many parts of the world, including the UK, the European Union, Brazil and Japan, now require sidebars on trucks to improve road safety and reduce fatalities and impacts on bicyclists and pedestrians, who are extremely vulnerable in truck accidents.

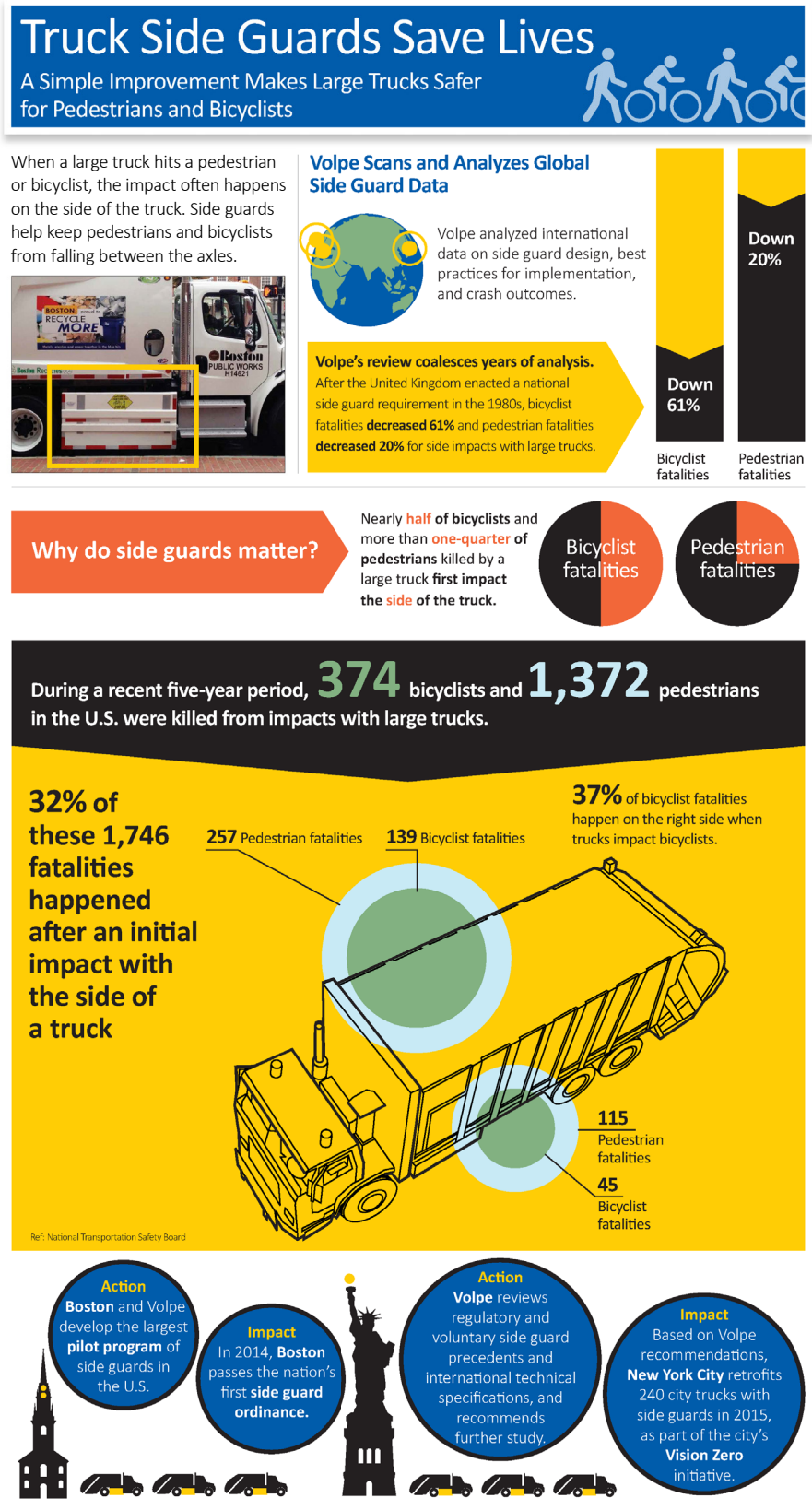
In 2013, the City of Boston did a pilot project on municipal trucks, particularly public works vehicles, testing side bars, as depicted in Figure A.13. As a result of the successful pilot, Boston now requires all city vendors using truck weighing 10,000 pounds or more, to install side guards as well as convex and cross-over mirrors enabling truck drivers to more easily see cyclists and pedestrians. . New York City is installing sidebars on the entire city fleet of truck vehicles.

MASCO (the Medical, Academic, and Scientific Community) , the collaborative management entity serving 22 institutions which employ over 45,000 people in Boston's Longwood Medical area, is considering making truck side bars a requirement for all vendors' large trucks, including delivery, construction and service trucks to reduce truck-bike accident injuries and fatalities.

Boston estimated the average cost of installing sidebars on city trucks was $1,200 during the pilot project. The Volpe Center estimates that installation of a rigid skirt on a tractor trailer may range up to $5,000 per vehicle. Installation of side bars or a rigid skirt (a type of side bar) is a one-time expense in the life of the truck. In addition. EPA Smartway, estimates that fuel economy for trucks with side skirts is improved four to seven percent, depending upon mileage and speed.

Figure A.12. Trucks with side guards.

Figure A.13. Boston Public Works vehicle retrofitted with a side guards and convex mirror to minimize blind spots. These upgrades reduce risk of injuries and fatalities to bicycles in side collisions.



Since 2008, Washington, DC and Portland, OR have both required sidebars on many municipal trucks to help minimize bicyclist and pedestrian fatalities and injuries resulting from truck accidents. Although truck sidebars have been widely adopted in Europe and Japan and have a proven track record of enhanced safety and decreased fatalities, this safety improvement has only slowly been incorporated in the US.

Figure A.14. Volpe Center information on truck guards..

CITY OF BOSTON
IN CITY COUNCIL

Be it ordained by the City Council of Boston, as follows that the City of Boston Code be amended by adding the following ordinance:

SECTION 1. City of Boston Code, Ordinances, Chapter IV is hereby amended by inserting after Section 4-7 the following new section:--

4-8 AN ORDINANCE REQUIRING CITY VENDORS TO SAFEGUARD UNPROTECTED ROAD USERS.

4-8.1 Purpose.

Vehicles covered by this ordinance shall be so constructed and/or equipped as to offer effective protection to unprotected road users against the risk of falling under the sides of the vehicle and being caught under the wheels.

4-8.2 Definitions.

The words defined in this ordinance shall have the meanings set forth below whenever they appear in this section unless the context in which they are used clearly requires a different meaning, or a different definition is prescribed for a particular paragraph or provision.

(i) *Approval of a vehicle* means the approval of a complete vehicle type with regard to its lateral protection.

(ii) *City* means the City of Boston.

(iii) *Department(s)* shall mean those City of Boston Departments, Authorities, Agencies, Commissions and any other instrumentality acting on behalf of another ("Awarding Authorities") under the supervision of the Mayor or persons appointed by him/her.

(iv) *Contract* means the contract between a Vendor and a Department resulting from a request for proposals or an invitation for bids issued by the City to do any work or to make any purchase.

(v) *Gross weight* means the sum of the weights transmitted to the road surface by all the wheels of the vehicle.

(vi) *Large vehicle* means a motor vehicle with a gross weight exceeding 10,000 lbs; or a trailer with an unladen mass exceeding 10,000 lbs; or a semi-trailer with a gross weight exceeding 26,000 lbs.

(vii) *Lateral protective device* means an apparatus installed on large vehicles between the front and rear wheels to help prevent injuries to unprotected road users, particularly from falling underneath the vehicle.

(viii) *Mayor* shall mean the Mayor or persons designated by him/her.

(ix) *Otherwise qualified* means any Vendor that meets all other criteria for the award of a Contract.

(x) *Unladen mass* means the weight of the vehicle in running order, unoccupied and unloaded, but complete with fuel, coolant, lubricant, tools, and spare wheel, if supplied by the vehicle manufacturer as standard equipment.

(xi) Unprotected road users mean pedestrians, cyclists, or motorcyclists using the road in such a way that they are liable to fall under the sides of the vehicle and to be caught under the wheels.

(xii) *Vendor* means any firm, vendor, contractor, or supplier of goods and/or services to the City of Boston, and any of its subcontractors.

4-8.3 Requirements for Large Vehicles.

When any officer or board in charge of a Department or other awarding agency of the City issues requests for proposals or invitations for bids to do any work or make any purchase, said officer or board shall contract with a responsible and eligible Vendor that has also installed, or that demonstrates that it will install, side under-ride guards, convex mirrors, and appropriate warning signage on all large vehicles it uses or will use within the City of Boston in connection with the Contract in preference of otherwise qualified Vendors.

4-8.4 Policy Implementation.

Every Large vehicle or a conventional cab configuration in which more than half of the engine length is forward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length used by a Vendor in connection with a Contract shall be equipped with convex mirrors, cross-over mirrors, decals, and side under-ride guards affixed to the sides of such vehicles in a manner consistent this section and with rules and regulations further promulgated by the Boston Transportation Department, the Boston Police Department, and the Inspectional Service Department.

4-8.5 Technical Specifications for the Equipment of Lateral Protective Devices, Convex Mirrors and Convex Cross-over Mirrors, and Safety Decals

(a) Lateral Protective Devices

Large vehicles must be constructed or equipped in such a way as to offer, throughout their length, effective protection to unprotected road users against the risk of falling under the side of the vehicle and being caught under the wheels. This requirement will be considered satisfied either

1. If the vehicle is equipped with a special lateral protective device (side under-ride guard) in accordance with the requirements of Section 4-8.5b
2. If the vehicle is so designed and/or equipped at the side that, by virtue of their shape and characteristics, its component parts can be incorporated and/or regarded as replacing the lateral protective device. Components whose combined function satisfies the requirements set out in Section 4-8.5b below are considered to form a lateral protective device.

(ii) Technical Specifications

The lateral protective device can use horizontal rails or a continuous flat surface that meets the following dimensional requirements:

1. The lower edge of the lateral protective device shall at no point be more than 21.5 inches above the ground
2. The upper edge of the lateral protective device shall not be more than 14 inches below that part of the structure of the vehicle, cut or contracted by a

vertical plane tangential to the outer surface of the tires, excluding any bulging close to the ground

3. Not more than 12 inches to the rear of the vertical plane perpendicular to the longitudinal plane of the vehicle and tangential to the outer surface of the tire on the wheel immediately forward of the guard
4. The rearward edge of the lateral protective device shall not be more than 12 inches forward of the vertical plane perpendicular to the longitudinal plane of the vehicle and tangential to the outer surface of the tire on the wheel immediately to the rear
5. The lateral protective device shall not increase the overall width of the large vehicle and the main part of its outer surface shall not be more than 5 inches inboard from the outermost plane (maximum width) of the vehicle.
6. Every lateral protective device shall be essentially rigid and securely mounted. They shall not be liable to loosening due to vibration in normal use of the vehicle. The lateral protective device shall be considered suitable if it is capable of withstanding a force of 440 pounds applied perpendicularly to any part of its surface by the center of a ram the face of which is circular and not more than 8.5 inches in diameter, and during such application
7. No part of the side under-ride guard shall be deflected by more than 6 inches; and,
8. No part of the side under-ride guard which is less than 10 inches from its rearmost part shall be deflected by more than 1.25 inches.

(iii) Convex Mirrors

Large vehicles must be equipped with convex mirrors to enable the operator of the large vehicle to see all points on an imaginary horizontal line which:

1. Is three feet above the road;
2. Is one foot directly forward from the midpoint of the front of such large vehicle; and extends the full width of such large vehicle

(iv) Cross-Over Mirrors

Large vehicles must be equipped with convex cross-over mirror on the front of the vehicle to enable the operator of the large vehicle with a conventional cab configuration in which at least more than half of the engine length is forward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length to allow the driver to see:

1. Any person or object at least three feet tall passing in front of the vehicle.
2. The area from the front bumper to where direct vision is possible.

(v) Safety Decals

Large vehicles must be equipped with a minimum of two (3) safety decals on the rear and sides that warn pedestrians and cyclists of blind spots:

1. Decals should be 'safety yellow' in color
2. Decals should include language or images warning of the blind spot locations on the vehicle.

3. Decals should be placed, when possible, on or near the lateral protection devices.

4-8.6 Compliance and Enforcement.

(a) Non-compliance with the provisions of this section 4-8 by a Vendor shall be grounds for
   1. A fine of $100 for the first offense on a Contract, escalating to $150 for the second offense, and $200 for the third offense.
   2. Termination of the Contract.

(b) This section 4-8 shall be enforced by the Inspectional Services Department's Weights and Measures Division and the Boston Police Department. The Boston Police Department and The Inspectional Services Department shall determine non-compliance with the provisions of this section 4-8 and any applicable regulations and may make recommendations, if any, to the contracting Department.

(c) The Inspectional Services Department shall issue, for a Vendor's large vehicles, a compliance certification through a vehicle inspection of convex mirrors, lateral protective devices, and decals prior to the date Vendor begins work on a Contract. A fee to cover the costs associated with inspection will be determined by the Commissioner of the Inspectional Services Department and passed on to the Vendor.

(d) Vehicle compliance will be certified with a sticker denoting the year of inspection. Inspections must be updated Biennially.

(e) Vendors may file for a waiver as stipulated in section 4-8.7. Waiver applications must be made in writing at the time of contract bid to the Commissioner of Inspectional Services, the Department requesting services, and the Commissioner of Transportation. Waiver applications filed after contract bids will not be considered.

(f) Inspectional Services Department shall issue an annual report to be filed with the Mayor and the City Clerk and transmitted by the Clerk to the City Council on the actions undertaken by the Inspectional Services Department on enforcement of this ordinance no later than May 31st of each year. The annual written report shall include, but not be limited to, the following items for the twelve (12) month period prior to the report's due date:
   1. Any financial costs to the City associated with this ordinance
   2. The number of vehicles this ordinance applied to
   3. The number of vehicle exemptions, if any
   4. The total number of inspections performed by inspectors and any subsequent violations of this ordinance

4-8.7 Waiver.

(a) If a Vendor or Department determines that extenuating circumstances exist which prevent the Vendor from complying with this section 4-8, then such Vendor or

Department may request an exemption from compliance to the City of Boston with its provisions. Waivers are issued at the sole discretion of the City of Boston.

(b) This ordinance does not apply to
  (i) A motor vehicle which has a maximum speed not exceeding 15 mph
  (ii) An agricultural trailer
  (iii) A fire engine
  (iv) An emergency medical vehicle
  (v) A vehicle which is being driven or towed to a place where by previous arrangement a side under-ride guard is to be fitted so that it complies with this section 4-8
  (vi) Vehicles used solely for the purpose of snow removal.
  (vii) Street sweeper vehicles
  (viii) City of Boston Fleet Vehicles purchased before July 1, 2014

4-8.8 Conformity with Existing State and Federal Law.

This section shall be implemented in conformity with state and federal law.

4-8.9 Severability.

The provisions of this section are severable and if any provision, or portion thereof, should be held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, such unconstitutionality or invalidity shall not affect the remaining provisions, which shall remain in full force and effect.

4-8.10 Effective Date.

(a) This section shall take effect one hundred and eighty days after passage and shall apply to all new Contracts awarded and to all renewal terms of existing Contracts executed after that date.

(b) City of Boston fleet vehicles purchased after July 1, 2014 that are Large Vehicles as defined herein will be required to comply with the provisions of this section.

(c) The Inspectional Services Department, Boston Police Department, and the Transportation Department shall issue rules and regulations to implement the provisions of this section within ninety days of the date it takes effect.

I HEREBY CERTIFY THAT
THE FOREGOING, IF PASSED IN
THE ABOVE FORM, WILL BE IN
ACCORDANCE WITH LAW.
BY _____
EUGENE L. O'FLAHERTY
CORPORATION COUNSEL

About the McCabe Enterprises Team

McCabe Enterprises provides strategic solutions in public financing, community planning and economic development to public and private sector clients with innovative and award-winning work. A wholly woman-owned consulting firm founded by Kathleen McCabe, AICP, EDP to work with clients to develop customized solutions addressing the unique needs of each client and community. Our approach encompasses planning and economic analysis, financing, community consultation, with a focus on implementation and community engagement. Our work includes market analysis, feasibility studies, downtown revitalization, public financing, urban renewal, sustainability, neighborhood planning, industrial retention brownfields re-use planning and redevelopment.

McCabe Enterprises can be reached at mccabe@plan-do.com or 617 469-9444.

McCabe Enterprises team members on the Merrimack Street Land Use Planning project include **Kathleen McCabe, AICP, EDP** and:

Jennifer Mecca, Architect is an experienced urban designer with downtown, neighborhood revitalization and redevelopment projects, including work with Boston Main Streets, Waterfront Square in Revere, and New Bedford brownfields development planning. She brings a breadth of redevelopment experience to enable communities to understand proposed redevelopment projects and their impacts.

John Shevlin, PE, Senior Vice President for Transportation, and Timothy Thomson, Senior Engineer, of Pare Corporation, a regional multi-disciplinary firm of engineers, environmental and wetland scientists, and GIS/CAD specialists specializing in transportation, waterfront, environmental, geo-technical engineering and sustainable design with offices in Foxborough and Lincoln, RI.

John Amodeo, ASLA, LEED AP, BD+C, and Carolina Carvajal, Landscape Architect of Carol R. Johnson Associates | IBI Group, an award-winning landscape architectural design and environmental planning firm. CRJA has developed a reputation for excellence in the design of both natural and urban environments. CRJA's design approach integrates natural systems with built features, achieving high quality, cost-effective solutions.

Eduardo Berinstein, E B Translations, is certified as a translator by the American Translators Association and as an interpreter by the U.S. Federal Courts. E B Translations has more than two decades of experience serving multilingual communication, including Spanish.

Beverly Kunze Photography provided the photographs of community meetings and many of the Merrimack Street area photographs.

McCabe Enterprises
12 Primrose Street
Boston, MA 02131
www.Plan-Do.com
617 469-9444
McCabe@Plan-Do.com

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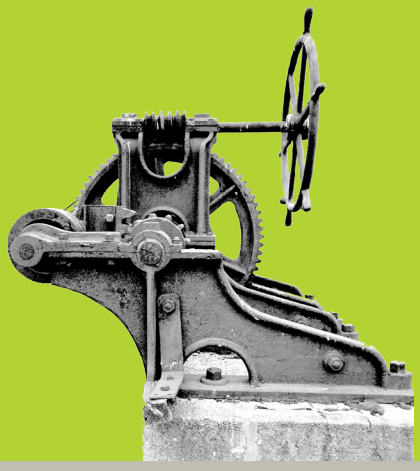
PARE CORPORATION

CRJA landscape architects

MERRIMACK STREET LAND USE PLANNING

City of Lawrence Daniel Rivera, Mayor

Supported by the Office of Planning & Development



The McCabe Enterprises Team

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