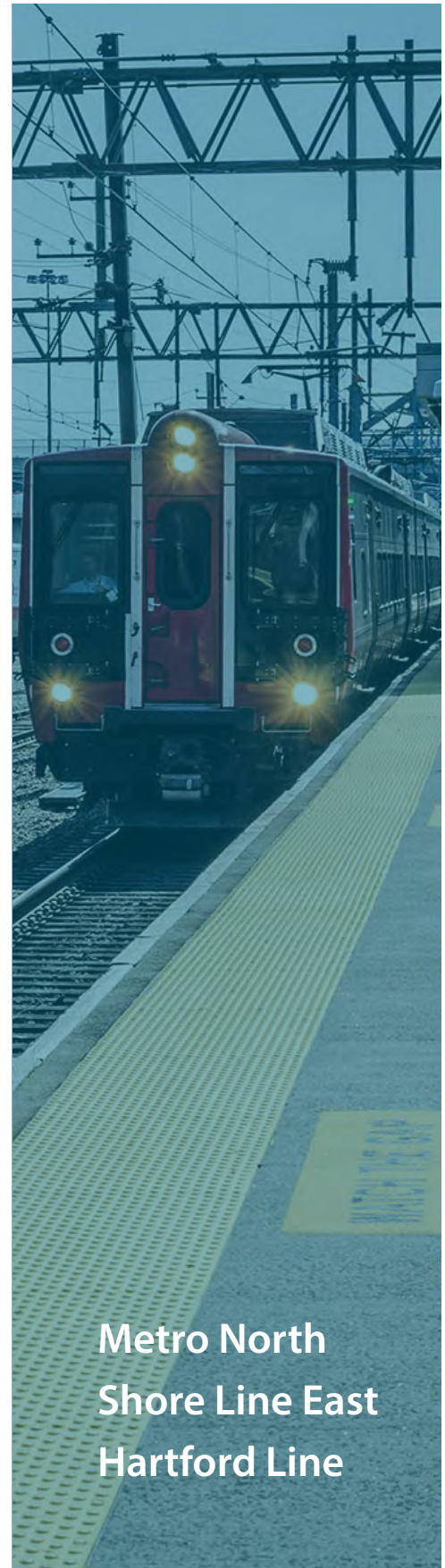


Transit Oriented Development Opportunities for the South Central Region

June 2015



Metro North
Shore Line East
Hartford Line



SOUTH CENTRAL REGIONAL COUNCIL OF GOVERNMENTS
Planning for Our Region's Future

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Prepared by:



Executive Summary

Introduction

The South Central Region of Connecticut is home to two existing commuter rails lines and will be serviced by a new commuter rail line in 2016. The region's employment is growing and employment is shifting away from sectors such as manufacturing, information, and finance & insurance and towards health care & social assistance, educational services, and accommodation & food services. The region is presented with an opportunity to direct jobs and housing towards its expanding commuter rail service.

The Metro North New Haven Line is a commuter rail service that serves south of New Haven to/from New York City including branch lines servicing Waterbury, New Canaan, and Danbury. The New Haven Main Line (exclusive of branch lines) serves approximately 40 million riders per year. Metro North offers connecting service to and from Shore Line East. Together, Metro North and Shore Line East provide commuter rail service from New York's Grand Central Station to New London.

Shore Line East is a commuter rail service that provides east-west service along the eastern shoreline of the state between New Haven and New London with limited express service to/from West Haven, Bridgeport and Stamford. Shore Line East runs most of its trains in the westbound direction from New London to New Haven during the morning commute period with the reverse pattern during the afternoon commuting period. The service has been continually upgraded with planned and programmed station improvements along the corridor with a steady and increasing ridership over recent years. Shore Line East serves almost 600,000 riders per year.

The Hartford Line is a planned commuter rail service from New Haven to Springfield, MA, including service to Hartford and several other stations along the corridor. This new service will provide connections to Shore Line East and the Metro North New Haven Line at New Haven's Union Station. The Hartford Line is projected to attract up to 1.26 million trips per year by 2030. The corridor is currently served by Amtrak's New Haven/Hartford/Springfield rail service.

Key Trends and Findings

Population and Labor Force

- Population within the region is concentrated along rail corridors and is projected to grow by approximately twenty thousand residents by 2025. The population is getting older, with the 55 and over age group growing while the 25 to 34 age group is projected to shrink.
- Migration from New Haven County has exceeded migration into New Haven County for several years and is likely to continue.
- Connecticut's economy is recovering from the 2008 recession and the state's Gross Domestic Product is expected to grow at an increased rate into 2016.
- The state's labor force has grown since 2012 and in-state employment has grown steadily since 2010. The number of jobs in the South Central region is expected to have grown 9.6% between 2012 and 2022.
- Connecticut's labor force will be impacted by retiring baby boomers with the number of 65 year-old workers exceeding the number of 22 year-old workers by 2022.
- Employment sectors in the South Central region have shifted from manufacturing, information, and finance & insurance towards health care & social assistance, educational services, and accommodation & food services.
- The largest employment sectors in the region are health care & social assistance, educational services, retail trade, manufacturing, and accommodation and food services.

Real Estate Trends & Findings

- Commercial vacancy rates have been decreasing nationwide and in Connecticut's metro areas since 2011, but have been increasing in the New Haven-Milford metro area since 2012. Asking rents for commercial space in the region have been decreasing since 2012. Vacancy rates in the region are highest in the office space market.
- Nationwide, home ownership rates have decreased since 2004 with the rentership rate growing since that time. The demand for apartments has increased since 2004 with the rising demand in rentership.
- The number of housing permits issued in New Haven County has remained relatively flat since 2008 with approximately one thousand permits issued per year, down from the two thousand permit average prior to 2004. Among the study area communities, most of the permits issued were in Milford and New Haven, which also had the only multi-unit permits.
- Home values in the New Haven metro area have declined significantly since 2006 and have been flat since 2012. By contrast, rental costs have increased since 2011 and have experienced a spike in the past year.
- With the exception of Meriden and New Haven, *station area* median incomes are relatively high, varying from \$50,643 in West Haven to \$90,676 in Orange.

Transit Service & Commuting Patterns

- Commuting to work via rail transit in the region's station areas is relatively low, less than 7% across station areas. With the exception of New Haven, a high percentage (68% to 85%) of workers living in station areas drive to work alone. The national station area average is 54%.
- Station area households in the region have a significantly higher rate (1.2-1.85 per household) of auto ownership than the average ownership rate (1.1 per household) for transit areas across the country.
- The Metro North New Haven Line corridor holds the most promise for transit oriented development based upon its level of transit service and ridership which are significantly higher than the Shore Line East or Hartford Line corridors.

Station Area Findings

- Most station areas, with the exception of North Haven and Orange, are mostly built-out with little vacant land that is suitable for development. There are, however, numerous opportunities across the station areas for redevelopment and infill development.
- The development densities typically associated with TOD will be difficult to achieve in Guilford and Madison given the lack of sewer infrastructure in those station areas.
- Most cities and towns in the region that have train stations have adopted TOD zoning or zoning that is supportive of mixed-use and/or high density residential development. North Haven, which does not yet have a station, does not have TOD zoning or TOD supportive zoning.

Recommended Regional & Local Approaches

- The South Central Region is well positioned to facilitate TOD in the region by: coordinating with large employers in the region to direct future expansions to station areas; working with transit providers to provide better connectivity between different modes of transit or transportation at station areas; directing discretionary funds to station areas; and providing ongoing technical assistance to municipalities along the region's transit corridors.
- Towns and cities in the region can encourage TOD by: leveraging state and regional resources; adopting TOD supportive zoning and design standards; directing economic development towards and within station areas; enhancing station area connectivity; and providing needed infrastructure in station areas.



Transit Oriented Development is the intersection of transit access, high density housing, goods and services, and walkable communities that provide pedestrian access to those resources.

Introduction

The South Central Regional Council of Governments (SCRCOG)'s goal is to support transportation and land use planning that will provide an efficient and functional multi-modal transportation system within the region. One of the most exciting and fast growing trends in the transportation industry is transit-oriented development (TOD), the creation of compact, walkable, mixed-use communities centered around high quality transit systems. The South Central Region has a great opportunity to promote and support TOD due to its context and location.

The region is comprised of fifteen municipalities, ten of which have existing rail stations or stations that are planned for development in the near future (Branford, Guilford, Madison, Meriden, Milford, New Haven, North Haven, Orange, Wallingford, and West Haven). These municipalities are serviced by the Interstate 95 and Interstate 91 highway corridors, multiple state routes, local and regional bus service, and multiple rail services.

This study seeks to identify opportunities for TOD in the South Central Region by exploring regional trends and the opportunities for transit oriented development in proximity of each station area. Furthermore, this study provides an in-depth analysis around each of the existing or planned stations located in the region to assess:

- Local commuting patterns
- Level of connectivity to station
- Existence of infrastructure to support new development
- Amount of potentially developable or redevelopable land
- Regulatory conditions in station area(s)
- Station area market conditions and socioeconomic profiles

The study also provides broad strategies for facilitating TOD in the region and identifies key opportunity areas and potential development sites for targeting transit oriented development.

What is TOD?

TOD (Transit Oriented Development) is the integration of transit with surrounding land uses. TOD often takes the form of mixed-use residential and commercial development that maximizes access to transit, and reduces dependency on the automobile. A TOD neighborhood typically has a center with a transit station or stop and is surrounded by relatively high-density development. Transit oriented development is typically located within a radius of one-quarter to one-half mile of a transit station or stop, as this represents an area that is generally accessible within a ten-minute walk of the station. Transit oriented development can take many forms including new development, redevelopment, rehabilitation, or infrastructure enhancements; critical to this is a strong relationship between transit and development.

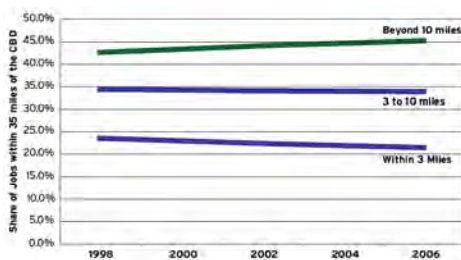
Why TOD?

Transit oriented development creates environments that enable people to walk, bike and use transit. TOD can increase transit ridership, minimize traffic, expand mobility, increase shopping and housing choices, provide improved regional connectivity, stimulate placemaking, revitalize communities, and provide financial return and value recapture. There are a number of reasons and incentives for encouraging transit oriented development including:

Consistency with the State's Transportation Vision

Implementing TOD strategies within the region is consistent with the State's vision. Connecticut's 2015 Transportation Vision Plan, *Let's Go CT!*, outlines an ambitious vision for the expansion of transit and investment in transportation infrastructure. While this is a long range vision, opportunities for specific transit investment programs are expected.

Geographic Distribution of Job Share¹
98 Metro Areas, 1998-2006



Economic Development

The New Haven metro area is among the top ten most decentralized small employment centers in the US¹. Development in the region's transit areas could reverse these trends by targeting industry sectors that are expanding.

Sectors that have exhibited especially strong growth within transit station areas nationally are: arts, entertainment, & recreation (14% growth), food & accommodation (14% growth); health care & social assistance (10% growth); and professional, scientific, & technical (9% growth). Over the same period of time, there was a 22% drop in manufacturing jobs within transit zones, some of which can be attributed to the displacement of these uses to other locations and the conversion of industrial lands to other uses².

Industry sectors such as government and knowledge based industries such as professional, scientific & technical services, information, and finance & insurance sectors have a greater propensity to locate near transit. In 2008, 42% of all public sector jobs were located in transit zones. About 36% of jobs in professional, scientific, and technical services are located within a half mile of a transit station².

Increased Transit Use and Walking

A study by the Mineta National Transit Research Consortium³ concluded that those living closer to transit stations are more frequent walkers and transit users and are less frequent drivers, compared to those living further away from transit stations.

The study found a mix of different effects, including:

- Associations between denser local street networks and increased walking frequency
- Lower vehicle ownership, associated with more frequent walking and transit use
- More frequent transit use and walking among those with longer commutes

These results demonstrate one of the primary benefits of TOD and development near train stations. Since those living closer to the train station drive less, they also create fewer negative impacts associated with driving (such as pollution, noise, and congestion). Their increased use of public transit benefits the finances of the transit agency and their increased propensity to walk can have health benefits.

Increased Property Values

The appreciation of residential property values in transit station areas represents an increase in demand for housing and other activities near stations. Higher average residential property valuations are found near TOD stations when compared to areas at a further distance³. Additionally, areas around stations with direct service to New York City have higher property valuations compared to areas more distant from the station³. The study results also show a diminishment in value further from a station. However, the reduction is less for proximity to New York City direct service stations than for other TOD stations. This suggests that access is more highly valued than the other attributes of a walkable neighborhood with TOD.

Additional case studies⁴ from cities such as San Francisco, San Diego, Portland, Sacramento, Chicago, St. Louis, Washington, D.C., Atlanta, and Dallas have shown that the real estate premium created by transit can range between 2% and 167%, with most premiums being less than 20%. The factors affecting this premium include:

1. *Job Sprawl Revisited: The Changing Geography of Metropolitan Employment*, Brookings, 2009

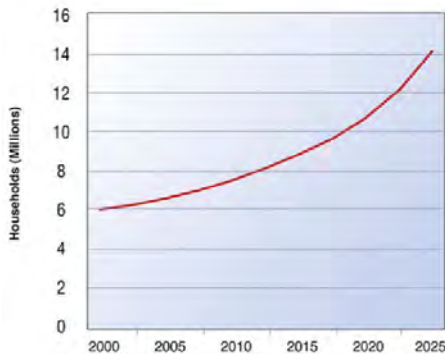
2. *Center for Transit Oriented Development, Transit and Regional Development*, 2011

3. *Mineta National Transit Research Consortium, Measuring Benefits of Transit Oriented Development*, October 2014

4. *Center for Transit Oriented Development, Capturing the Value of Transit*, 2008

- The local regulatory framework including TOD supportive zoning and subdivision regulations
- Parking ordinances and regulations that support high density development
- Regional connections: A high level of transit connectivity and service supports higher values
- TOD cannot overcome regional economics

Projected Demand for Housing in Transit Zones (nationwide)¹



Projected Demand for TOD Housing

According to the Center for Transit Oriented Development (CTOD)¹, there is likely to be an increasing demand for housing within a half-mile radius of fixed-guideway transit stations, nationwide, over the next 10 years. While this analysis was conducted in 2004, the projections remain relevant as population continues to shift from rural areas to urban areas. CTOD's market assessment shows that at least a quarter of all new households in the U.S. (14.6 million households) could be looking for housing in these transit zones.

Market trends also reveal a shift from single family home ownership towards apartment development and rentership. This is connected to an aging baby boomer population that is interested in downsizing their housing as they retire and a young population that is entering the workforce with more debt and is less likely to buy because of stricter lending standards.

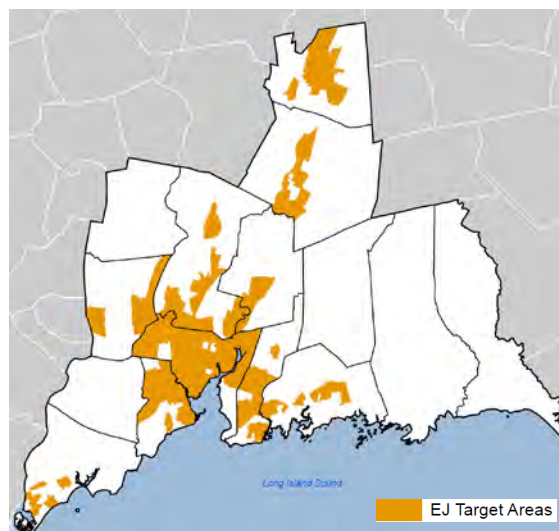
Affordable Housing

TOD projects, as part of the fabric of a community, should have residential units that are affordable for a broad cross-section of residents. Development subsidies and incentives can be used to encourage the inclusion of affordable housing within transit oriented developments.

Environmental Justice

There are numerous environmental justice areas in the SCRCOG region, many of which are in proximity of the region's rail stations. Environmental justice target areas are defined as census block groups with more than 11.85% of the population living below the federally defined poverty level and/or with a minority population of more than 25.9%. These thresholds are the regional averages. Any proposed TOD development should consider the impact on Environmental Justice areas in order to mitigate impacts.

South Central Region Environmental Justice Target Areas ²



1. Center for Transit Oriented Development, *Hidden in Plain Sight*, 2004

2. Data Source: U.S. Census Bureau, 2009-2013 5-Year American Community Survey (Table B17021, B02001)

South Central Region Transit Corridors

SCRCOG Region Rail Service Corridors



Service	Annual Ridership
Metro North New Haven Line	40 million (typical)
Shore Line East	0.5-0.6 million (typical range)
Hartford Line	1.0-1.26 million (projected)

This study focuses on the rail systems in the South Central Region as the core areas to explore the opportunities to create vibrant, livable, and sustainable communities. The region is currently served by two existing commuter rail services, Shore Line East and Metro North’s New Haven Line, which are the State’s primary commuter rail corridors. New Haven’s Union Station serves as a major transit hub which connects the two existing rail systems and will connect with the planned rail service, the Hartford Line. This rail service is currently being planned by the State of Connecticut, Amtrak, and the Federal Railroad Administration to provide high speed rail service between New Haven, Hartford, and Springfield, Massachusetts. These three rail systems, as described below, are used as the basis and fundamental elements for this study to determine the TOD opportunities within specific areas of the region.

The Metro North New Haven Line is a commuter rail service that serves south of New Haven to/from New York City including branch lines servicing Waterbury, New Canaan, and Danbury. Metro North offers connecting service to and from Shore Line East. Together, Metro North and Shore Line East provide commuter rail service from New York’s Grand Central Station to New London. The New Haven Main Line (exclusive of branch lines) serves approximately 40 million riders per year and 3.4 million riders per month¹.

Shore Line East is a commuter rail service that provides east-west service along the eastern shoreline of the state between New Haven and New London with limited express service to/from West Haven, Bridgeport and Stamford. Shore Line East runs most of its trains in the westbound direction from New London to New Haven during the morning commute period with the reverse pattern during the afternoon commuting period. Average weekday ridership is reported to be approximately 2,000¹ passengers per average weekday. The service has been continually upgraded with planned and programmed station improvements along the corridor with a steady and increasing ridership over the most recent years. The corridor includes five stations within the SCRCOG region: Guilford, Madison, Branford, New Haven–State Street, and New Haven-Union Station.




The Hartford Line is a planned commuter rail service from New Haven to Springfield, MA, including service to Hartford and several other stations along the corridor. This new service will provide connections to Shore Line East and the Metro North New Haven Line at New Haven’s Union Station. The service is projected to attract 3,600 to 4,000 trips per day² and up to 1.26 million trips per year by 2030³. The corridor is currently served by Amtrak’s New Haven/Hartford/Springfield rail service.

For purposes of this study, Union Station in the City of New Haven, while a hub for the three services, is identified as a Metro North station due to the volume of activity at Union Station. Likewise, New Haven State Street has also been included in the Metro North Corridor within this report. While State Street Station primarily services Shore Line East, the station area, which is in proximity to Union Station and shares a common geography, is heavily influenced by transit service at Union Station.

1. Connecticut Commuter Rail Council Monthly Operations Report, June 2015
 2. New Haven-Hartford, Hartford-Waterbury Rail Service Proposal, January 2001
 3. New Haven-Hartford-Springfield Program Benefits Fact Sheet - 2012

It is anticipated that with this level of direct and connecting service linking the region, towns along the rail corridors will attract growth and become the places where people desire to live and where businesses desire to relocate. With the success of commuter rail service, the South Central region has the right ingredients in place to enhance and build livable and sustainable communities that will provide travel options to reduce congestion and dependence upon the automobile. A strong transportation network of three prominent rail corridors with interconnection to all modes at the New Haven Union Station lends itself towards creating viable TOD opportunities within the region.

Stations included within study

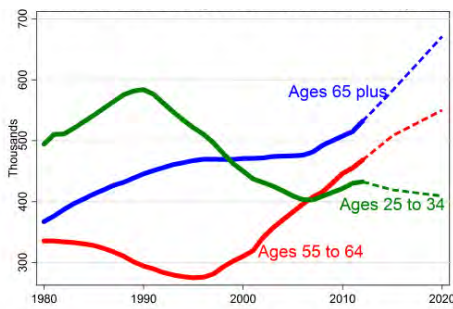
- Milford Center
 - Orange Station (proposed)
 - West Haven Station
 - Union Station
 - State Street Station
- } 
- Branford Town Center
 - Guilford Town Center South
 - Madison Town Center
- } 
- Meriden Hub
 - Wallingford Town Center
 - North Haven Station (proposed)
- } 

Excluded from analysis within this study are potential future stations in Hamden and at Wharton Brook in North Haven. The potential Hamden station does not yet have a proposed site and the future of the Wharton Brook Station is uncertain at the time of this study.



Regional Demographic Profile

Statewide Population Trends¹

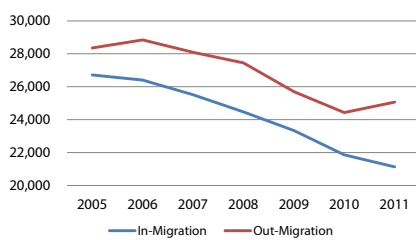


The SCRCOG Region’s population is concentrated along major transportation corridors including the region’s rail corridors and Interstates 91 and 95, Route 1 and Route 15. New Haven, West Haven, and Meriden have the highest density housing areas in the region.

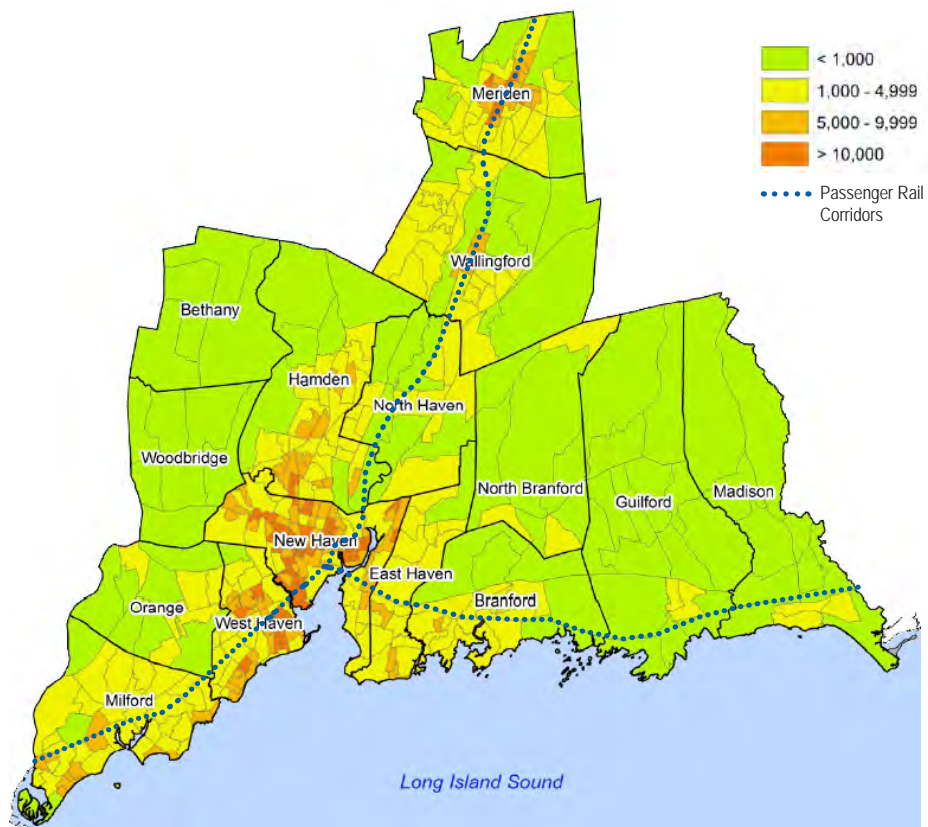
Statewide, age groups above 55 have been growing and are projected to grow. The 25 to 34 age group has been shrinking and is expected to decline marginally into 2020¹. The state’s population has shifted and is generally older, with the 30 to 44 age group losing population between 2000 and 2010 and the 45 to 69 age group gaining population over the same time period¹. This shift is a reflection of the aging baby boomer population.

Within New Haven County, and statewide, out-migration has been outpacing in-migration for several years. Both out-migration and in-migration declined between 2005 and 2011². Population within the SCRCOG region has, however, grown 4.1% between 2000 and 2012, with a 2012 population of 569,272³. Population growth is also projected within the region with an additional 20,000 residents in the region between 2015 and 2025³.

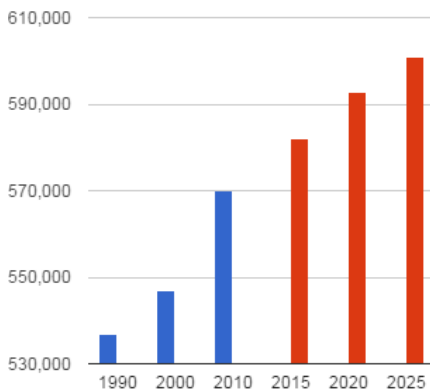
New Haven County Migration²



Persons per Square Mile by Census Tract⁴



SCRCOG Region³ Population Projections



1. CT Department of Labor, Office of Research, Connecticut Workforce Trends, 2013
 2. Statistics of Income Division -Internal Revenue Service, County-to-County Migration Inflow, 2005-2011
 3. CT State Data Center (www.ctsdc.uconn.edu). Projected from U.S. Census Bureau 2000 to 2010 Birth and Mortality data
 4. SCRCOG 2014 Demographic and Socioeconomic Trends, Original Source: 2008-2012 American Community Survey

Labor Force Trends

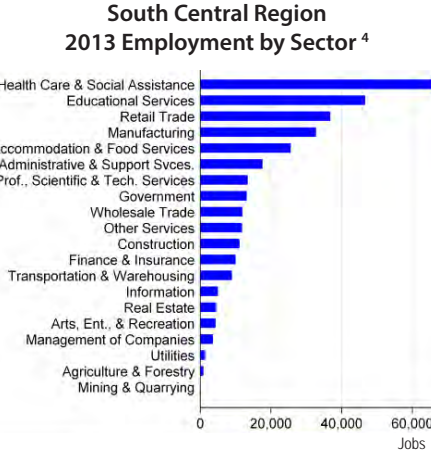
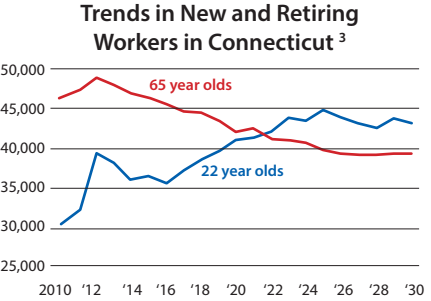
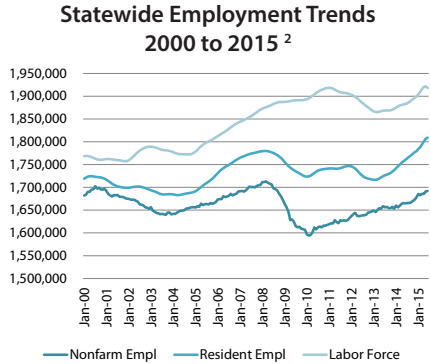
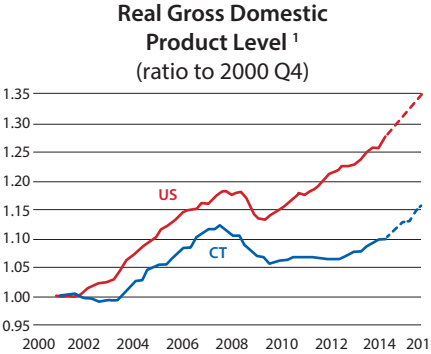
One of the primary indicators to measure the health of the economy is the gross domestic product (GDP) index. It represents the total dollar value of all goods and services produced over a specific time period. Connecticut's economy is slowly rebounding from the 2008 recession with GDP increasing steadily since 2013. The state's GDP is projected to grow at an increased rate through 2015¹. Compared to the US economy, Connecticut's GDP has lagged behind national growth since 2001.

Statewide employment trends mirror the state's GDP, with nonfarm employment (*nonfarm employment excludes farm workers, government employees, household employees, and nonprofit social assistance employees*) contracting by more than 100,000 jobs between 2008 and 2010. Nonfarm employment has since recovered, but has yet to reach 2008 levels. Resident employment (*Connecticut residents employed out of state*) also dropped between 2008 and 2010, but the contraction was less than the contraction of in-state employment. This suggests that Connecticut suffered a greater share of job losses than surrounding states. Employment indicators have been positive since 2013 with nonfarm employment, resident employment, and the labor force having steadily grown between 2013 and early 2015².

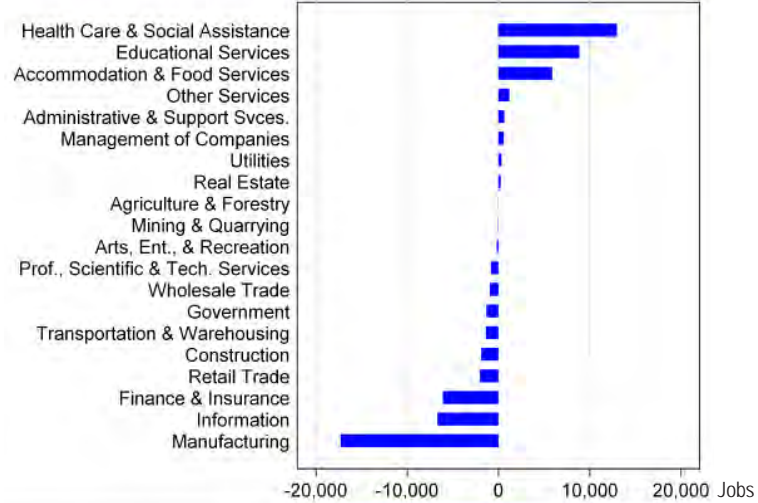
According to the Connecticut Department of Labor, the number of jobs in the South Central region is expected to grow 9.6% between 2012 and 2022, increasing from 365,401 jobs in 2012 to 400,578 jobs in 2022⁴. The region's labor force will, however, likely be negatively impacted by retirements of baby boomers, with the number of 65 year old workers exceeding 22 year old workers statewide in 2022³. Retiring workers are then likely to exceed the supply of new workers entering the workforce. Given Connecticut's trend towards out-migration, labor force shortages could be a future issue.

Between 2001 and 2013, the region's employment shifted away from sectors such as manufacturing, information, and finance & insurance and towards health care & social assistance, educational services and accommodation & food services.

The largest employment sectors in the SCRCOG region are health care & social assistance, educational services, retail trade, manufacturing, and accommodation & food services⁴. With the exception of manufacturing, which has been contracting, these employment sectors are compatible with the high densities and mixture of uses associated with transit oriented development.



South Central Region Employment Change by Sector 2001 to 2013⁴



1. Chase Bank/JP Morgan 2014 Regional Perspectives: Connecticut Economic Outlook
 2. CT Department of Labor, 2015 Workforce Sector Scorecard
 3. CT State Data Center (www.ctsdc.uconn.edu). Projected from U.S. Census Bureau 2000 to 2010 Birth and Mortality data
 4. CT Department of Labor, Office of Research, Connecticut Workforce Trends 2013

Commercial Market Trends

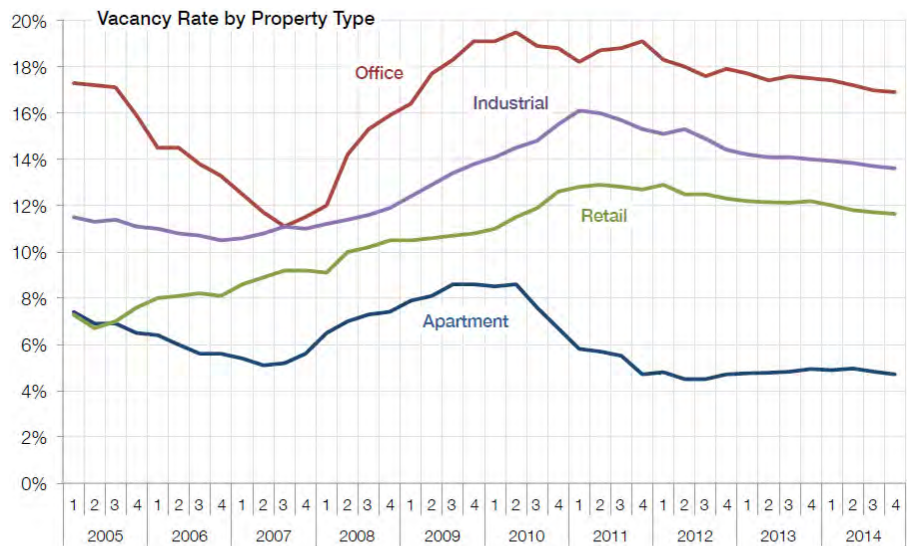
Commercial and apartment property sales, which had reached a ten year low of less than \$100 billion in 2009 have recovered steadily since that time reaching approximately \$380 billion in 2014, comparable to 2006 sales levels¹.

Office, retail, and industrial vacancy rates increased between 2007 and 2011 with the office vacancy rate increasing most dramatically (11% to 19%) in that time. The apartment vacancy rate also began to grow in 2007 but stabilized in 2009 and began to drop in 2010. In 2014, the apartment vacancy rate was slightly above 4%, with retail near 12%, industrial near 14% and office vacancy at 17%¹.

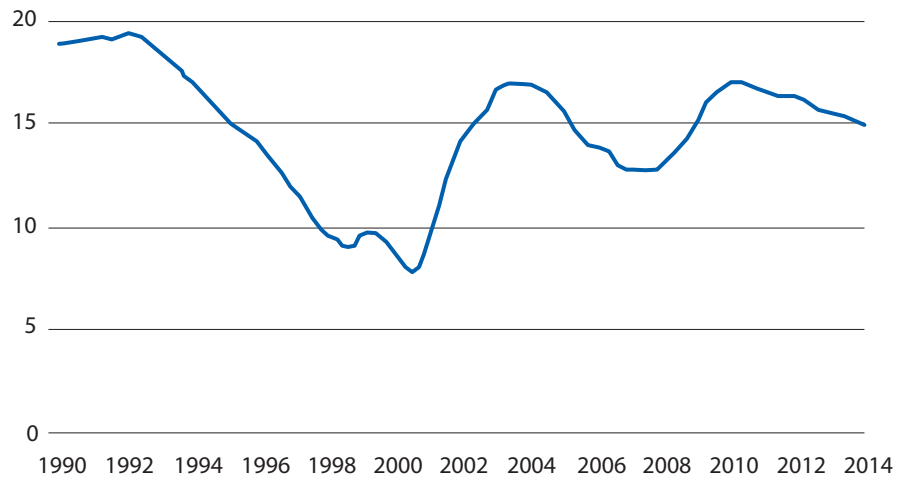
These trends suggest a rebound in the commercial real estate market with improvements in sectors such as office, retail, and apartment that are favorable to transit oriented development.

Office vacancy in Connecticut's metro areas began rising significantly in 2001 and tapered in 2004. Vacancy declined between 2004 and 2008, rose again between

**Vacancy Rate by Property Type
United States 2005-2014¹**



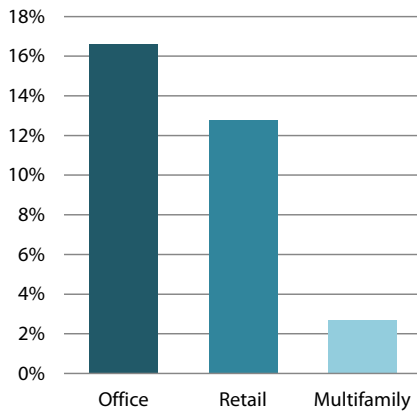
**Percent of Vacant Office Space
Connecticut Metro Areas 1990-2014²**



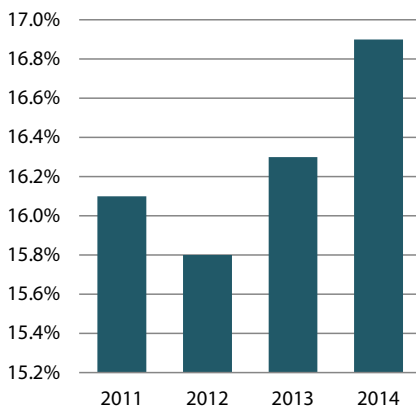
1. Chandan Economics: 2015 Commercial Real Estate Trends Forum

2. Chase Bank/JP Morgan 2014 Regional Perspectives: Connecticut Economic Outlook

New Haven Metro 2015 Q2 Vacancy Rates ³



New Haven-Milford Metro Area Office Vacancy Rates ⁴



2008 and 2010, and has declined since 2010. The 2014 office vacancy rate for all Connecticut metro areas was approximately 15%¹.

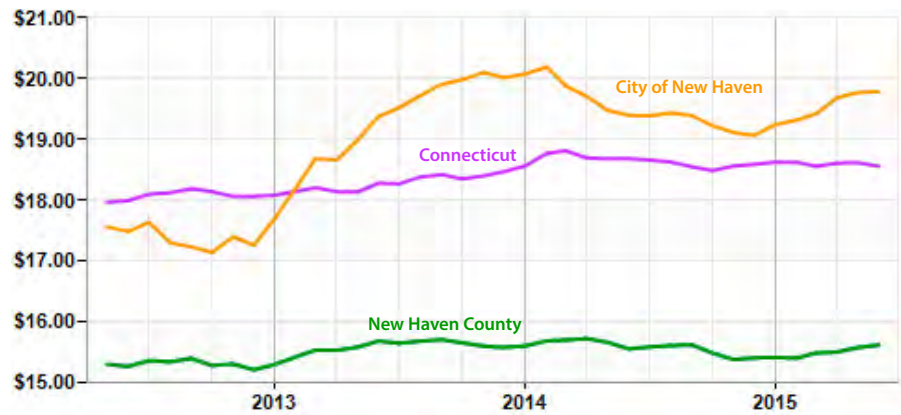
Within the New Haven-Milford Metro area, office vacancy rates grew between 2012 and 2014 with a 2014 vacancy rate of almost 17%². The 2015 second quarter Metro New Haven office vacancy rate (approximately 16.5%) is slightly less than the 2014 level for the New Haven-Milford Metro area³. The 2015 second quarter New Haven Metro retail vacancy rate is approximately 12.5% and the multifamily rate is less than 3%³.

Office property asking rents have mirrored statewide asking rents, remaining relatively stable in New Haven County since 2012, yet approximately \$3 less per square foot. The City of New Haven's office asking rents are more than \$4 more per square foot than office space in New Haven County and are up slightly since 2014⁵.

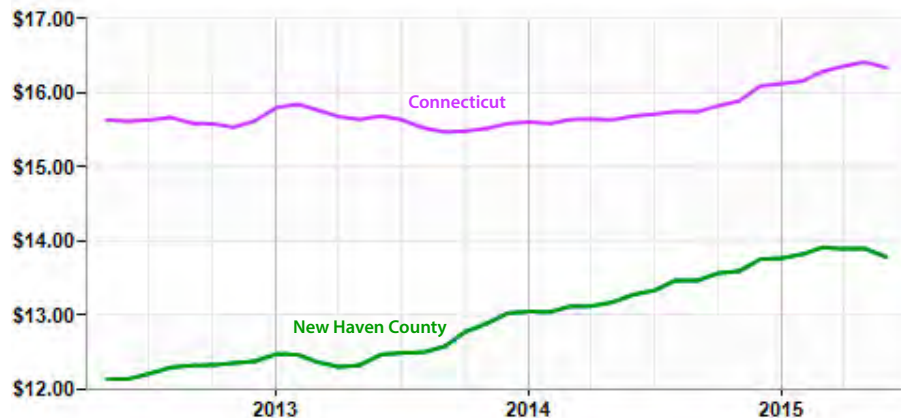
Retail asking rents have been increasing in New Haven County since 2012 achieving almost \$14 per square foot in early 2015. This is well below the state average retail asking rent which is more than \$16 per square foot⁵.

Commercial vacancy rates remain high in the New Haven region with asking rents for both office and retail properties significantly lower than statewide asking rents. This suggests that office and retail space, as a component of transit oriented development, may not be a driving factor in the New Haven region.

Office Property Asking Rents, per sq ft per year, 2012-2015 ⁵



Retail Property Asking Rents, per sq ft per year, 2012-2015 ⁵



1. Chandan Economics: 2015 Commercial Real Estate Trends Forum

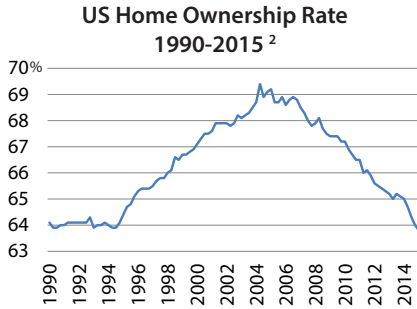
2. Chase Bank/JP Morgan 2014 Regional Perspectives: Connecticut Economic Outlook

3. National Association of Realtors Commercial Real Estate Outlook: 2015 Q2

4. CassidyTurley/DTZ 2014, 2015 US Office Trends Reports

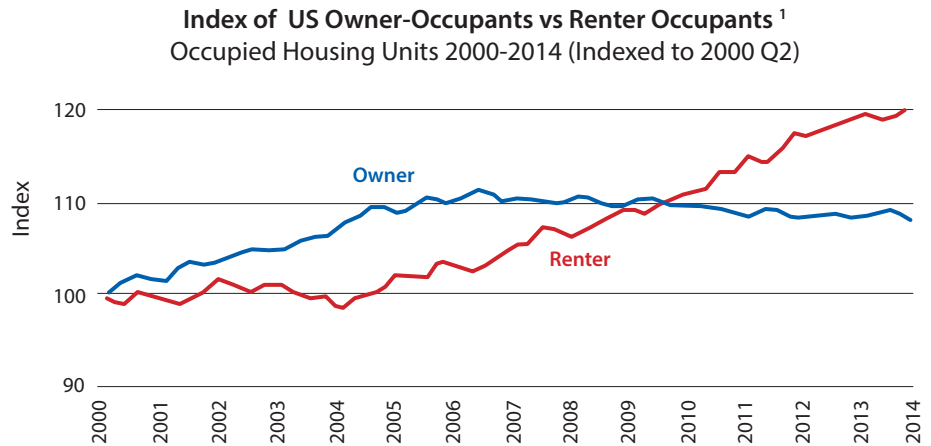
5. LoopNet (www.loopnet.com/New-Haven_Connecticut_Market-Trends)

Residential Market Trends

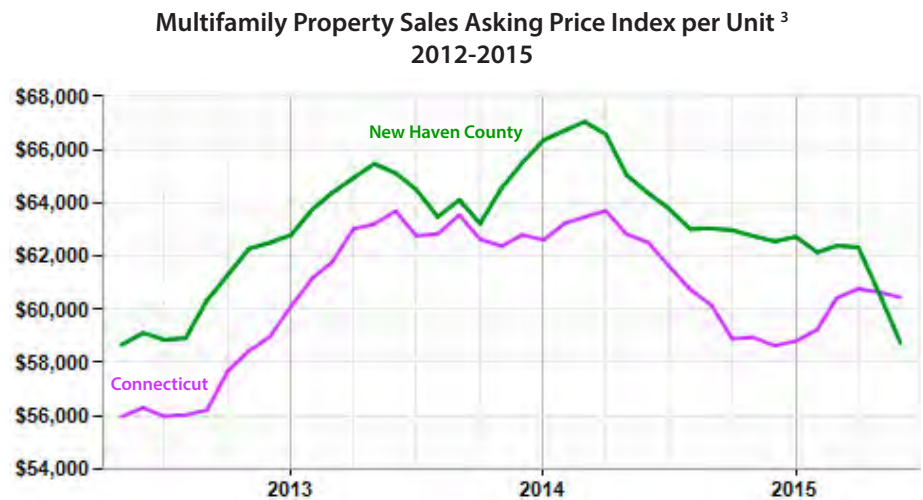


Nationally, the residential real estate market has been trending towards renter occupied housing units. Between 2000 and 2005, the rate of owner occupied units increased significantly versus renter occupied units. Between 2005 and 2014, this trend reversed with renter occupied housing outpacing owner occupied housing¹. This shift is evidenced by the national home ownership rate which increased steadily between 1995 and 2004 when it reached an ownership rate of more than 69%. This rate has since fallen with 2015 levels of less than 64%².

The shift towards renter occupied apartments suggests a potential demand for high density housing associated with transit oriented development. While the market could correct with more stability in the economy and housing market, the current market appears prime for apartment development.



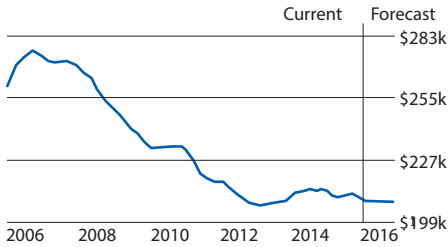
Multifamily unit property asking prices experienced a rise in New Haven County and Connecticut between 2012 and 2014, but have since declined to approximately \$58,700 in New Haven County and \$60,400 in Connecticut³. This trend coincides with a reduction in home values in the New Haven metro area since 2014.



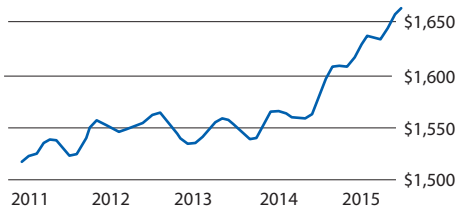
1. CT Department of Labor: *Current Conditions and Outlook for the U.S. and Connecticut Economies: 2013-2015*.
 2. National Association of Realtors: *2015 Economic and Housing Market Outlook*
 3. LoopNet (www.loopnet.com/New-Haven_Connecticut_Market-Trends)

Market Trends

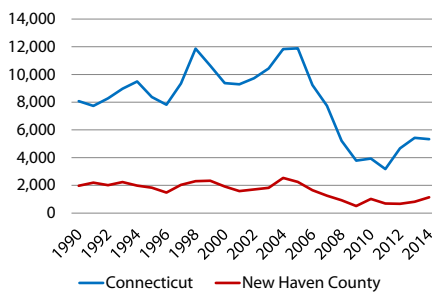
**New Haven Metro Home Value Index
2006-2016¹**



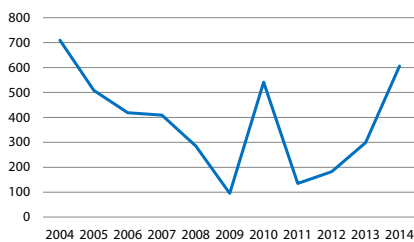
**New Haven Metro Monthly Rental Index
2011-2015¹**



**Annual Housing Permits
1990-2014²**



**Housing Permits Issued by Unit
New Haven-Milford Metro Area³**
Units in 5+ Unit Structures



The median home value in the New Haven Metro Area is \$210,300¹. New Haven Metro home values have declined 2.0% over the past year and are predicted to fall an additional 1.0% within the next year¹. Foreclosures are expected to continue to be a factor impacting home values in the next several years. In the New Haven Metro area, 2.3 homes are foreclosed (per 10,000). This is greater than the Connecticut value of 2.0, but is lower than the national value of 3.8¹.

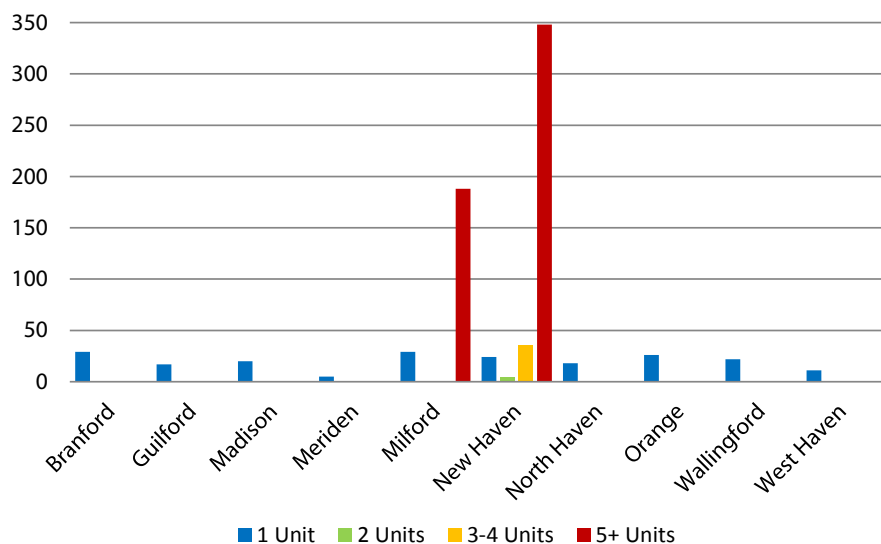
The median rent price in New Haven Metro is \$1,670, which is lower than the Connecticut median of \$1,745¹. Median monthly rental prices have risen from \$1,514 in 2011, with most of that increase occurring since 2014¹.

The number of annual housing permits remained stable in New Haven County between 1990 and 2004, hovering around 2,000 permits per year. Permits began to fall in 2004 to 509 permits in 2009. This reduction mirrored the statewide trend which saw permits shrink from 11,885 in 2005 to 3,786 in 2009². As a component of overall housing construction, multi-unit (5 or more units per structure) construction in the New Haven-Milford Metro Area slowed following a peak in 2004, reaching a ten-year low of less than 100 permitted units in 2009. Multi-unit development achieved a brief spike in 2010, falling again in 2011³. 2014 housing permit data shows a recovery in this sector with more than 600 units of multi-unit housing permitted in 2014³.

Overall, permit applications have grown modestly in New Haven County since 2009, with 1,140 permits issued in 2014 which represents 21% of statewide permits that year². Of permits issued in the TOD study area communities, the most permits were issued in New Haven and Milford, which were the only communities with residential building types of five or more units. Permits issued in all other communities were for one unit housing types³.

The regional market trends suggest a strengthening sector for rental properties, with that growth concentrated in New Haven and Milford. Home values and housing permits are likely to remain flat into 2016. These trends generally favor transit oriented development which is typically comprised of multiple unit housing and rental housing.

2014 Housing Permits By Units³



1. Zillow.com, *New Haven Metro Home Prices & Values*, (www.zillow.com/new-haven-metro-ct_r394908/home-values)

2. CT Department of Economic & Community Development, *2014 Construction Report: Housing Production & Permits*

3. US Census Bureau, *Building Permits Survey* (www.census.gov/construction/bps/msaannual.html)

TOD Strategies for the South Central Region

Transit Oriented Development requires the proper conditions to improve its feasibility. To facilitate TOD, the region's towns and cities need to recognize and overcome a number of challenges while adopting strategies that position themselves for development in transit areas.

Challenges

Challenges to TOD

- TOD cannot overcome local and regional economics. If the local real estate market conditions are not supportive of development, subsidies may be required to improve the economic feasibility of development.
- Achieving increased property values requires building more complex (mixed-use) projects at higher densities. Such projects have higher costs of development and higher risks. Until property values and rents are high enough to tip the balance toward more intense development, such projects may not be feasible.
- Low levels of transit connectivity and service do not add the “transit premium” that may be necessary to incentivize development. Transit service must be high in order to demand higher rental and sales costs needed for return on investment.
- Developers are often reluctant to introduce a new “product” that has not been tested in a regional market. Complex projects with limited parking may have little appeal to local bankers until there are successful local examples.

Regional Strategies

Strategies for the region to take in facilitating transit oriented development and a transit supportive environment include:

- Coordinate with large employers in the region to direct future expansions to station areas.
- Work with transit providers to provide better connectivity between different modes of transit at station areas.
- Direct discretionary funds to station areas.
- Provide ongoing technical assistance to municipalities along the region's transportation corridors.

Local Strategies

Strategies for SCRCOG area municipalities to take in facilitating transit oriented development and a transit supportive environment include: leveraging state and regional resources, adopting TOD supportive zoning, fostering economic development, enhancing station area connectivity, and providing the necessary infrastructure.

Leverage State & Regional Resources

Leverage State and Regional Resources

- Work in partnership with regional and state government to leverage resources outside of the municipality.
- Solicit state grant funding for station area planning and development. State funding is available for the following development, redevelopment, and facility types:
 - Affordable housing
 - Brownfield remediation
 - Historic rehabilitation
 - School construction
 - Transportation improvements
- Hartford Line communities can access a loan fund operated by the Connecticut Housing Finance Authority (CHFA) and the Local Initiatives Support Corporation (LISC) targeted towards the redevelopment of properties within ½ mile of stations.

Adopt TOD Supportive Zoning and Design Standards

Adopt TOD Supportive Zoning and Design Standards

- Revise zoning to enable mixed-use development and high-density residential development.
- Reduce parking requirements, consider the adoption of parking maximums, encourage shared-use parking strategies.
- Discourage new heavy industrial or auto-oriented uses; encourage change of use from existing heavy industrial or auto-oriented uses. Light industrial uses can be transit supportive if they have the following characteristics: high employment density; no outdoor storage; buildings sited to face street, attractive street edge and pedestrian-friendly entrance for employees; loading and truck parking to back of site, screened from view from active pedestrian streets.
- Encourage commuter and neighborhood uses such as convenience stores, dry cleaners, daycare, and restaurants with take-out service immediately adjacent to the station.
- Encourage infill development to fill gaps in street edge.
- Create amenities (plazas, streetscape improvements, open space) to attract new transit-oriented development.

Foster Economic Development

Foster Economic Development

- Create a business improvement district (BID) to finance additional services within the TOD area.
- Encourage the use of tax increment financing (TIF) and/or other mechanisms such as CDFI's (Community Development Financial Institutions) to assist with financing. *In June of 2015 the Connecticut General Assembly enacted Public Act 15-57 which enables municipalities to establish tax increment financing districts. The legislation is effective on October 1st, 2015.*
- Encourage the development of active ground floor commercial and retail uses to increase street level activity around stations.

Enhance Connectivity

Enhance Station Area Connectivity

- Provide direct pedestrian connections from surrounding neighborhoods.
- Create a safe walking and bicycling environment (adequate sidewalk width, pedestrian scale lighting, designated crosswalks, limited curb cuts, bicycle lanes and parking).
- Implement traffic calming techniques so as to improve pedestrian safety
- Consider incorporating access management techniques such as shared driveways and reduced curb cuts.
- Provide safe and convenient pedestrian access at underpasses and overpasses. Walkways and stairs should provide direct and safe pedestrian access and clear lines of sight between the street, station and platforms, with no blind corners and no dead ends.
- Improve connections to local transit by rerouting local buses (if needed) to provide a more direct connection to the train station and/or improve bus waiting area at train station.

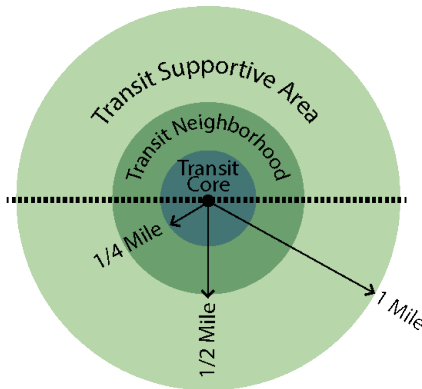
Provide Infrastructure

Provide the Necessary Infrastructure

- Add sewer and water infrastructure and capacity as needed.
- Invest in local roadway, sidewalk and traffic infrastructure.

Approach to Assessing TOD Feasibility

The following approach describes the factors considered in assessing TOD feasibility for station areas within the SCRCOG region.



Source: *A Framework for TOD in Florida*¹

Establish TOD study area

Research shows that commuters are willing to walk on a regular basis to transit if they live within a half-mile of a rail station that easily connects to their workplace or school¹. A half mile radius is useful for general planning purposes, but a more useful measure of a station's area of influence is measured by a half mile walking distance from the station, as measured along publicly accessible routes (ie. roadways, sidewalks, public pathways). This establishes the half mile "walkshed" of the station site. Walksheds can vary considerably as a function of the amount of public roadway and level of connectivity of that roadway.

Evaluate the factors that influence the potential for transit oriented development

A number of factors influence the feasibility of transit oriented development. These factors include:

- Population and employment
- Commuting patterns and level of transit service
- Market demand
- Level of connectivity
- Sewer and water infrastructure
- Zoning
- Land use and environmental conditions

Population & Employment

What is the population and employment within the station area?

A high population within the station area would suggest an existing demand for housing in the area and existing goods and services that support the population. By contrast, low populations suggest low density housing, automobile dependency, and the lack of goods and services that might otherwise support new development.

Transit oriented development can take many forms including commercial development that attracts jobs and relies upon transit to provide access to those jobs. The presence of employment suggests an existing demand for transit in the station area and the potential for expansion of development that is complementary to those employment sectors.

Commuting Patterns and Transit Service

What are the commuting patterns and level of transit service in the station area?

Transit use and the effectiveness of a station in attracting transit oriented development are heavily influenced by the level of transit service provided. A good measure of this level of service is the total of departing transit trips (train and bus) per week from the station site. Potential future expansion of transit service should also be considered.

A high level of automobile dependency within a station area suggests that existing development is less dependent upon transit access than is typical within a TOD. It also suggests that the demand for future development may not be driven by transit access. This level of dependency can be assessed by calculating the number of autos per household and the commuting preferences as reported by census data.

1. *A Framework for TOD in Florida*, Florida Department of Transportation, March 2011

Market Demand

Is there market demand for residential or mixed use development?

Active residential and mixed use development projects, whether planned or in development, demonstrate a demand for TOD supportive development and suggest the potential for additional development. Local housing occupancy rates can be used to assess market demand in a station areas. Median income and socioeconomic profiles can be used to determine if the existing local market could support new housing and/or an expansion of retail services. While the median income is an indicator of what consumers can afford in the market, socioeconomic profiles provide data on consumer’s lifestyle choices, what they buy, and how they spend their free time. Additionally, leakage/surplus data by industry sector is used to establish under-served retail markets within the station area.

Connectivity

What is the level of connectivity in the station area?

Transit oriented development requires the station to be easily accessible to pedestrians. The comfortable walking range for most transit users is approximately one half mile. The total miles of roadway within a half mile walk of a station can be used as a measure of the walking environment. The percentage of roadways with sidewalks can also be used as a measure of walkability.

In addition to this metric, Walk Score can also be used to assess the qualitative value of the walking environment. Walk Score analyzes multiple walking routes in proximity to a fixed location such as a transit station. Points are awarded based on the distance to services and amenities from that point. Amenities within a 5 minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density.

Infrastructure

Will the infrastructure support new development?

Sewer and water infrastructure must be present to support high density development. If such infrastructure does not currently exist, it should be determined if expansion is planned or if there is potential for expansion.

Zoning

Does the local zoning support transit oriented development?

Zoning within the station area needs to allow for high density residential development and mixed-use development. TOD supportive zoning can take the form of a TOD zone, a TOD overlay zone, or zoning that is supportive of mixed uses and high density residential development.

Parking requirements should also account for transit usage and should therefore be lower than might be required outside of a station area. Parking is costly to build and consumes large amounts of space that competes for valuable space that might otherwise be used for open space or residential or mixed use development. Lower requirements and flexible standards facilitate TOD by reducing development costs and allowing for more pedestrian friendly site design.

Land Use & Environmental Conditions

Does the existing land use and environmental conditions in the station area allow for development or redevelopment? Are there opportunity areas for TOD?

The area potentially available for development or redevelopment within the station area (TOD Opportunity Area) is a primary factor in considering the feasibility of TOD. Factors such as the quantity of vacant land, the presence of properties that could be redeveloped, and the environmental constraints on development (such as wetlands and floodplains) are considered when assessing the feasibility of TOD. Areas within the station area that are occupied by neighborhoods of single family homes, municipal and institutional uses such as schools, hospitals and churches, and dedicated open space are generally not suitable for TOD.



The Metro North New Haven Line Corridor

The Metro North New Haven Line Corridor extends from New York City to New Haven with connecting service to Shore Line East. The corridor is fed by three branch lines that are west of the study area. The New Haven Line has a high level of ridership and service with 3.4 million riders per month on the entire line and an average of 2,650 departing trains per week from the four existing stations. Weekday ridership varies from 250 boardings at State Street Station to 5,500 boardings at Union Station. The TOD study area includes Metro North stations in Milford, West Haven, New Haven and a planned station in Orange.

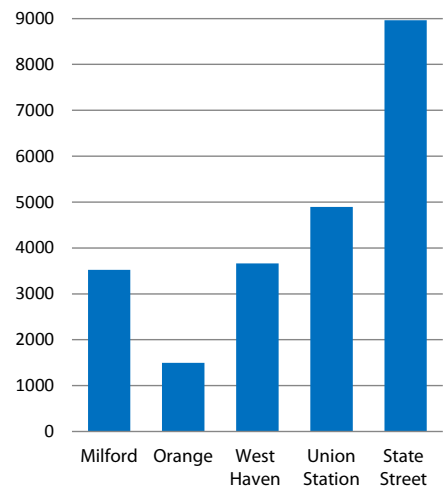


Population and Employment

The corridor spans an area of dense population with a combined population of the existing and planned station areas* of 22,540 (includes overlapping populations in the Union and State Street Station areas).

State Street Station and Union Station have the largest populations within a half-mile radius of the five station areas. The proposed station in Orange has the lowest population along the Metro North corridor due to its proximity to industrial sites, and undeveloped land. Low station area populations suggest the lack of a strong local demand for retail development. Higher populations are generally more favorable of residential development depending on the housing vacancy rate in the area.

2014 Station Area Population ¹

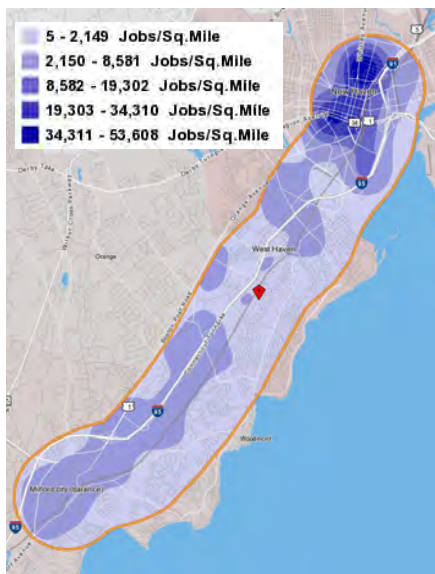


1. 2009-2013 American Community Survey

* Station area is comprised of the area within a 1/2 mile radius of the station

Job Concentration, 2013¹

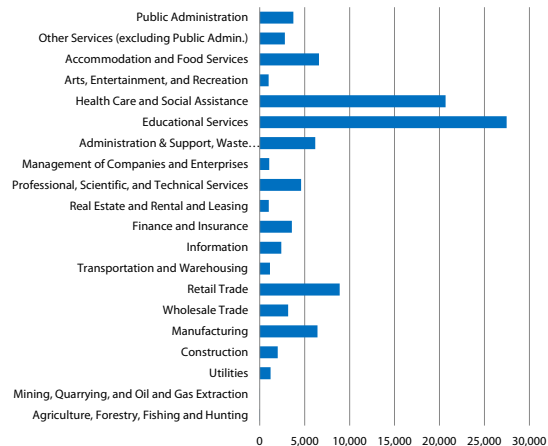
(Within 1 mile of Metro North Corridor from Milford Station to State Street Station)



Employment along the corridor is concentrated in New Haven with dense pockets of employment lining the Metro North and I-95 corridors. The most prevalent industry sectors within one mile of the rail corridor include educational services and health care & social assistance. Other high employment job sectors include retail trade, accommodation & food services, and manufacturing¹.

Jobs by Sector, 2013¹

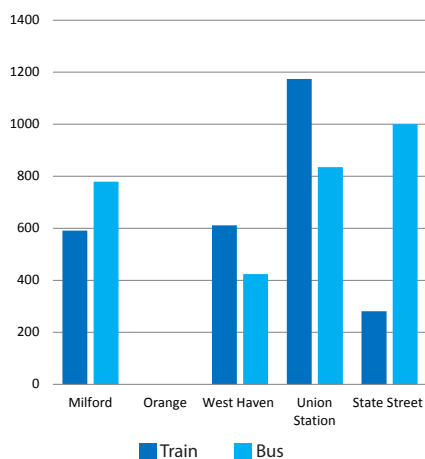
(within 1 mile of Metro North Corridor from Milford Station to State Street Station)



Commuting Patterns and Level of Transit Service

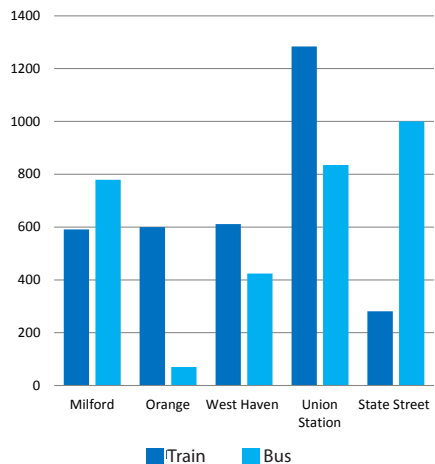
The level of transit service was measured as the number of departing transit trips (train and bus) per week per station. As might be expected, Union Station and State Street Station have the greatest number of transit trips, although they are closely followed by Milford and West Haven Stations. It should be noted that both Milford and West Haven Station have more departing train trips per week than State Street Station which has the highest level of bus service of the five stations.

Weekly Transit Departures per Station



Potential future weekly departures were also measured. This estimate includes probable service at the proposed station in Orange. This estimate also includes a potential increase of bus service at the Orange station assuming rerouting of local bus service upon completion of the station. Additionally, the introduction of commuter rail service on the Hartford line will also result in increased service at Union Station. Transit oriented development feasibility is greatly influenced by the level of service at the supporting station. With high levels of service, these Metro North stations are generally supportive of transit oriented development.

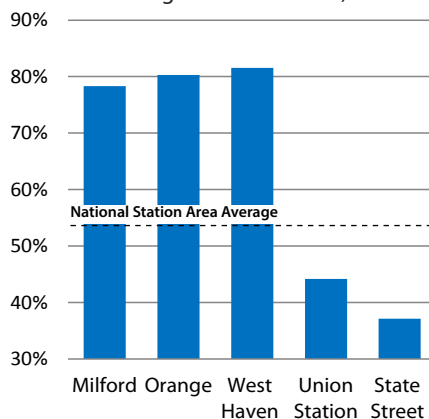
Potential Future Weekly Transit Departures per Station



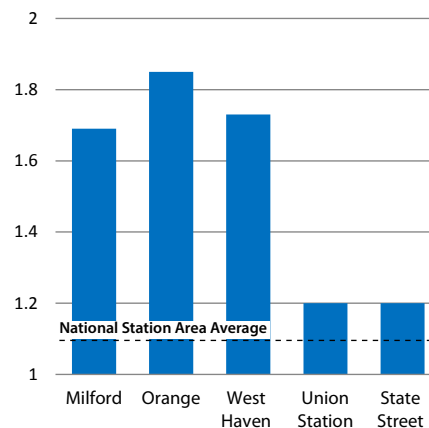
Data extracted for a three-minute driving radius indicates a relatively high number of workers drive alone to work from the Milford, Orange, and West Haven Station areas². This varied from 78 to 82% for those stations. The national station area average of commuting by car of residents living in transit zones is 54%³. Both Union Station and State Street Station areas were far below the national average with 44% and 37%, respectively, of station area residents driving to work alone.

Drove Alone to Work²

(workers within a 3 minute driving radius of station)



Autos per Household within Station Area²



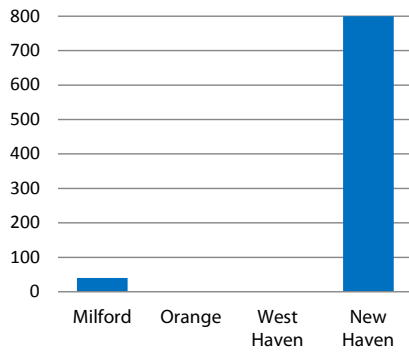
1. 2013 Census Origin-Destination Employment Statistics, OntheMap.com

2. 2009-2013 American Community Survey

3. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004

The number of automobiles per household roughly corresponds to the commuting habits of residents. This figure ranges from 1.2 to 1.85 autos per household with the New Haven station areas having the lowest ownership per household and Orange having the highest. The national station area average auto ownership per household is 1.1 vehicles¹. The high rate of car ownership compared to national rates suggests that station area residents, although having access to transit, remain largely dependant upon private vehicles for commuting and personal trips.

Planned Residential Units within Station Area



Market Demand

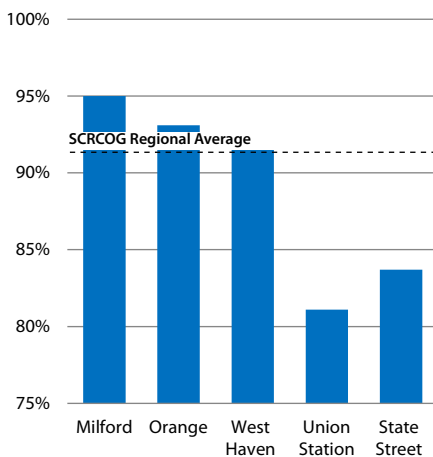
Market demand is a key factor in determining the feasibility of transit oriented development. A key measure of this demand is the presence of residential development activity within the station area. New Haven leads this metric within the corridor with 800 units of housing planned or in development within the combined Union Station and State Street Station areas.

Other key measures of the market potential for development include the local housing occupancy and median household income. High housing occupancies suggest market demand for housing while high median household incomes demonstrate the spending potential of local residents. The median home value also suggests potential capacity of the local market to support new development.

Milford, Orange, and West Haven have high occupancy rates (above 90%) which suggest a latent demand for additional housing². Both Union Station and State Street station area occupancy rates are below 85%². Median station area household income is highest in Orange (\$90,676) and lowest in the Union Station area (\$25,071)³. The student population within the New Haven area contributes to this low median household income. The highest median home value (\$279,605) of station areas along the Metro North corridor is, however, found in the State Street station area.

Housing Occupancy²

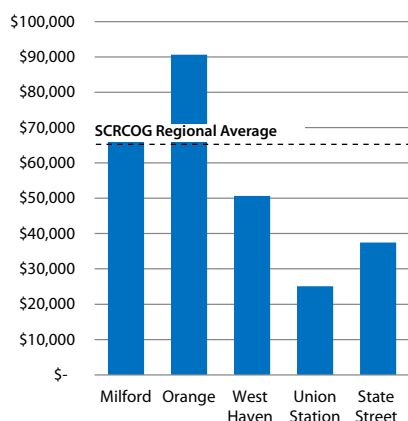
(within 3 minute drive of station)



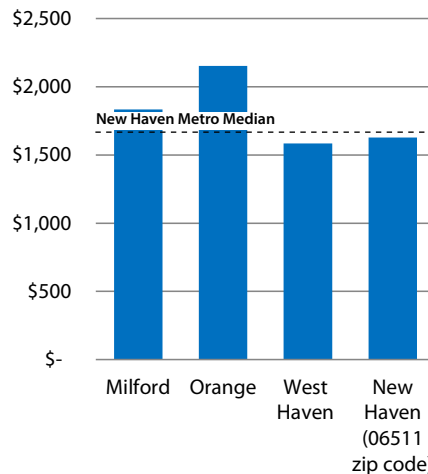
The monthly rental cost of residential dwellings is also a factor in determining the feasibility of transit oriented residential development. Higher rental costs are more supportive of new development. Of the four communities on the Metro North line, Orange has the highest monthly rental costs (\$2,153), followed by Milford, New Haven and West Haven which has the lowest monthly rental cost (\$1,585)³.

Median Household Income²

(within 1/2 mile station radius)

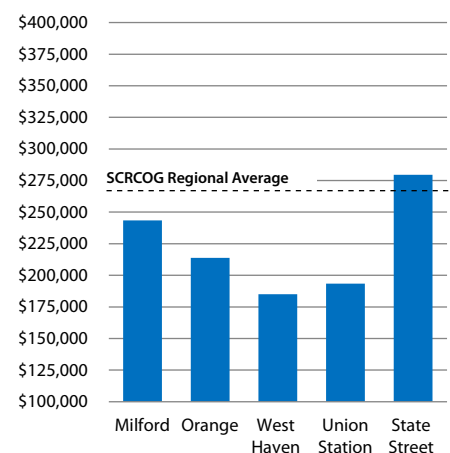


Monthly Rental Cost Index³



Median Home Value³

(within 1/2 mile station radius)

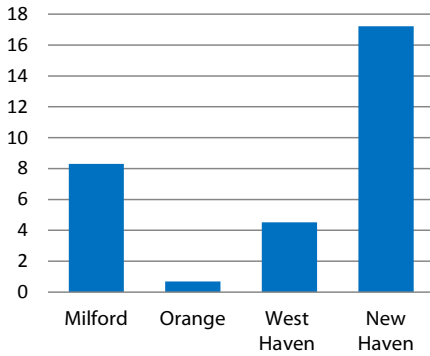


1. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004

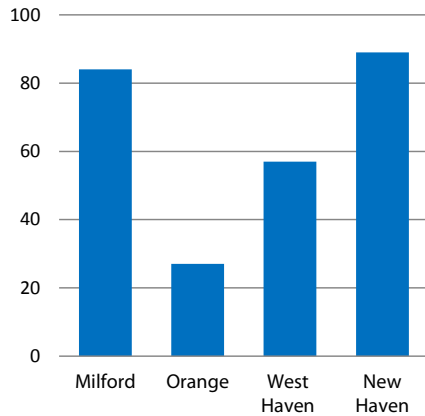
2. 2009-2013 American Community Survey

3. Zillow.com, New Haven Metro Home Prices & Values, (www.zillow.com/new-haven-metro-ct_r394908/home-values)

Miles of Roadway
Within 1/2 mile Walk
of Station Platform(s)



Walk Score ¹



Station Area Connectivity

The level of pedestrian connectivity within the station area is a significant factor in the feasibility of transit oriented development. One measure of this connectivity is the total miles of roadway (assumed walkable) within a half mile walk of the station platform. Of the stations along the Metro North corridor, the combined areas of New Haven’s stations have the highest connectivity, followed by Milford, and West Haven. The proposed station in Orange has the lowest connectivity. This is due in part to the station’s proximity to West Haven and the lack of contiguous road network between Orange and West Haven at that location.

Another measure of pedestrian connectivity is the station Walk Score¹. This metric is based upon the level of street network connectivity and the number of services and destinations available within walking distance of the station. New Haven’s stations also scored the highest, followed closely by Milford and West Haven.

Sewer and Water Infrastructure

The presence of sewer and drinking water infrastructure is critical for the feasibility of new development. All cities and towns along the Metro North corridor have both sewer and drinking water infrastructure in the station areas. Drinking water for all communities is supplied by the South Central Regional Water Authority. Sewer infrastructure is managed by each municipality.

Station Area	Drinking Water Infrastructure	Sewer Infrastructure
Milford	Yes: RWA	Yes
Orange	Yes: RWA	Yes
West Haven	Yes: RWA	Yes
New Haven	Yes: RWA	Yes

Zoning

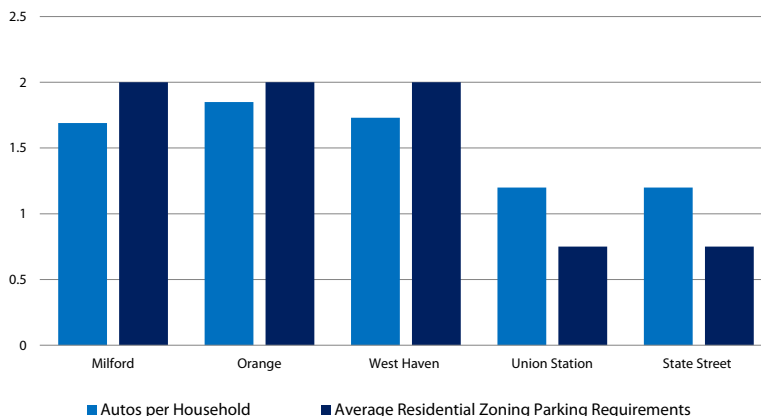
Towns and cities along the Metro North corridor have TOD zoning or zoning that is supportive of transit oriented development. While Milford does not have TOD zoning in place, the Milford Center Design Development District is structured to support transit access while preserving the character of Milford’s center.

Station Area	TOD Zoning	Notes
Milford	Supportive	Milford Center Design Development District
Orange	Yes	Area is currently zoned industrial and low density residential, the Town has a TOD overlay zone that could be applied to the station area
West Haven	Yes	TOD zone surrounding station
New Haven (Union & State Street Station)	Yes	Two TOD subdistricts, multiple mixed-use districts

1. *walkscore.com*: Walk Score measures the walkability of any address by analyzing hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a 5 minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30 minute walk. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density.

In addition to TOD specific zoning, parking requirements as set forth by zoning can have an impact on the feasibility of TOD development. Lower parking requirements reduce the cost of construction and the space dedicated to parking. With the exception of New Haven, the residential parking requirements of towns and cities along the Metro North Corridor exceed the autos owned per household (for the purpose of this analysis, a household is assumed to contain an average of two bedrooms). The national average number of autos per household in transit oriented zones is 1.1 cars per household¹. Milford, Orange and West Haven require an average of 2.0 parking spaces per household despite average ownership rates between 1.69 and 1.85.

Autos per Household vs Zoning Parking Requirements



Land Use and Environmental Conditions

Of the four towns and cities along the Metro North corridor, New Haven (due in part to its combined station area of Union Station and State Street Station) has the greatest area of parcels that are accessible within a 1/2 mile walk of each station. New Haven also has the greatest area consumed by municipal, institutional, transportation, open space, and built-out residential land uses. Environmental constraints such as wetlands and waterbodies are limited in each station area, with Orange having the most area consumed by those features. The net available area in each community, after subtracting out land uses that aren’t supportive of TOD, ranges from 73 acres in Milford to 186 acres in New Haven. This area is considered the TOD opportunity area. This calculation does not imply that property is available for development, but rather suggests a potential area that could be available for development or redevelopment under supporting conditions.

Methodology used in Establishing the TOD Opportunity Area

The methodology used in establishing the TOD Opportunity Area is outlined in detail in each station area section. The repetition of this information within the document is intended to ensure that the methodology is readily accessible within each station area section.

Station Area	Parcel area within 1/2 mile walk (acres)	Municipal, Institutional, Transportation, Open Space Land Uses (acres)	Built-out Residential Areas (acres)	Wetlands & Water bodies within TOD Opportunity Area (acres)	Net TOD Opportunity Area (acres)*
Milford	281	113	92	3	73
Orange	138	2	0	9	127
West Haven	167	16	69	2	80
New Haven	454	142	126	0	186

*Excludes municipal right-of-way within opportunity area

1. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Metro North
Population	3,523
Households	1,705
Median household income	\$69,837
Median home value	\$243,467
Housing units	1,783
Autos per household	1.69
Commute via transit within 3 minute drive time	8%
Drive to work alone within 3 minute drive time	78%
Miles of roadway within 1/2 mile walk of station platform	8.3
Roadway with sidewalk on at least one side of road	88%
Walk Score	84
Departing transit trips from station per week	1,370
Weekday station ridership (2010)	1,735
Housing units planned or in development	40
Housing vacancy within 3 minute drive time	7%
Total number of businesses within 3 minute drive time	672
Total number of jobs	5,090

*Birdseye view of station site
Source: Bing Maps*

Milford

Milford Station is serviced by Metro North, which provides commuter rail service with 89 departing trains per weekday. The station area is close to the City’s Downtown and is comprised of residential and commercial land uses primarily associated with the Downtown. The City’s government center complex is also located in proximity of the rail station and occupies approximately 18% of the station area. The station’s parking lot is fully utilized, with a multi-year waiting list for permits.

Milford has been active in station area planning, with the Regional Plan Authority (RPA) having conducted a TOD technical assistance study in 2014. This study builds upon earlier work by the Yale Urban Design Workshop. The City is currently developing an Incentive Housing Zone (IHZ) for the station area and has received a grant for an economic impact/market study.

There are a number of active projects in the station area. Milford is a pilot city for the Connecticut Department of Transportation in beautifying the train trestles to create “Gateways to Downtown”. The City has also been approved for a \$5 million bond to fund the purchase of property (Darina Place) next to the train station between High Street and West River Street. The City is considering mixed-use development for the site with parking below the development. Currently, forty units of housing are being constructed adjacent to the City’s government center complex, within a few minutes walk of the rail station.

Constraints to development within the station area include environmental constraints such as the floodplains which encompass approximately 13% of the station area walkshed. Additionally, a significant percentage of land within the station area, 60%, is occupied by low density residential areas, municipal properties, and open space. Much of the study area is also within the River Park Historic District which places constraints upon new development.

The population within a 1/2 mile radius of the station is 3,523. Automobile dependency is relatively high with 1.69 autos per household and 78% of the local population of workers driving to work alone. The use of the station by commuters within the station area is relatively low, with only 8% of commuters travelling by transit (train or bus). Despite this automobile dependency, the station is located within the Downtown where a number of goods and services are available. Numerous sidewalks links are available in the station area with sidewalks on at least one side of the street on 88% of the station area roadways.

Planned infrastructure improvements include ongoing sidewalk enhancements in the station area, and the extension of Founders Walk from the station to New Haven Avenue. Municipal sewer and water systems have recently been upgraded and have capacity to accommodate additional development.



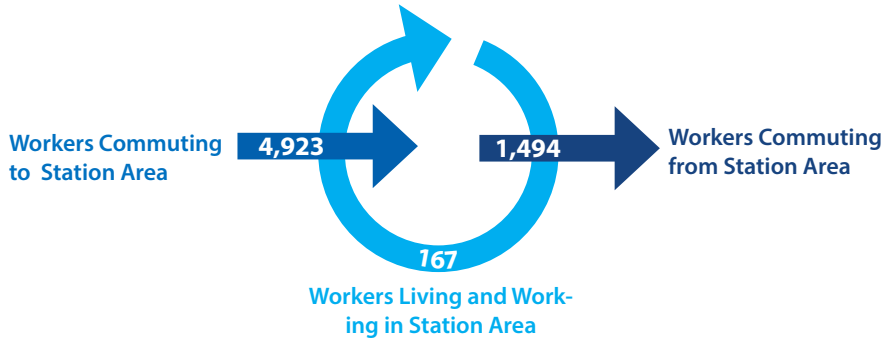
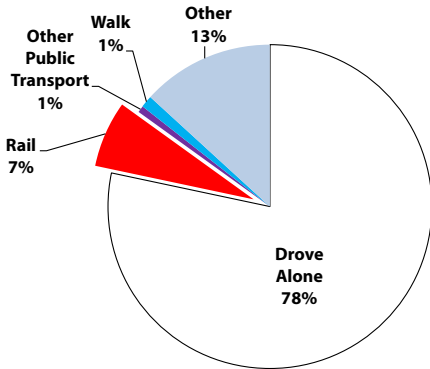
Transit Service	
Metro North	89 departures per weekday, 73 total weekend departures
Bus	CT Transit New Haven J Line, Milford Transit 1, 2, 3, 4 Lines, Coast Link. 779 total bus departures per week

Commuter Patterns

According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 78% driving alone to work, 7.6% using the train, and less than 1% using other transit such as the bus. Less than 1% of commuters walk to work.

The latest census based origin-destination employment statistics² show that 4,923 workers commute to the station area (area within 1/2 mile radius of station), with 1,494 workers who live in the station area commuting to work outside of the station area. A small number (167) of workers live and work within the station area.

Transportation to Work ¹
(workers within 3 minute drive of station)

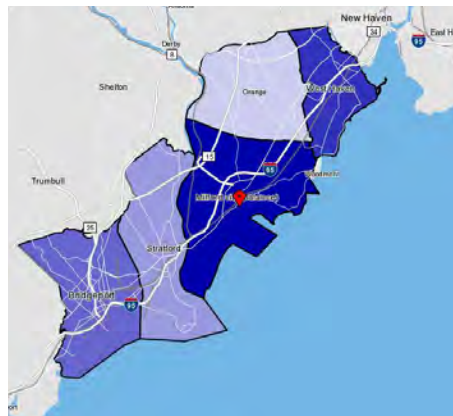


Of workers who commute to the station area, most commute from the City of Milford, with West Haven being the second most common origin. Bridgeport, Stratford and Orange are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is also the City of Milford. This is followed closely by New Haven, with Bridgeport, Stratford and Shelton being amongst the top five destinations of workers who reside in the station area.

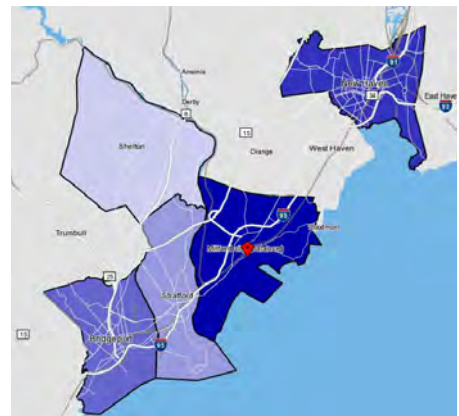
Commuting Patterns of Workers to and from Milford Station Area²
(Top 5 origins/destinations)

Inbound Commuters From		
	#	%
Milford	1,864	36.6
West Haven	354	7.0
Bridgeport	259	5.1
Stratford	215	4.2
Orange	191	3.8
Outbound Commuters To		
	#	%
Milford	470	28.3
New Haven	147	8.9
Bridgeport	121	7.3
Stratford	105	6.3
Shelton	78	4.7

Approximately 22.5% of commuters travelling to work from the station area have destinations in New Haven, Bridgeport, or Stratford. Given rail station locations in those communities, these statistics would suggest the potential for expansion of transit use beyond the 7% of workers from the station area that currently commute via rail. This potential is governed by multiple factors including but not limited to the level of connectivity between place of employment and the local station.



Top five origins of workers who commute to Milford Station area.²

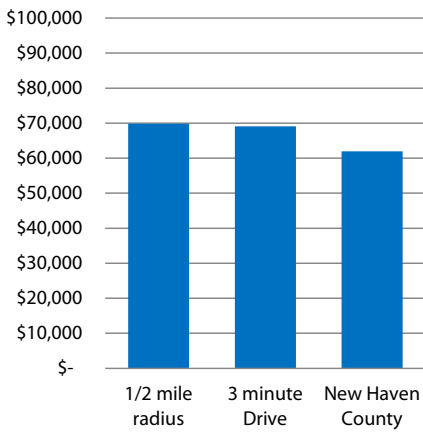


Top five destinations of workers who live in Milford Station area.²

1. 2009-2013 American Community Survey

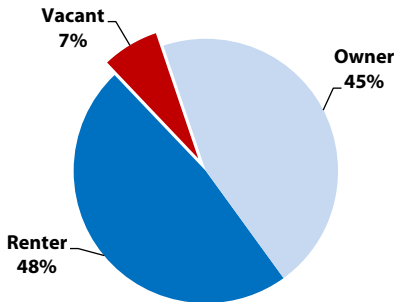
2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OnTheMap.com

Median Household Income ¹



Station area household income is near state average. Income decreases slightly with distance from the station.

Housing Occupancy ¹
(within 3 minute drive of station)



The vacancy rate is slightly above the state average of 6.8%. Rental rates are relatively high at 48% of housing.

Market Assessment

Milford is a prosperous community with a 2012 median household income over \$79,000, which itself is significantly above the Connecticut median of nearly \$68,000¹. The Town is home to approximately 52,800 residents and it enjoys quick access to New Haven. Milford is only 61 miles to New York City and less than 31 miles to Stamford. The town has a well-educated population as would be expected with the high median household income. The predominant form of housing is single family, with a significantly higher percentage than the state average.

Milford Station has the benefit of very good parking, the proximity to Milford Center, and marinas with access to Long Island Sound. It does, however, lack available developable land, with Milford Center mostly built out.

Transit oriented development potential around the Milford station is strong. The Milford train station’s location in Milford Center is a favorable asset and current Milford socioeconomic market profiles contain residents who typically seek walkable, dense downtowns. Retail business in the area is well established, with a wide-range of attractive businesses already in the area.

However, there are still challenges that need to be addressed to maximize development potential. Milford Town Center is attractive, built out, and well maintained, however, existing sites are aging and occupied by a large portion of single story retail buildings. Currently only 40 units of housing are planned for development. In addition, mixed used buildings are limited to only 6 residential units per building without approval.

The median home value in the station area is \$243,467². Home values have declined 0.2% over the past year and are predicted to fall 0.4% within the next year². Median sales price of single family and condominium homes in Milford have also declined between 2014 and 2015. The median single family home sales price declined 8.8% over that period to \$249,900 with condo units down 11.3% to a median sales price of \$164,100³.

Median Home Value Trends, City of Milford ²



1. 2009-2013 American Community Survey
 2. Zillow.com, Milford, CT Home Prices & Values, www.zillow.com/milford-ct/home-values
 3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

In Style

Average Household Size: 2.33
 Median Age: 41.1
 Median Household Income: \$66,000

Embrace an urbane lifestyle that includes support of the arts, travel, and extensive reading. Connected and make full use of the advantages of mobile devices. Professional couples or single households without children, they have the time to focus on their homes and their interests. The population is slightly older and already planning for their retirement.

Enterprising Professionals

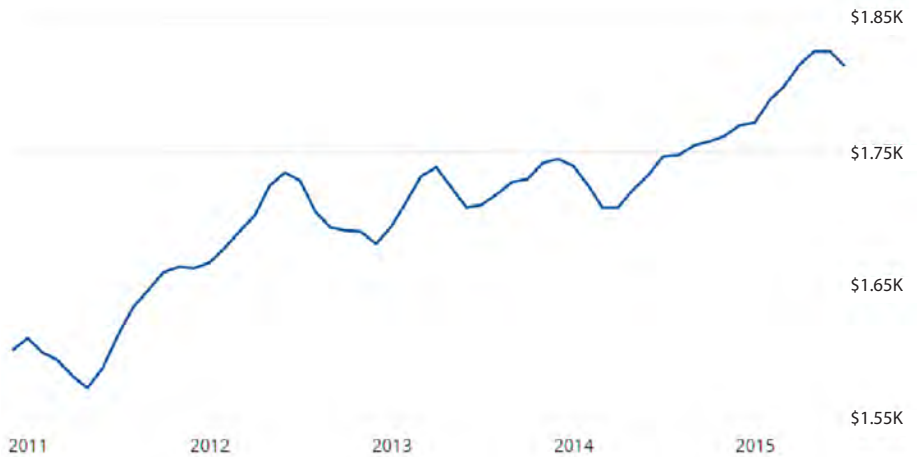
Average Household Size: 2.46
 Median Age: 34.8
 Median Household Income: \$77,000

Well educated and employed in STEM occupations. Change jobs often, choose to live in condos or apartments; Fast-growing market, located in low density neighborhoods of large metro areas. Young & diverse, supplement their income with high-risk investments. At home, they enjoy the Internet and TV on high-speed connections with premier channels and services.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

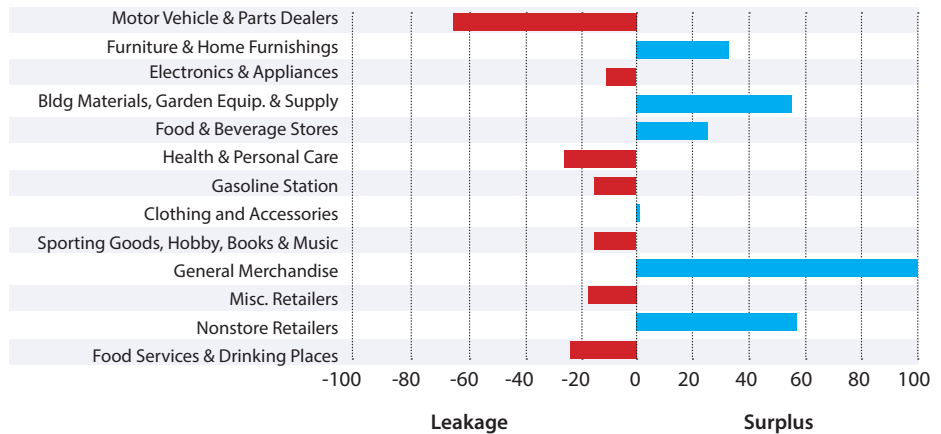
The median monthly rental list price in Milford is \$1,700, which is higher than the New Haven Metro median of \$1,295. The monthly rental cost index, which is a calculation of listing prices and actual rental costs is slightly higher at \$1,833. Rents in Milford have gradually increased since 2011, reaching a five-year high in 2015¹.

Monthly Rental Cost Index, City of Milford ¹



The town center is within the immediate station area, contributing to a strong retail presence. More specialized goods can be found in larger trade areas. A number of retail sectors that favor TOD are underrepresented in the study area. These include: health and personal care; sporting goods, hobby, books, and music; and food services and drinking places.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Milford, CT Home Prices & Values, www.zillow.com/milford-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

➔ **Build sidewalks on Railroad Ave.**

Railroad Avenue provides a direct east/west connection to the station, but provides few pedestrian facilities. The provision of sidewalks and lighting would improve the safety of pedestrians walking to the station.

➔ **Provide bicycle lanes and/or shared-use lanes (sharrows)**

Bicycle facilities, by encouraging cycling, can expand access to the station by non-motorized users beyond the walkshed. Improvements should first be targeted along the East Coast Greenway route and in proximity of the station area.

➔ **Provide bus shelters for Milford Transit stops on River Street and/or on North and South Broad Streets in proximity of Depot Square.**

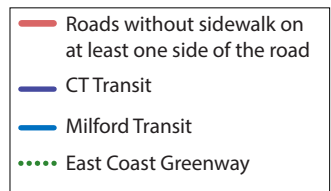
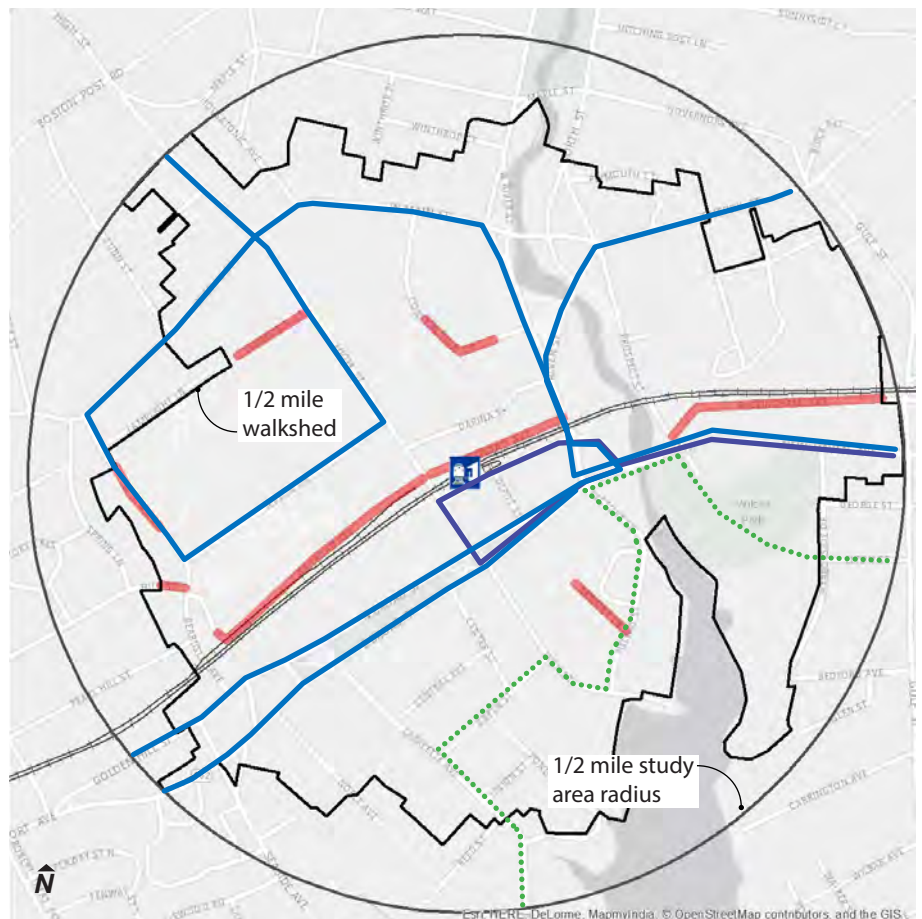
Shelters are critical for commuters arriving to and leaving the train station via bus. While the CT Transit route stops directly at the station, Milford Transit routes stop on local roads where no shelters are present.

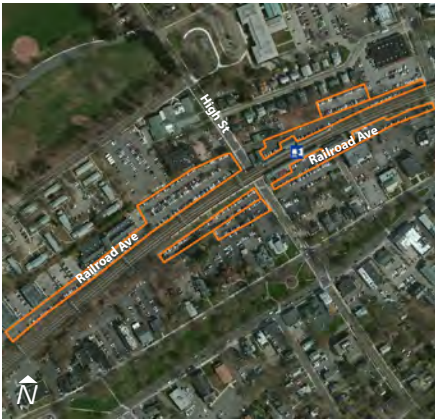
Connectivity

Of the 502 acres located within a 1/2 mile radius of the station, 336 acres are accessible within a 1/2 mile walk of the station platform (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the difference between the two areas.

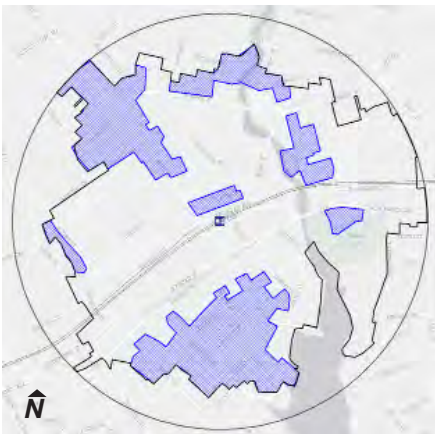
The train station is accessible from a number of local streets including High Street, River Street, Darina Place, and Railroad Avenue. Sixty eight percent of roadways within the walkshed have sidewalks on at least one side of the street. Sidewalks are noticeably lacking on Railroad Avenue. The station area has a moderate Walk Score of 52 (out of 100) points, designating the area as “somewhat walkable”.

The station area is also serviced by both CT Transit and Milford Transit with CT Transit’s route stopping at the station and Milford Transit’s routes stopping in close proximity of the station. The area is also traversed by the East Coast Greenway, a route that extends along the East Coast from Florida to Maine. There are no dedicated bicycle lanes or shared-use markings along the greenway route.





Station parking is located immediately north and south of the station and extends along Railroad Avenue from West Town Street to West River Street. The area shown above includes public lots and private lots that are available to the public.



Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 27% of the 1/2 mile walkshed.

Parking

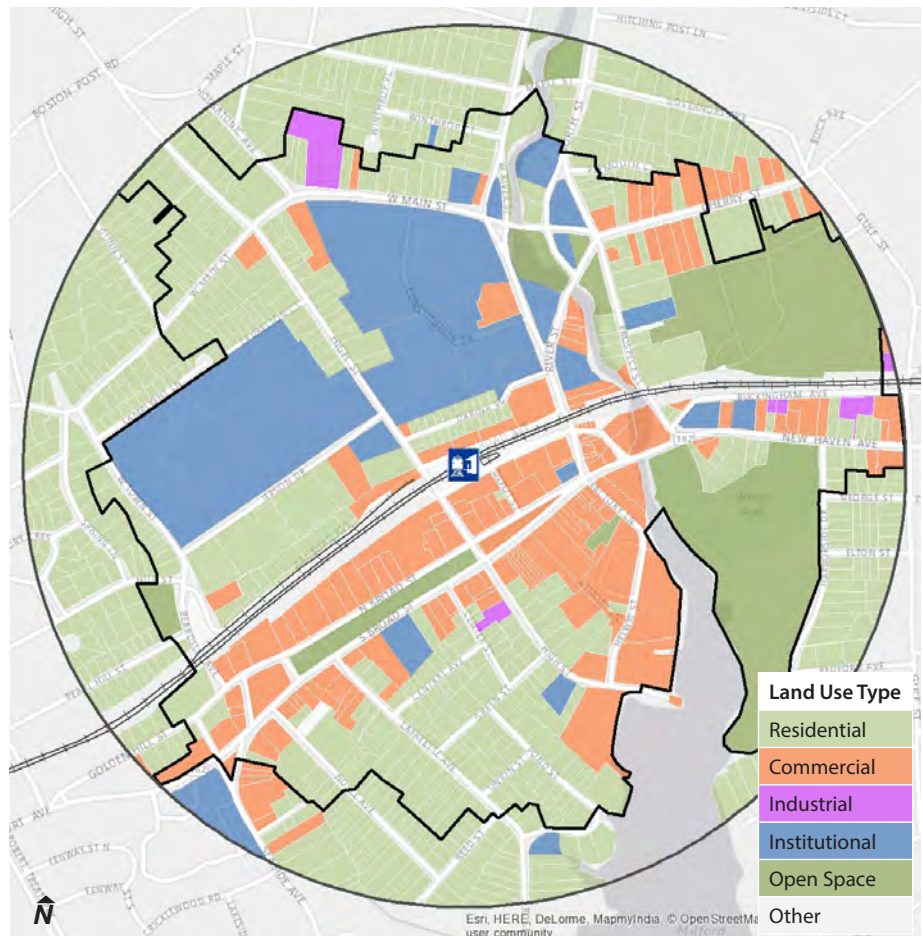
There are 676 parking spaces located in four public lots at Milford Station. Parking is managed by the Milford Transit District with permits sold for three of the four lots. One of the lots is available for daily parking for a daily fee on a first come, first serve basis. The permit lots are fully utilized on a daily basis and there is a multi-year waiting list for permits.

Approximately 200 additional spaces are available at two private lots. This capacity could fluctuate based upon the allocation of the lots which also serve local businesses. Parking is a limited resource in Milford Center, and will be a limiting factor for development.

Land Use

Of the 336 parcel acres within the 1/2 mile walkshed, 37 acres (20%) is occupied by transportation infrastructure such as roadways and the rail line and station site. 92 acres (27%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 10 acres (5%), and dedicated open space occupies 51 acres (15%).

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 76 acres. Of this 76 acres, 8 acres are occupied by waterbodies or wetlands leaving 68 acres of land that is potentially available for transit oriented development or redevelopment.



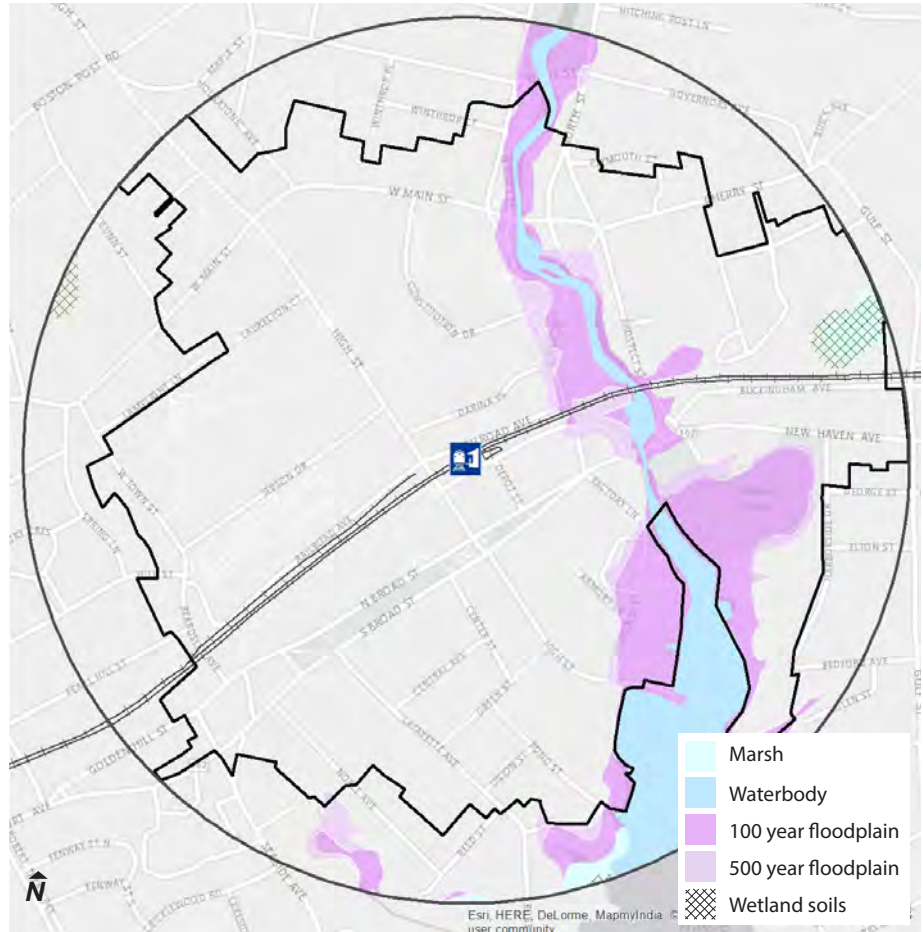
Environmental and Cultural Features

Only two percent of the watershed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. Forty-five acres (13.4%) of the watershed is located within a 100 year or 500 year floodplain. The total dry land area within the floodplain is slightly less at 43 acres (12.8%) of the watershed area. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

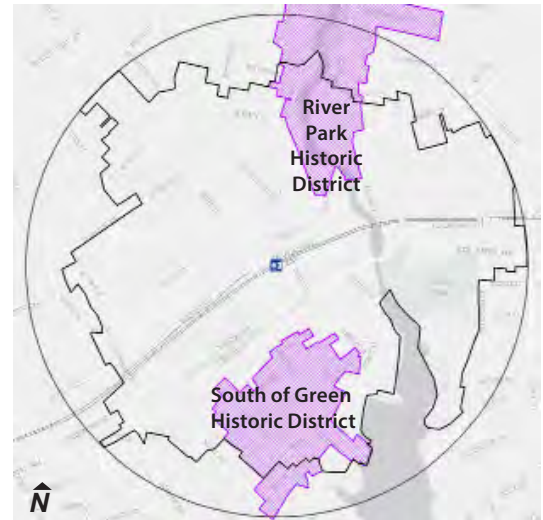
13.4% of the 1/2 mile watershed is within a floodplain

2% of the 1/2 mile watershed is covered by wetlands and/or waterbodies

12.8% of dry land within the 1/2 mile watershed is within a floodplain



There are two National Register Historic Districts in proximity to the station. These districts include the River Park District and the South of Green District. National Register Districts are less restrictive than local or state districts and do not prohibit the redevelopment of properties.



Zoning Recommendations

➔ *Expand Milford Center Design Development District*

The MCDD, while covering much of the station area, could be expanded to include the RO zone along Cherry Street and the Boating Business zone on Helwig Street.

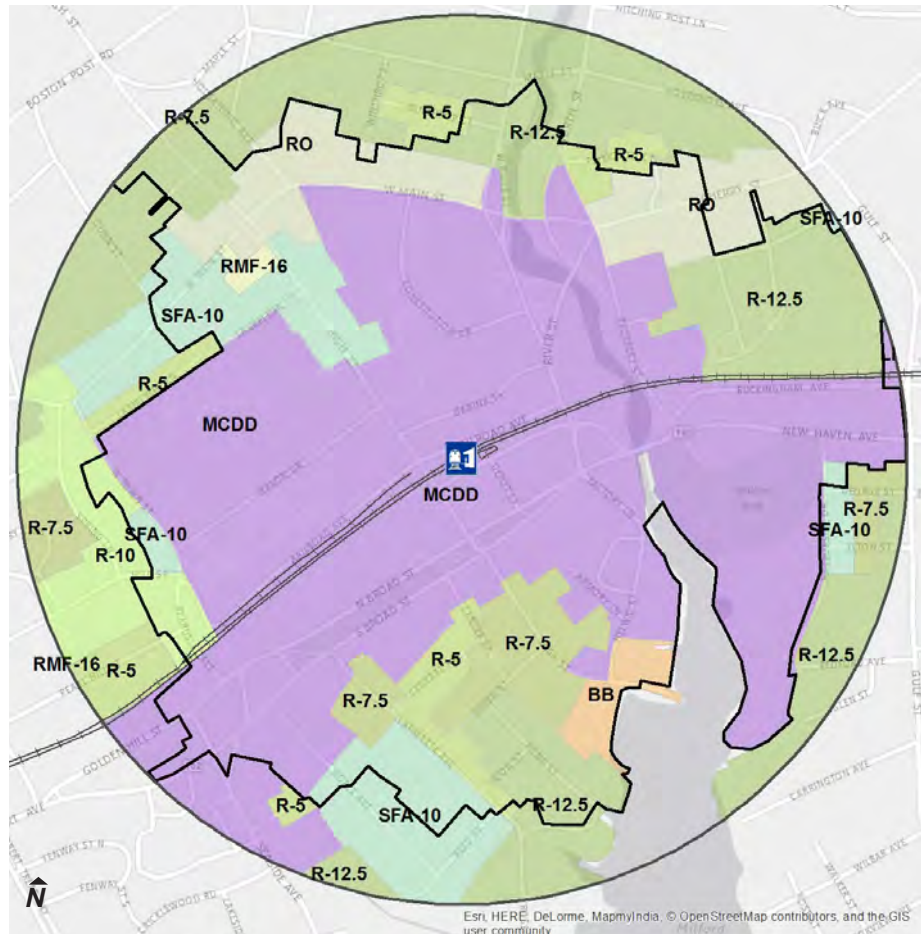
Zoning

Milford has eight different zoning districts within the ½ mile station radius. The station site is immediately surrounded by the MCDD (Milford Center Design Development District) district which dominates the geography of the ½ mile radius area. The MCDD is intended to preserve the character of Milford’s downtown area; it is structured to support transit access but is not crafted specifically to accommodate TOD.

The MCDD has the following TOD elements:

- permits mixed-use buildings with residential permitted above the first floor;
- limits or prohibits auto-oriented businesses;
- allows lots sizes of 2,000 s.f. (1/8 acre);
- allows FAR of 3

Building height in the MCDD cannot exceed 40 feet (about 3 stories) which limits densities in that zone. Shared parking and off-site parking (within 250 feet of the principal associated building) may be allowed if demonstrated necessary to the proposed development. There are no place-making design standards for the MCDD such as those for public spaces, sidewalks, or bicycle accommodations.



Zoning Legend

MCDD:	Design District
BB:	Boating Business
RMF-16:	Multi-Family Res.
SFA-10:	Single Family Res.
RO:	Residential Office
R-5:	Single Family Res.
R-7.5:	Single Family Res.
R-12.5:	Single Family Res.

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

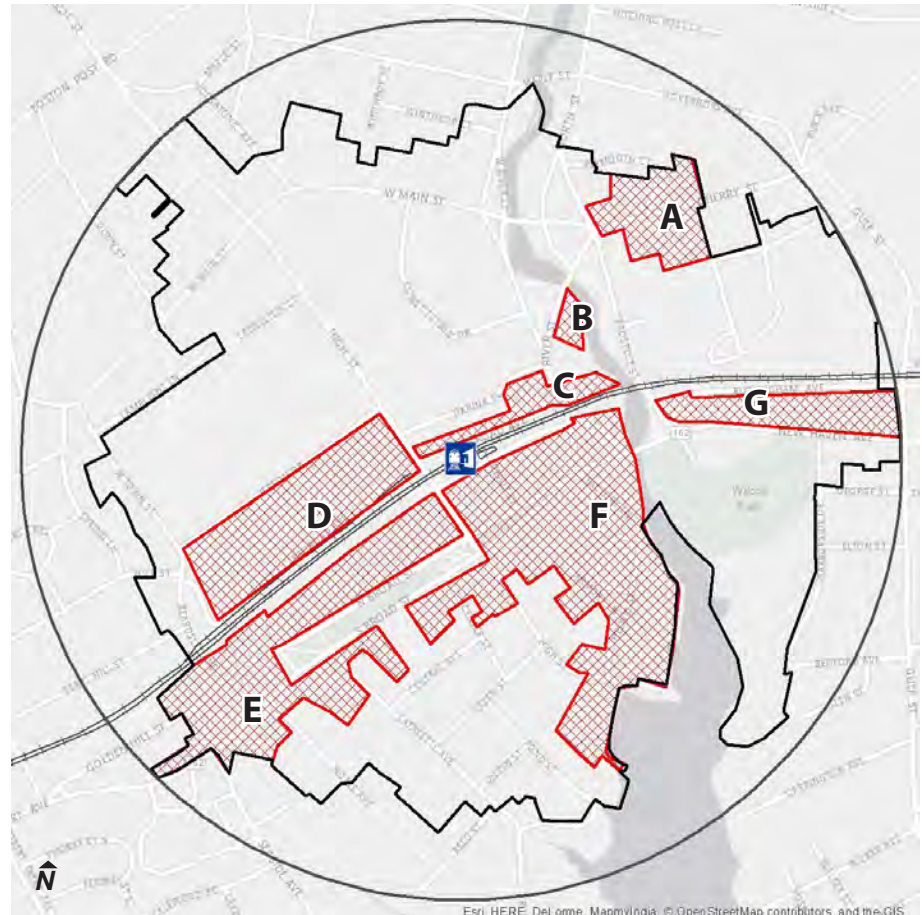
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - a. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - b. Municipal and institutional parcels such as schools and churches
 - c. Protected open space such as public parks, cemeteries, and conservation areas
 - d. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
3. Subtract from the remaining area land that is physically prohibitive to development:
 - a. Wetlands
 - b. Water bodies
 - c. Floodways
4. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: The area, located on Cherry Street, is comprised of a mixture of low density residential and office uses. The area is zoned RO (residential office).

Area B: This area is comprised primarily of low density retail uses and has potential for mixed use development.

Area C: This area includes a key site at Darina Place recently purchased by the City for expansion of station parking and other parcels directly abutting the rail corridor.

Area D: This area, between Railroad Avenue and Jepson Drive, is comprised of a number of medium density residential developments and commercial space and may be suitable for infill development or redevelopment of existing properties.

Area E: Located along Broad and South Broad Streets, this area is comprised of a mixture of residential, office and retail land uses. While mostly “built out” the area has potential for redevelopment and infill development.

Area F: This area includes retail and commercial development on the south side of South Broad Street and along Milford’s harbor.

Area G: Located on the north side of New Haven Avenue, this area is comprised of low density retail, office and residential uses.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	7.1	Residential, Commercial	Residential Office	
B	0.9	Low density retail	Milford Center Design District	Floodplain
C	7.9	Commercial	Milford Center Design District	
D	14.7	Residential, commercial	Milford Center Design District	
E	21.6	Residential, office, retail	Milford Center Design District	
F	34.3	Retail, commercial	Milford Center Design District, Boating Business	Floodplain
G	6.4	Retail, office, residential	Milford Center Design District	

**Inclusive of municipal right-of-way within each opportunity area*



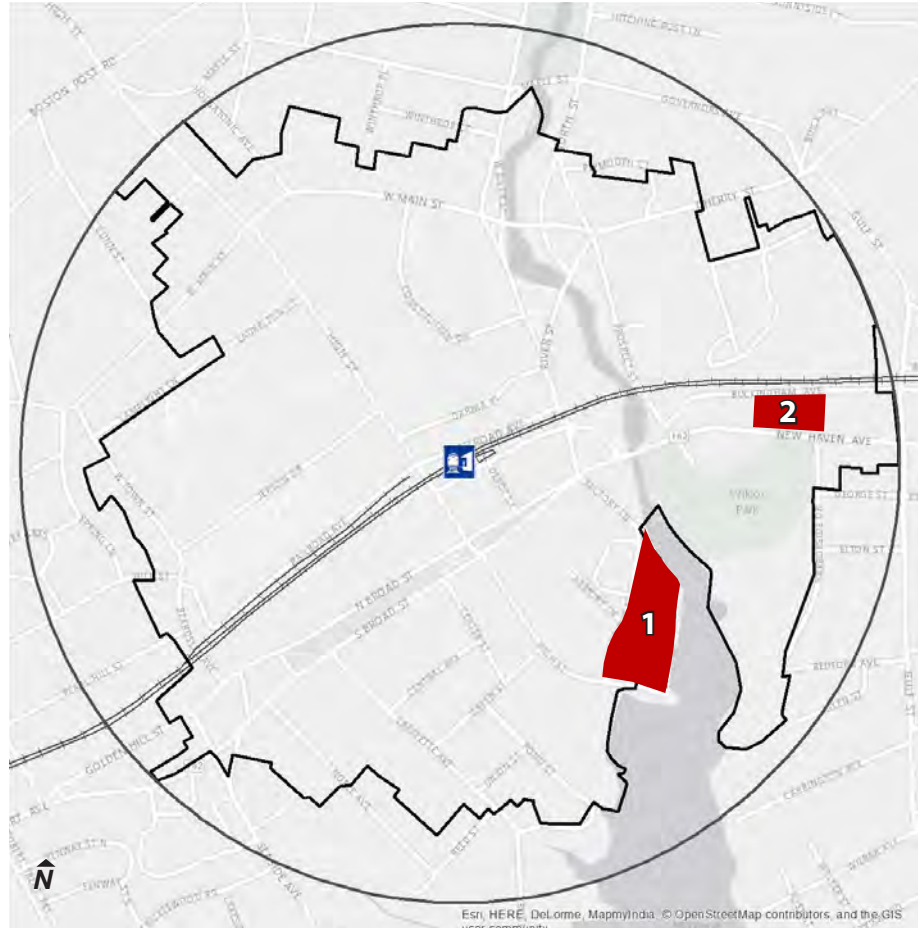
1. This area, on the east side of Helwig Street includes Milford's Lisman Landing (a city-owned property) and the Milford Boat Works. The area includes 5 acres and is within walking distance of the train station.



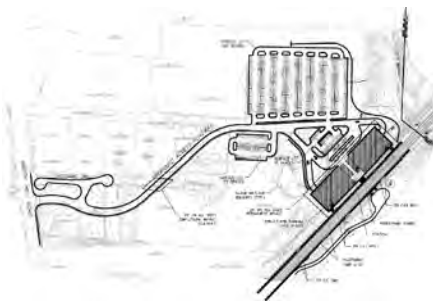
2. New Haven Avenue: Several adjoining parcels on New Haven Road and Buckingham Avenue (106, 112, 124, 132 New Haven Road and 57 Buckingham Avenue) are currently comprised of low density land uses such as a gas station, single family residence, Elks club, and day care. If assembled, these parcels would comprise a 1.95 acre site within walking distance of the train station.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	5	Boat yard	Boating Business	100 year floodplain, active land use	Comprised of Milford's Lisman Landing and Milford Boat Works. Future redevelopment should be considered given proximity to station.
2	1.95	Gas station, Elks club, day care, single family residence	Milford Center Design District	Active land use	This area is comprised of five parcels which could be combined to provide a mixed use development with street level retail on New Haven Road.



Site plan of proposed station

Summary

(1/2 mile radius of station unless otherwise noted)

Future Service	Metro North
Population	1,499
Households	1.85
Median household income	\$90,676
Median home value	\$213,757
Housing units	838
Autos per household	1.85
Commute via transit within 3 minute drive time	1%
Drive to work alone within 3 minute drive time	80%
Miles of roadway within 1/2 mile walk of station platform	0.7
Roadway with sidewalk on at least one side of road	0%
Walk Score	27
Estimated potential departing transit trips from station per week	600
Projected 2025 daily ridership	2,100
Housing units planned or in development	0
Housing vacancy within 3 minute drive time	6%
Total number of businesses within 3 minute drive time	88
Total number of jobs	1,644

Orange

Orange Station is a proposed station in the southeast corner of Orange, abutting West Haven and Milford. The proposed site is located off of Marsh Hill Road in proximity to I-95. The station would be serviced by Metro North and would likely have rail service comparable to Milford or West Haven.

The station area is comprised of commercial and industrial land uses and undeveloped land. The station area’s location is remote from the Town Center but would provide good access to Yale University’s West Campus and United Illuminating’s corporate campus. The proposed station also has direct access from I-95 which provides a large catchment area for commuters arriving to the station by car.

Station planning is well in development, with the Connecticut Department of Transportation (CTDOT) having approved the station track and siding. CTDOT is currently designing track and electrification for the station. Like West Haven, the station would have an “up and over” structure that will provide access to both sides of the track. This structure will be critical in providing pedestrian connectivity from the south and north sides of the track.

There are multiple opportunities for development surrounding the station site. Marsh Hill Road was recently improved in the proposed station area and Edison Road, which is north of the proposed station site, has recently been constructed and would provide access to developable land.

The primary constraint to development within the station area is established low density residential areas in both West Haven and Milford which occupy approximately half of the station area. The remaining land is, however, suitable to development with wetlands and floodplain occupying only the eastern edge of the study area along the West Haven boundary.

The population within a 1/2 mile radius of the station is 1,499. Automobile dependency is relatively high with 1.85 autos per household and 80% of the local population of workers driving to work alone. Only 1% of commuters travel by transit (bus). Sidewalks are not currently available within the station area and consequently the Walk Score for the station area is low (27 out of 100).

Town officials have been supportive of the station, although local residents have concerns about traffic. The Town has historically has been against retail in the area proposed for the train station, but is willing to change regulations in that area once funding is approved for the rail station. Sewer and water are accessible in the area and have ample capacity to accommodate new development.



Birdseye view of proposed station site
Source: Bing Maps

Transit Service	
Metro North	Potential for similar service as Milford or West Haven Stations (89-93 departures per weekday)
Bus	CT Transit New Haven B5 & B6 Line (no stop near station) 14 departures per weekday, no weekend service

Commuter Patterns

According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 80% driving alone to work, 0% using the train, and less than 1% using other transit such as the bus. Only 1% of commuters walk to work.

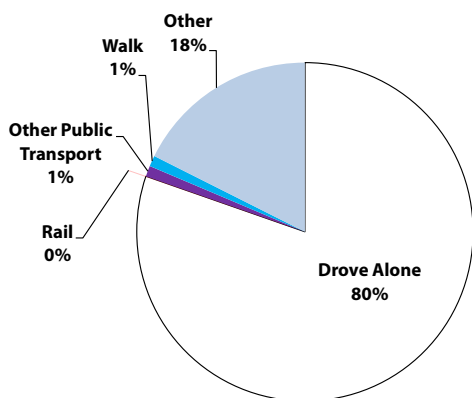
The latest census based origin-destination employment statistics² show that 1,637 workers commute to the station area (area within 1/2 mile radius of station), with 1,847 workers who live in the station area commuting to work outside of the station area. Only seven workers live and work within the station area.



Of workers who commute to the station area, most commute from West Haven, with New Haven being the second most common origin. Milford, Bridgeport, and Stratford are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is New York City. This is followed closely by West Haven, with Milford, New Haven and Stamford being amongst the top five destinations of workers who reside in the station area.

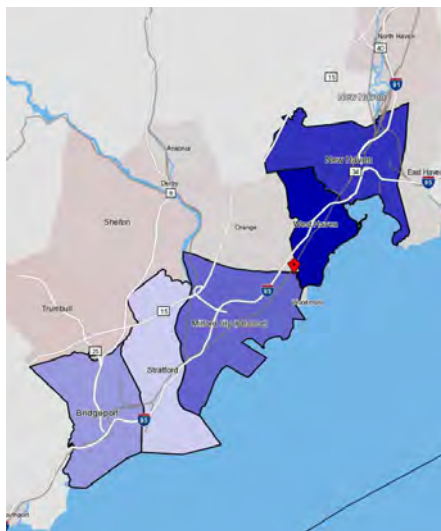
All of the top five commuting destinations for workers are serviced by Metro North. With this representing approximately 35% of commuters travelling to work from the station area, commuter patterns would suggest that a station in Orange would be well utilized by workers living in the station area.

Transportation to Work ¹
(workers within 3 mile drive of station)

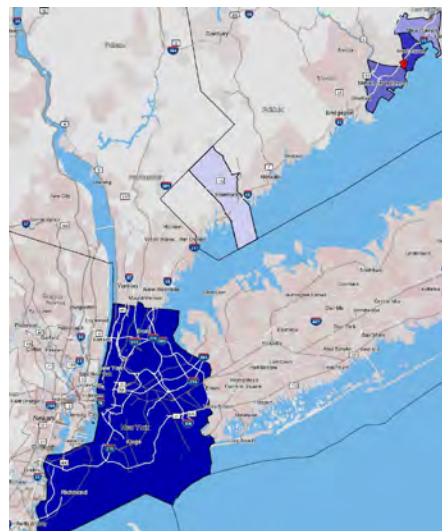


Commuting Patterns of Workers to and from Proposed Orange Station Area ²
(Top 5 origins/destinations)

Inbound Commuters From	#	%
West Haven	1,864	11.7
New Haven	354	10.8
Milford	259	7.5
Bridgeport	215	4.7
Stratford	191	3.6
Outbound Commuters To	#	%
New York City	191	10.3
West Haven	149	8.0
Milford	134	7.2
New Haven	108	5.8
Stamford	70	3.8



Top five origins of workers who commute to proposed Orange Station area.²

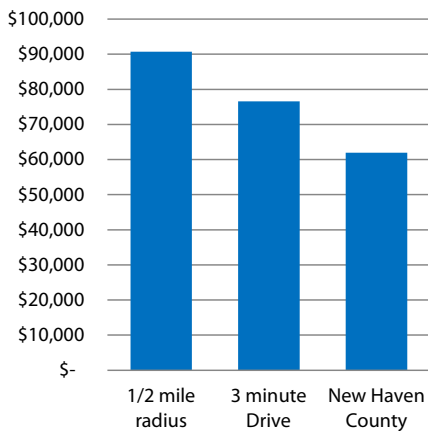


Top five destinations of workers who live in proposed Orange Station area.²

1. 2009-2013 American Community Survey

2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OntheMap.com

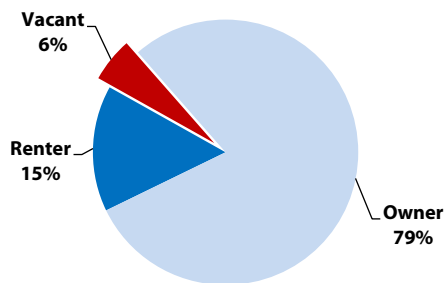
Median Household Income ¹



Household Income is well above the state average. Incomes farther away from the station area are significantly lower.

Housing Occupancy ¹

(within 3 minute drive of station)



The vacancy rate is below the state average of 6.8%. It increases as you move away from the station. Owners significantly outnumber renters.

Market Assessment

Orange is a prosperous community with a 2012 median household income (MHHI) over \$106,000, which itself is significantly above the Connecticut median of nearly \$68,000¹. The Town is home to approximately 13,919 residents and it enjoys quick access to New Haven and is 64 miles from New York City and less than 38 miles to Hartford. The town has a well-educated population as would be expected with the high MHHI. The predominant form of housing is single family, with a significantly higher percentage than the state average.

The Orange Train Station is planned. It will be served by Metro North and be located near 55 Marsh Hill Road. It is proximate to the Yale West Campus, I-95 and the Boston Post Road. The station will be located in an industrial area, with low population densities.

The planned Orange Train Station has weaker TOD potential than other stations in the study area. Although a high population density area of the state, the immediate station area has a low population density and in fact, the planned Orange Train Station would have the lowest density of all the stations in the study. There is no existing retail business in the area, with the Boston Post Road being over a mile away.

The station will have immediate access to the Yale’s West Campus which will certainly enjoy the benefits from the presence of the station. This campus focuses on research, archives and graduate studies, but does not have a resident student population. The station will also benefit other employers in the vicinity such as United Illuminating.

The median home value in Orange is \$338,700². Home values have declined 1.3% over the past year and are predicted to fall 0.1% within the next year². The median sales price of a single family home has risen marginally since 2013, and is currently \$350,000³.

Median Home Value Trends, Town of Orange ²



1. 2009-2013 American Community Survey
 2. Zillow.com, Milford, CT Home Prices & Values, www.zillow.com/milford-ct/home-values
 3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Comfortable Empty Nesters
 Average Household Size: 2.5
 Median Age: 46.8
 Median Household
 Income: \$68,000

Older, with more than half of all householders aged 55 or older; many still live in the suburbs where they grew up. Most are professionals working in government, health care, or manufacturing. Earn a comfortable living and benefit from years of prudent investing and saving. Net worth is well above average. Many are enjoying the transition from child rearing to retirement. Value their health and financial well-being.

Pleasantville
 Average Household Size: 2.86
 Median Age: 41.9
 Median Household
 Income: \$85,000

Prosperous, domesticity settled denizens. Principally in older housing in suburban areas in the Northeast and secondarily in the West, move less than any other market. Many are already empty nesters. Own older, single-family homes. Have higher incomes, higher home values, and much higher net worths. Home improvement and remodeling projects are a priority, preferably done by contractors. Participate in sports and watch movies. Shop online and in a variety of stores. Use the Internet largely for financial purposes.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

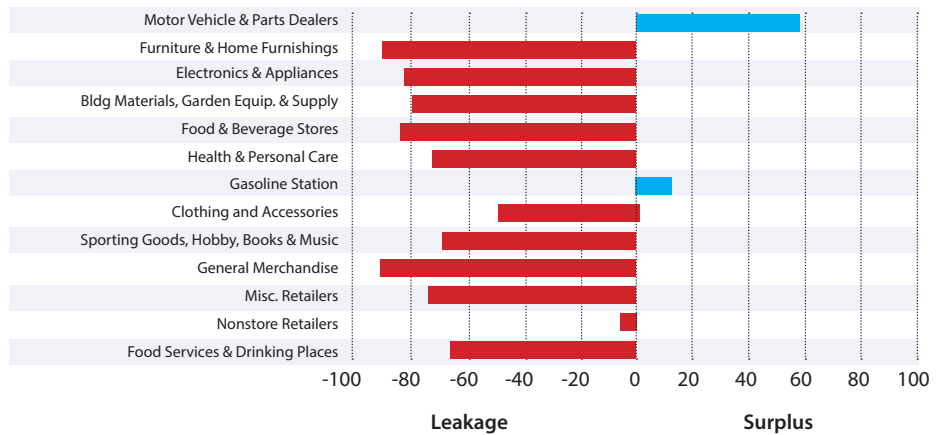
The median monthly rental cost index in Orange is \$2,151 per month, which is significantly higher than the New Haven Metro median of \$1,666 per month. The monthly rental cost index is a calculation of listing prices and actual rental costs. Rental cost has risen \$300 since early 2013 when the rental cost index was \$1,851.

Monthly Rental Cost Index, Town of Orange ¹



The proposed location of Orange Station is remote from retail areas and consequently, most retail sectors are underrepresented in the station area. The only retail sectors in surplus are auto related: motor vehicles & parts dealers, and gasoline stations.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Orange, CT Home Prices & Values, www.zillow.com/orange-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

- Provide road connections from the station site to nearby roads

The proposed station site would have access from Marsh Hill Road. The site layout as presented in the 2009 environmental impact evaluation does not show connections to any other surrounding roads. A connection to Heffernan or West Campus Drives would improve local connectivity for autos, bicyclists, and pedestrians.

- Provide sidewalks on Marsh Hill and Connair Roads

A sidewalk on Marsh Hill Road would connect the station site to an existing sidewalk on the bridge over I-95, providing a connection to United Illuminating’s campus. Likewise, a sidewalk on Connair Road would provide a connection to the south side of the station platform from Oxford Road and the industrial park on Connair Road.

- Extend CT Transit Route B5 and B6 to the proposed station

Providing a connecting local transit link would expand potential ridership at the station.

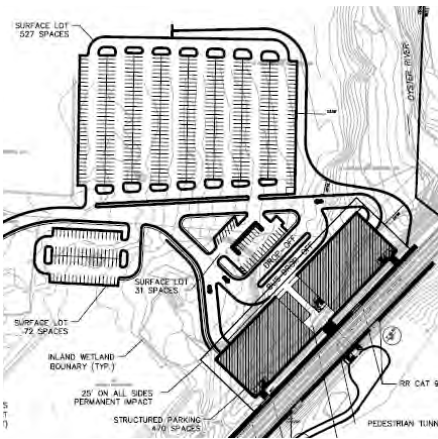
Connectivity

Of the 502 acres located within a 1/2 mile radius of the proposed station site, 156 acres are accessible within a 1/2 mile walk of the station platform (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the difference between the two areas.

Access to the train station would likely be provided by Marsh Hill Road and Salemme Lane. Given the suburban location and surrounding industrial land uses, no public sidewalks are currently present within the walkshed. Connectivity is further constrained by the proposed station’s proximity to the West Haven and Milford town lines, which offer little local road connectivity to the station site. There are no bus routes in the immediate station area. CT Transit’s New Haven B5 and B6 buses, which service the Baybrook Shopping Center to the south of the station area, are the nearest routes.

Given the proposed station’s location, and the lack of nearby retail services, the area has a Walk Score of only 27 (out of 100) points.





Station site plan showing one large parking lot and two smaller lots. The proposed parking structure is located bottom right.

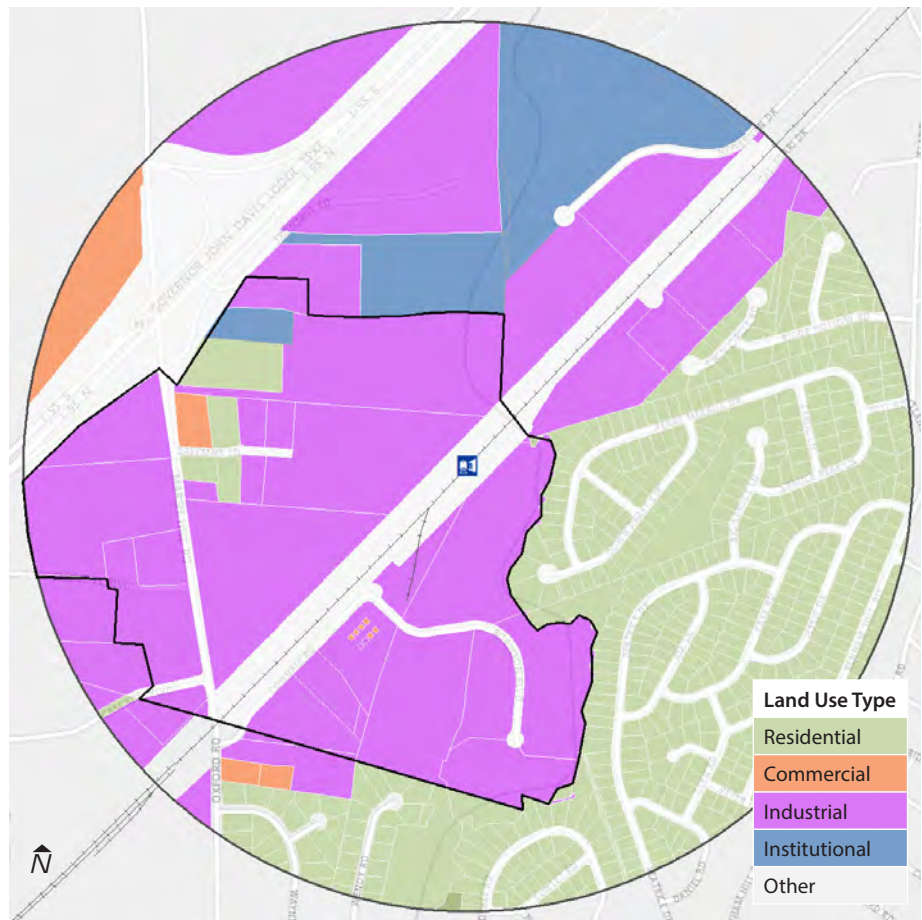
Parking

According to the West Haven/Orange Railroad Station Environmental Impact Evaluation, there are 630 surface parking spaces planned for the Orange Station site in a total of three lots. Of those spaces, 31 would be reserved for short-term parking. An additional 470 spaces could be provided if a parking structure is constructed. The evaluation estimated an unmet parking demand exceeding 1,500 spaces at each station.

Land Use

Of the 156 parcel acres within the 1/2 mile walkshed, 18 acres (12%) is occupied by transportation infrastructure such as roadways and the rail line. Residential, municipal and institutional and open space land uses occupy only 2 acres of the walkshed.

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 136 acres. Of this 136 acres, 9 acres are occupied by waterbodies or wetlands leaving 127 parcel acres that are potentially available for transit oriented development or redevelopment.



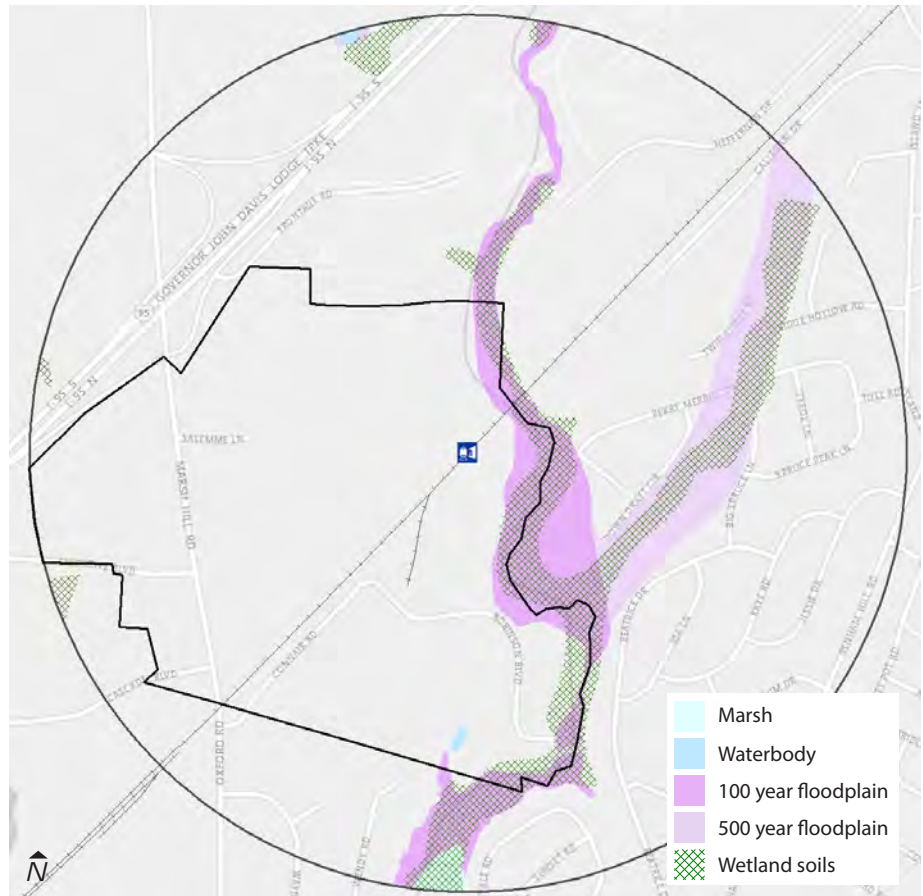
Environmental Features

Only 9 acres (6%) of the watershed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. Likewise, only 10 acres (6%) of the watershed is located within a 100 year or 500 year floodplain. The total dry land area within the floodplain is only 3 acres (2%) of the watershed area. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

6% of the 1/2 mile watershed is within a floodplain

6% of the 1/2 mile watershed is covered by wetlands and/or waterbodies

2% of dry land within the 1/2 mile watershed is within a floodplain



Zoning

The station area includes ten zoning districts, two of which are in Orange. Those districts are light industrial zoning districts (LI-2 and LI-4). This zoning is prohibitive of residential uses and is not conducive to TOD; it does not accommodate/include any of the fundamental zoning elements that foster TOD.

The Town also has a TOD zoning district. The purpose of the Transit Oriented Development District is to create a high density mixed use, transit oriented development adjacent to a Metro North Rail Station. It is further the intent to provide a range of housing, businesses and services specifically geared towards commuters and users of the railroad, designed in an aesthetically pleasing, environmentally conscious and pedestrian scaled manner. Additionally, at least 20% of all housing units constructed within this district are required to be made affordable for the life of the project.

The Town's TOD zoning district is an overlay district. In order to apply the TOD zoning standards to the station area, the Town's zoning ordinance requires that a financial commitment and regulatory permits are in place for the construction of the rail station.

West Haven's abutting districts to the east includes a PRD district which permits retail and office uses in some limited mixed-use configurations. This area is largely comprised of Yale University's West Campus. No site in a PRD may have more than 50 dwelling units; the PRD is intended to incorporate affordable housing units.

Zoning Legend

Orange

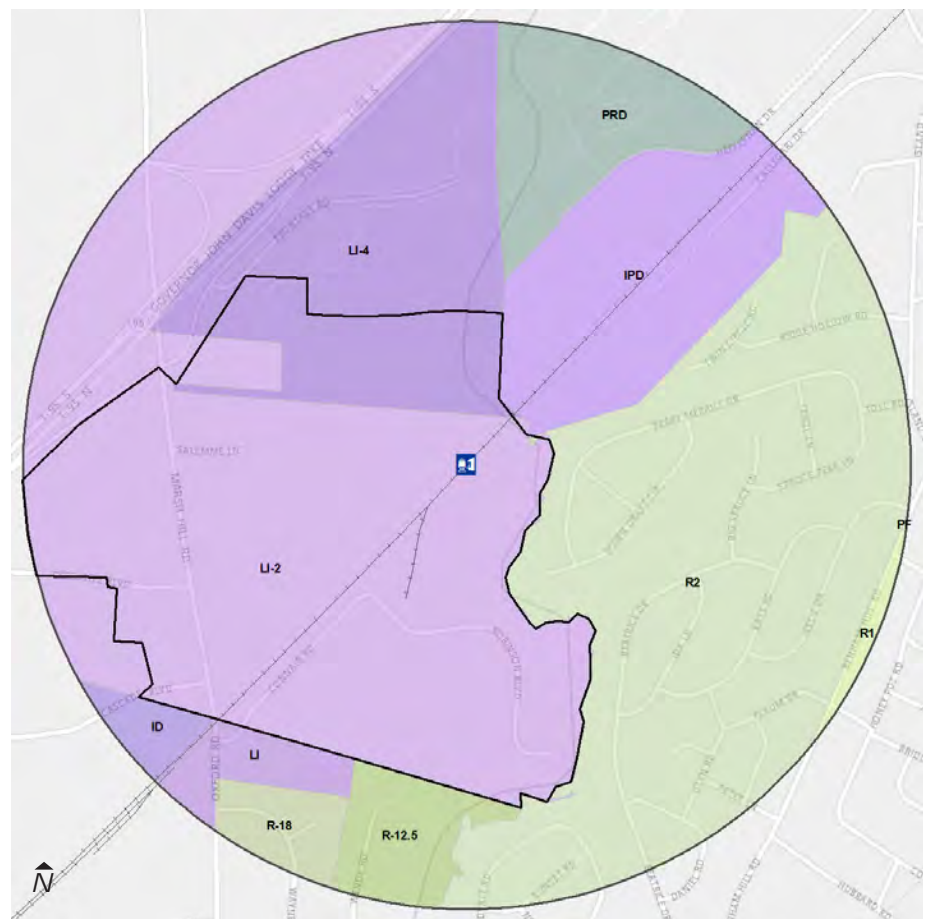
- LI-2: Light Industrial
- LI-4: Light Industrial

West Haven

- PRD: Light Industrial
- IPD: Light Industrial
- R1: Residential
- R2: Residential

Milford

- ID: Industrial
- LI: Limited Industrial
- R12.5: Residential
- R18: Residential



Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

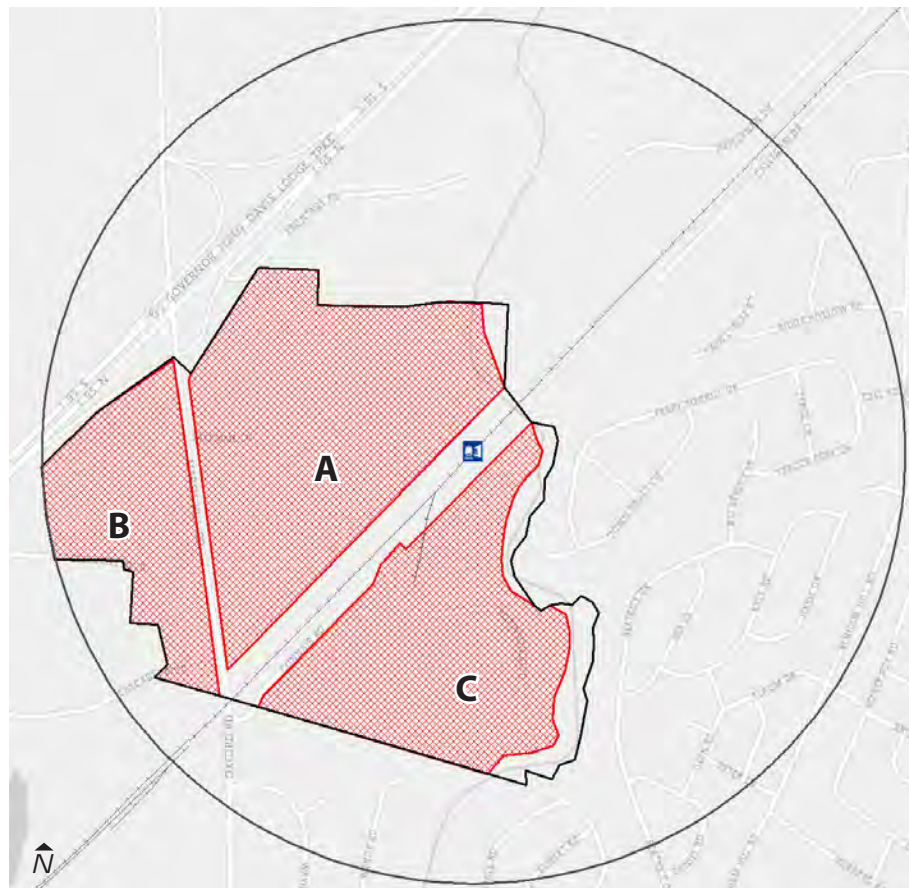
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - a. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - b. Municipal and institutional parcels such as schools and churches
 - c. Protected open space such as public parks, cemeteries, and conservation areas
 - d. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
3. Subtract from the remaining area land that is physically prohibitive to development:
 - a. Wetlands
 - b. Water bodies
 - c. Floodways
4. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: This area includes the proposed station site which is currently occupied by distribution warehouses, commercial office buildings, vacant land, and a small number of residences. There is considerable potential for infill development within this area.

Area B: This area also includes commercial office and warehouse space. Properties would require redevelopment to support TOD land uses.

Area C: Located on the south side of the rail corridor, this area is comprised of business and industrial parks which would require redevelopment to accommodate TOD. A rail overpass at the proposed station will be critical in linking development on this site to the rail station.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	60.4	Warehouse, office, undeveloped land, residential	Light Industrial	
B	26.2	Office, warehouse	Light Industrial	
C	44.4	Office and industrial	Light Industrial	

*Inclusive of municipal right-of-way within each opportunity area



1. 99 Marsh Hill Road
This 3.7 acre parcel, located immediately west of the proposed station site, currently has a single family use.



2. Salem Lane Properties Combined, these parcels total 3.3 acres. Two of the properties are currently single family uses. The parcels are located immediately west of the proposed station site.



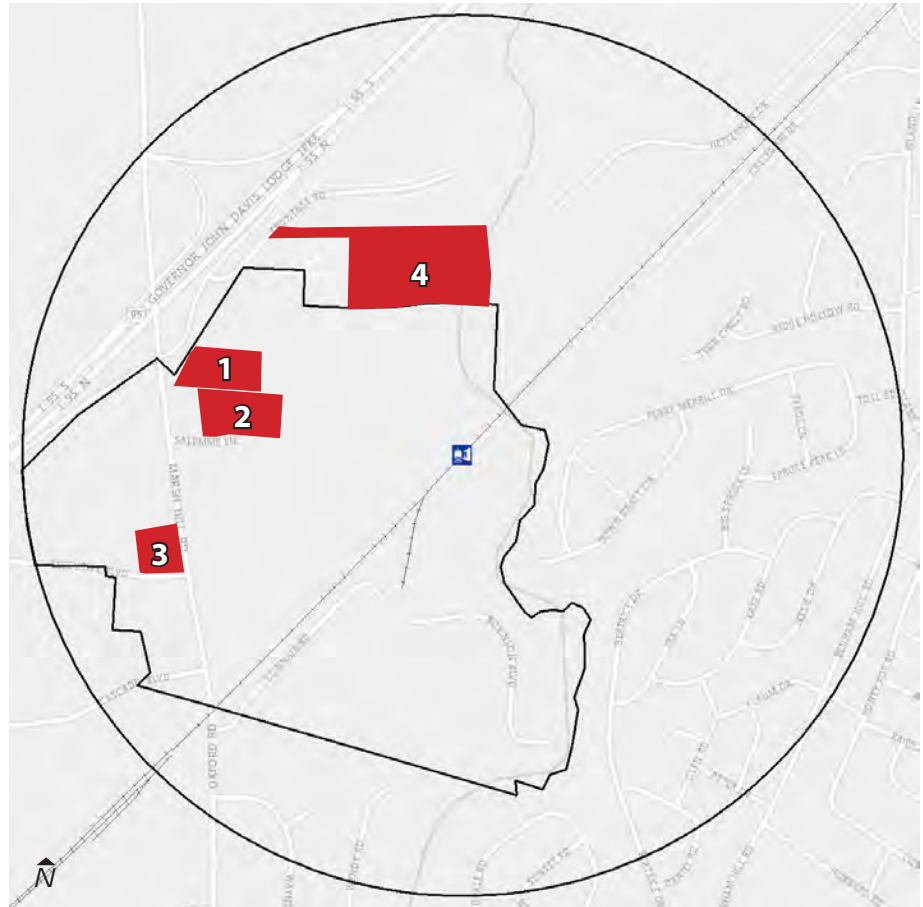
3. 38 Marsh Hill Road
This 2.1 acre parcel, currently used as a single family residence and farm-stand has been advertised for development.



4. 139 West Campus Drive
This 10.7 acre wooded parcel is located immediately north of the proposed station site. While currently outside of the station walkshed, a pedestrian connection to this parcel would place it within walking distance.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	3.7	Single family residence	Light Industrial	Active land use	
2	3.3	Single family residence	Light Industrial	Active land use	
3	2.1	Single family residence	Light Industrial	Active land use	Parcel has been advertised as potential redevelopment site
4	10.7	Undeveloped	Light Industrial		Outside of station walkshed; a pedestrian connection to this parcel would place it within walking distance



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Metro North
Population	3,663
Households	1,536
Median household income	\$50,643
Median home value	\$185,000
Housing units	1,677
Autos per household	1.73
Commute via transit within 3 minute drive time	3%
Drive to work alone within 3 minute drive time	82%
Miles of roadway within 1/2 mile walk of station platform	4.5
Roadway with sidewalk on at least one side of road	65%
Walk Score	57
Departing transit trips from station per week	1,035
Weekday station ridership (projected from 2009)	1,620
Housing units planned or in development	0
Housing vacancy within 3 minute drive time	8.5%
Total number of businesses within 3 minute drive time	409
Total number of jobs	1,587

West Haven

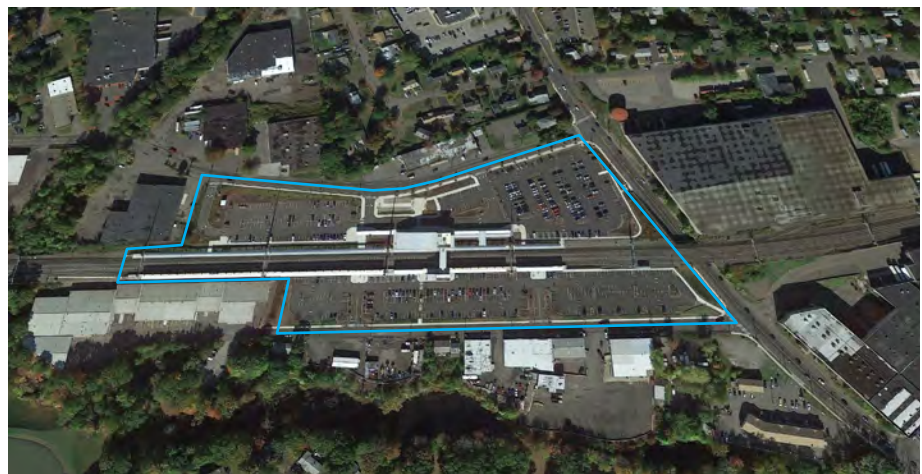
West Haven Station is serviced by Metro North, which provides commuter rail service with 93 departing trains per weekday. The station area is comprised of commercial and industrial land uses and is used primarily by commuters who arrive by car and pay or have permits to park at the station site which has 658 spaces. Station lots, which are located on both sides of the rail tracks, are heavily utilized often reaching capacity early in the morning. The station has an “up and over” structure which connects platforms on both sides of the tracks and provides pedestrian access from Hood Terrace and Railroad Avenue.

The City is currently engaged in a TOD study of the station area, which was initiated in 2014. A market study was also recently completed which suggested that commercial and industrial uses would have little growth in the station area over ten years, with residential development showing the most promise for growth.

Potential development areas include the adjacent Armstrong buildings, which are industrial properties adjacent to the station site. The City had received a grant to study the feasibility of structured parking at the Armstrong building, but the Connecticut Department of Transportation has not advanced this project. The Armstrong South building has redevelopment potential but has environmental issues relating to its historical industrial use. The Armstrong North building is currently used for warehousing and distribution. Other development potential includes a school south of the train station that has been closed. The site has been slated for redevelopment; a connection to the train station could be provided by constructing a bridge over an adjacent stream that runs south of Hood Terrace.

Constraints to development within the station area include environmental constraints such as the floodplains, which encompass the station site and much of the area near the tracks, and contaminated sites associated with former industrial land uses. Much of the area is also comprised of single family home land uses which are not supportive of high density development or redevelopment.

The population within a 1/2 mile radius of the station is 3,663. Automobile dependency is relatively high with 1.73 autos per household and 82% of the local population of workers driving to work alone. The use of the station by commuters within the station area is relatively low, with only 3% of commuters travelling by transit (train or bus). Despite the automobile dependency, the station is within a ten minute walk of Downtown West Haven where a number of goods and services are available. Sidewalks are available on 65% of the station area roadways. And the area has a Walk Score of 57 out of 100 points.



Aerial view of station site. Source: Google Maps

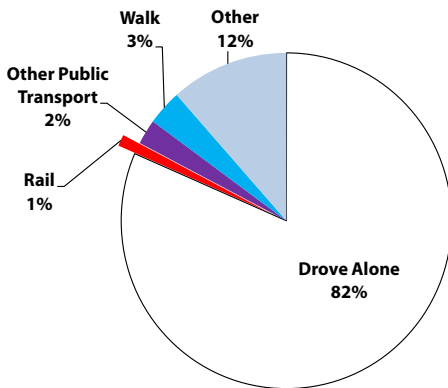
West Haven

Transit Service

Metro North	93 departures per weekday, 73 total weekend departures
Bus	CT Transit New Haven B Line 70 departures per weekday, 74 total weekend departures

Transportation to Work ¹

(workers within 3 mile drive of station)



Commuting Patterns of Workers to and from West Haven Station Area ²

(Top 5 origins/destinations)

Inbound Commuters From	#	%
West Haven	419	26.4
New Haven	173	10.9
Milford	91	5.7
East Haven	63	4.0
Bridgeport	44	2.8
Outbound Commuters To	#	%
New Haven	470	22.6
West Haven	147	16.6
Milford	121	8.5
Orange	105	5.2
Bridgeport	78	4.6

Commuter Patterns

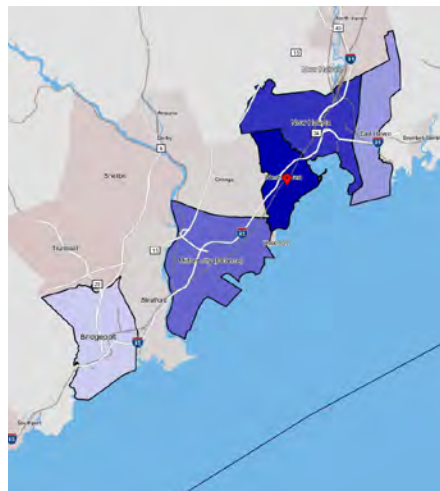
According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 82% driving alone to work, 1% using the train, and 2% using other transit such as the bus. Only 3% of commuters walk to work.

The latest census based origin-destination employment statistics² show that 1,558 workers commute to the station area (area within 1/2 mile radius of station), with 1,405 workers who live in the station area commuting to work outside of the station area. Only 29 workers live and work within the station area.

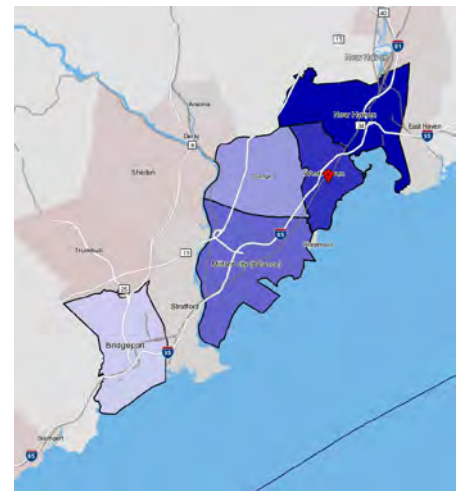


Of workers who commute to the station area, most commute from West Haven, with New Haven being the second most common origin. Milford, East Haven, and Bridgeport are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is New Haven. This is followed closely by West Haven, with Milford, Orange and Bridgeport being amongst the top five destinations of workers who reside in the station area.

Four of the top five commuting destinations for workers are serviced by Metro North, which represents approximately 52% of commuters travelling to work from the station area. The low share of rail ridership (1%) would suggest a potential for growth in this mode share with development in the station area.



Top five origins of workers who commute to West Haven Station area.²

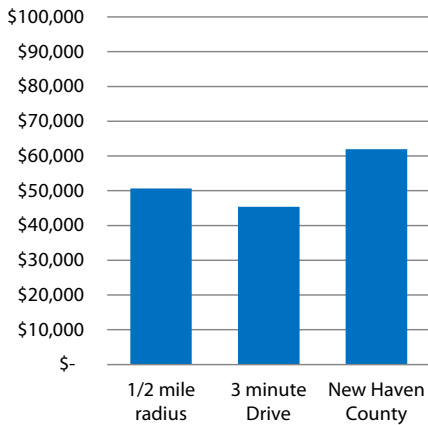


Top five destinations of workers who live in West Haven Station area.²

1. 2009-2013 American Community Survey

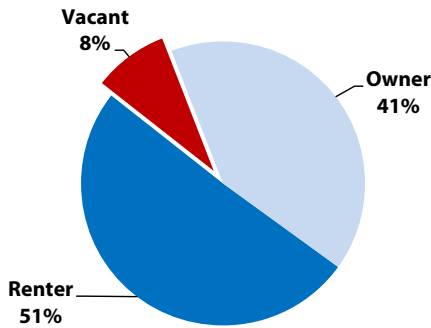
2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OntheMap.com

Median Household Income ¹



Household Income is significantly lower than the state average, with incomes lower in the immediate station area.

Housing Occupancy ¹
(within 3 minute drive of station)



Close to the station, housing vacancy is above the state average of 6.8%. Vacancy rates and renters slightly decrease with distance from the station.

Market Assessment

West Haven is a moderate income community with a 2012 median household income (MHHI) of nearly \$52,000, well below the state average of over \$68,000¹. The Town is home to approximately 55,386 residents and it has convenient access to New Haven. West Haven is less educated than state average, with 21% of residents having obtained a Bachelor’s Degree or higher. Housing is split equally between owner occupied and renter occupied, with the proportion of rental units above the state average.

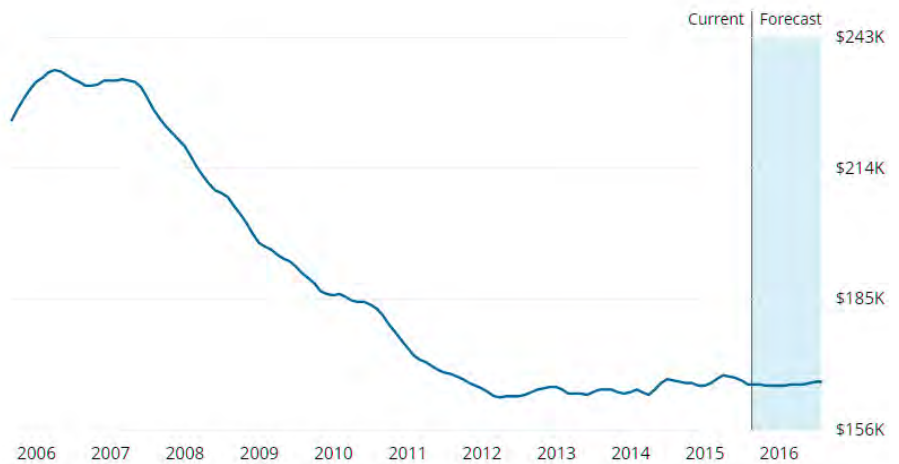
The West Haven train station is relatively new, being built in 2010. Its location was chosen for access to the Yale West Campus and proximity to the Town Center. The station area has a TOD zoning, with a large portion of existing TOD zoned land either vacant or used for industrial purposes.

The West Haven Station has potential for TOD development. The area is characterized by a range of uses including large-scale vacant and other industrial, housing and retail uses. West Haven has multiple assets such as its close proximity to New Haven and its access to public resources such as the water and parks, do contribute favorably to long-term transit oriented development. The long-term plan as described in the vision document is very ambitious and would require strong cooperation among the city government, developers, and the local community.

However, in order to make this plan a reality, much work must be done in the short-term to transform the TOD area into a catalyst for growth. The current station area remains undesirable for both developers and transit oriented residents, with its large portion of industrial buildings and lack of attractive housing.

The median home value in West Haven is \$166,500². Home values have declined 0.5% over the past year and are predicted to rise 0.3% within the next year². Median sales price of homes have fluctuated for several years, staying below \$180,000 since 2013³. The median home sales price is currently \$170,000³.

Median Home Value Trends, City of West Haven ²



1. 2009-2013 American Community Survey
 2. Zillow.com, Milford, CT Home Prices & Values, www.zillow.com/milford-ct/home-values
 3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Parks and Rec

Average Household Size: 2.49
 Median Age: 40.3
 Median Household Income: \$55,000

Practical, suburbanite homeowners living in older homes. Town homes and duplexes are not uncommon. Two-income married couples approaching retirement age; budgeting wisely. Well established neighborhoods, with existing amenities are attracting a new generation of young couples.

Front Porches

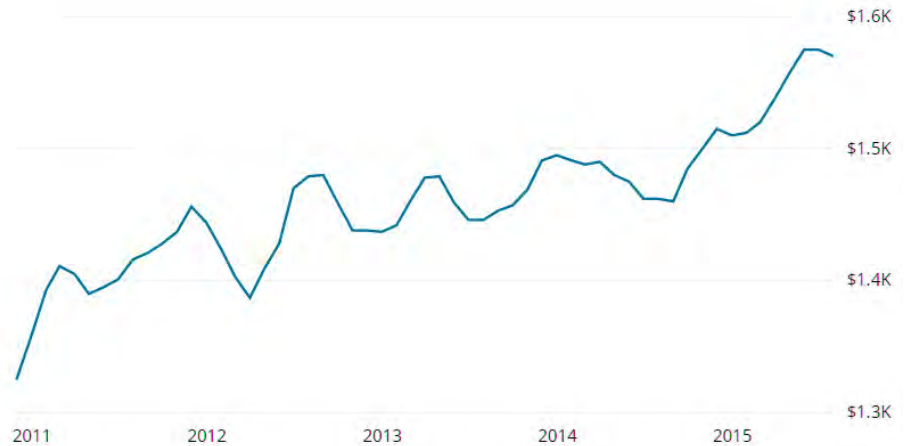
Average Household Size: 2.55
 Median Age: 34.2
 Median Household Income: \$39,000

Blended household types, more young families with children or single households than average. Half of householders are renters, and many of the homes are older town homes or duplexes. Make household buying decisions with help of friends and family. Enjoy cars that are fun to drive. Income and net worth are well below the US average, and many families have taken out loans to make ends meet.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

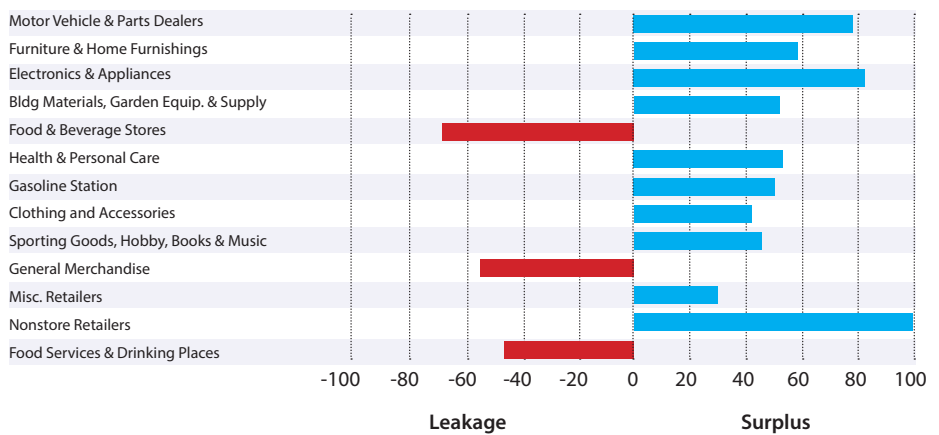
The median monthly rental list price in West Haven is \$1,450, which is higher than the New Haven Metro median of \$1,295. The monthly rental cost index, which is a calculation of listing prices and actual rental costs is slightly higher at \$1,582. Rents in West Haven have gradually increased since 2011, reaching a five-year high in 2015¹.

Monthly Rental Cost Index, City of West Haven ¹



West Haven's downtown is east of the station area, contributing to a relatively strong retail presence near the station. Retail sectors that are underrepresented include food & beverage stores, general merchandise, and food services & drinking places. These underrepresented sectors are generally favorable to transit oriented development.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, West Haven, CT Home Prices & Values, www.zillow.com/westhaven-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Connectivity

Of the 502 acres located within a 1/2 mile radius of the station site, 200 acres are accessible within a 1/2 mile walk of the station platform (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the half-mile walkshed.

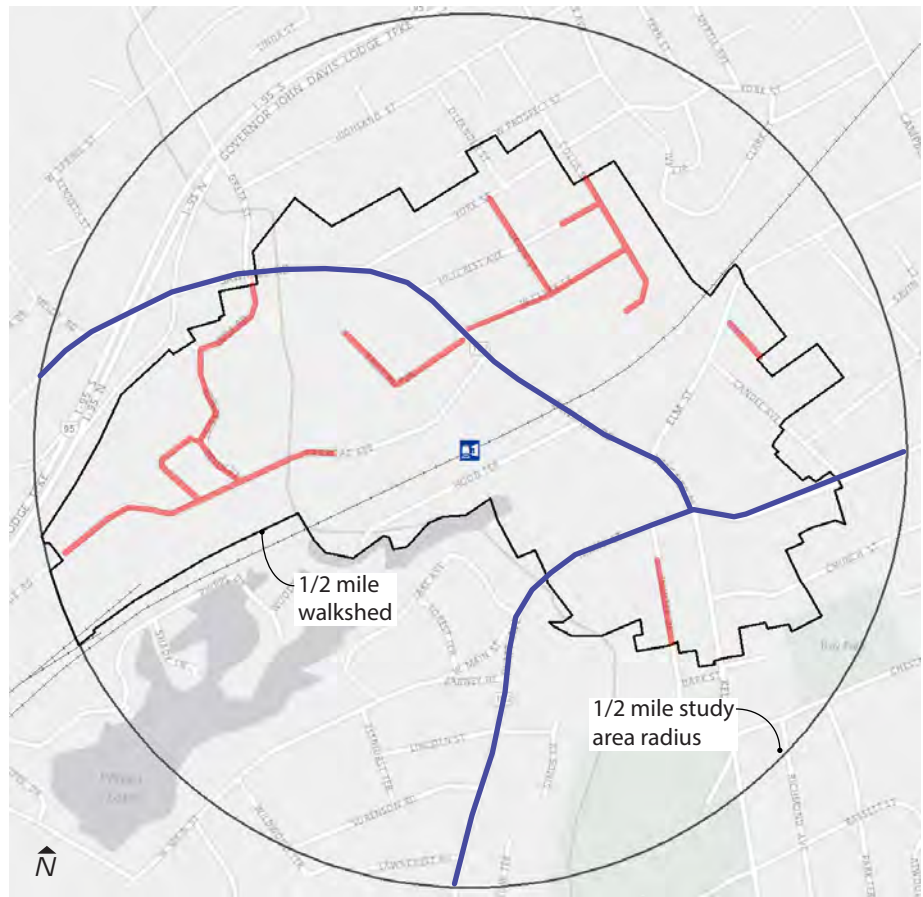
Access to the train station is primarily from Sawmill Road and the connecting streets of Railroad Avenue and Hood Terrace. There are 4.5 miles of public roadway within a 1/2 mile walk of the station platform, 65% of those roadways have a sidewalk on at least one side of the street. Given the station's proximity to the Town Center, the area has a walk Score of 57 (out of 100) points, designating the area as "somewhat walkable".

The area is served by CT Transit with a stop on Sawmill Road at the entrance to the station site.

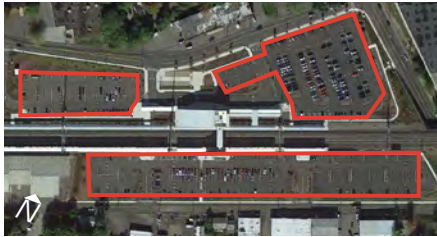
Recommendations for Improving Local Connectivity

→ *Extend sidewalks to the west on Railroad Avenue*

Sidewalks are absent west of the rail station. Extending a sidewalk west to Edward Street would provide access to an existing residential area and accommodate future redevelopment of industrial parcels in that area.



— Roads without sidewalk on at least one side of the road
 — CT Transit



Parking is located in one of three public lots north and south of the station.

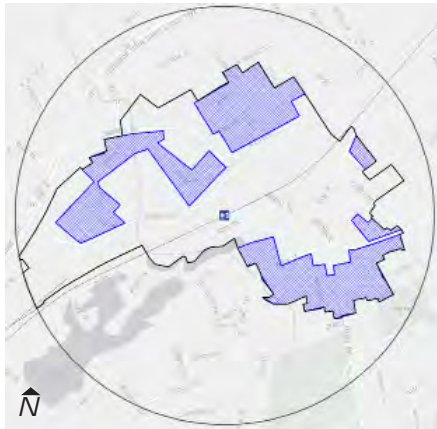
Parking

There are 658 parking spaces at West Haven Station, all are public and managed by CTDOT's property manager. Those spaces are located in lots on the north and south sides of the station. Parking costs \$6 per day with payment processed at pay stations. Permits are available for \$300 for a six-month period and are managed by CT Rides. The station lots are heavily utilized, often filling up by 8:00 in the morning. Permit parking spaces are available for paid parking after 10:00 am. Parking utilization is low in the evenings and weekends, although parking is free, which suggests the potential for a shared-use arrangement should transit oriented development occur in the station vicinity.

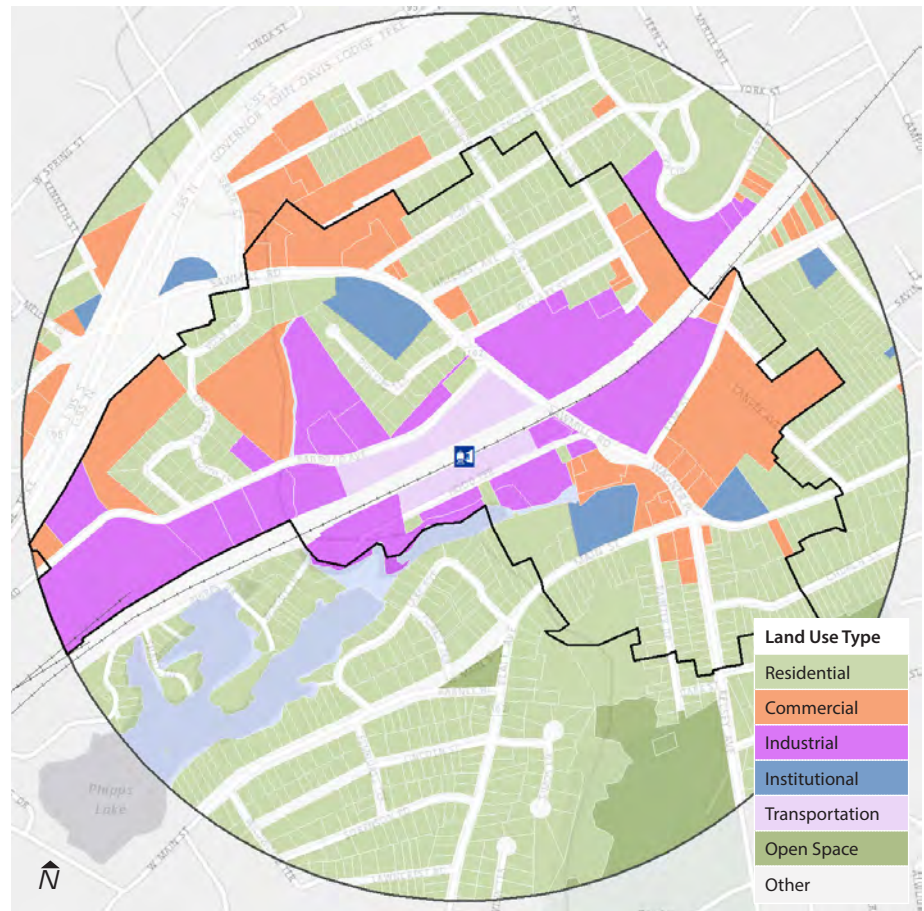
Land Use

Of the 200 acres within the half-mile walkshed, 40 acres (20%) are occupied by transportation infrastructure such as roadways and the rail line and station site. 69 acres (35%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 8 acres (4%). There is no dedicated open space within the walkshed.

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 82 acres. Of this 82 acres, slightly more than one acre is occupied by waterbodies or wetlands leaving approximately 81 acres that is potentially available for transit oriented development or redevelopment.



Built-out areas of low density residential development are shown on the map above. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 35% of the half-mile walkshed.



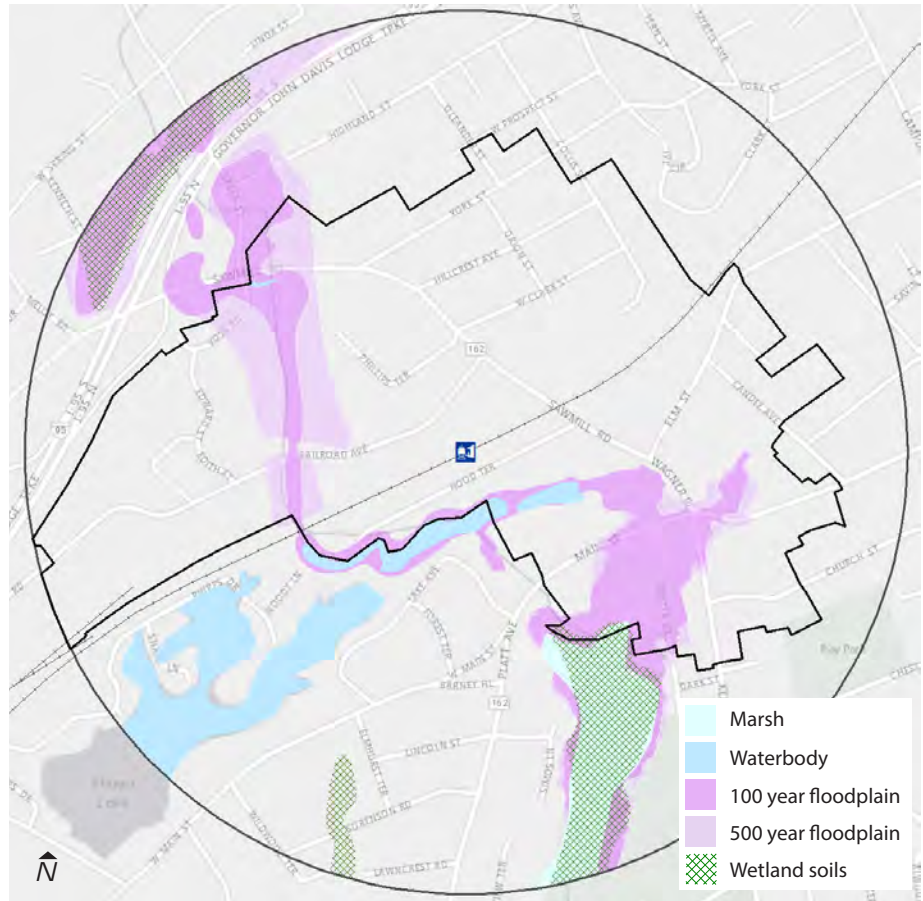
Environmental Features

Only 2 acres (1%) of the watershed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. However, 37 acres (18.4%) of the watershed is located within a 100 year or 500 year floodplain. Most of the floodplain within the watershed is on dry land, occupying 35 acres (17.6%) of the area. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

18.4% of the 1/2 mile watershed is within a floodplain

1% of the 1/2 mile watershed is covered by wetlands and/or waterbodies

17.6% of dry land within the 1/2 mile watershed is within a floodplain



Zoning Recommendations

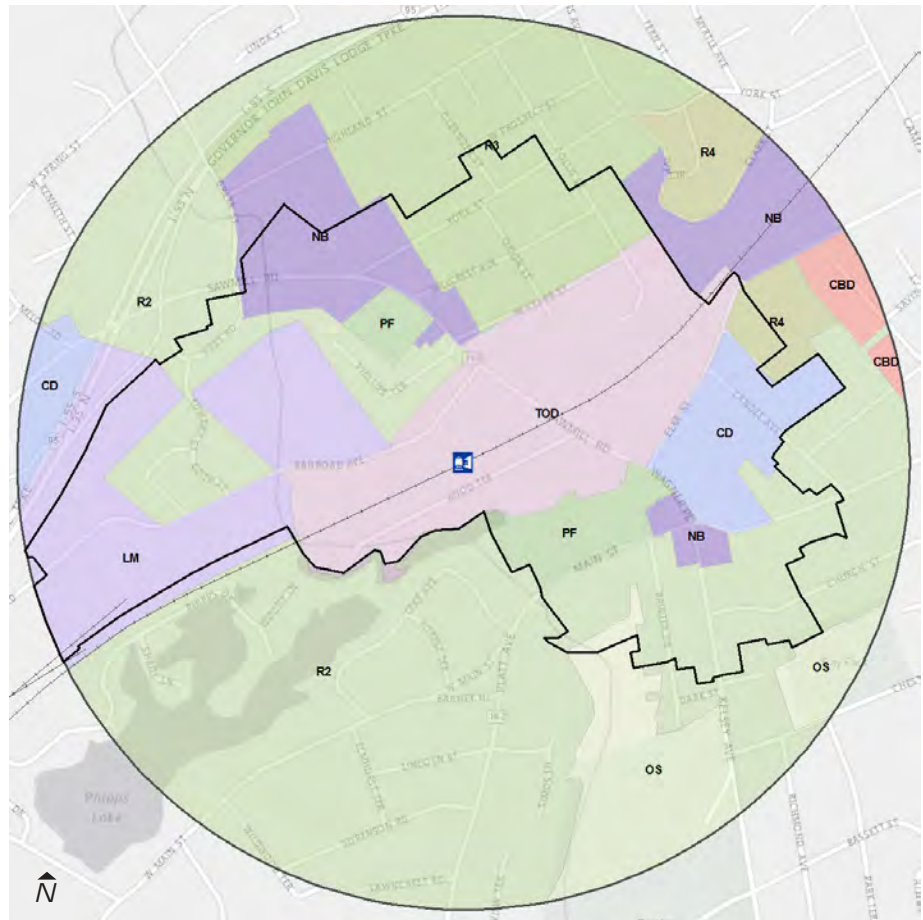
➔ *Expand the TOD District*

The existing TOD zone enables the density of development and mixture of uses necessary to support TOD but is limited in geographic area to the immediate vicinity of the station. Expansion of the zone within the walkshed would create more opportunities for TOD.

Zoning

West Haven has ten different zoning districts within the ½ mile station radius. There are three commercial zones (NB, CD, and CBD) which permit upper floor residential over commercial/retail use. Residential zones include R2 (detached single family), R3 (1-3 family), and R4 (multiple family). These zones do not permit a mixture of non-residential uses.

A TOD zone encompasses the area immediately surrounding the rail station. The TOD zone has all of the elements which are supportive of TOD. It also offers development incentives to encourage adaptive reuse of existing sites for TOD including design standards, requirements for bicycle and pedestrian access and facilities, and flexible parking standards.



Zoning Legend

- TOD: Transit Oriented Dev.
- PF: Public Facility
- CD: Commercial
- CBD: Central Business District
- NB: Neighborhood Business
- R2: Single Family Residential
- R3: 1-3 Family Residential
- R4: Multi Family Residential
- LM: Light Manufacturing
- OS: Open Space

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

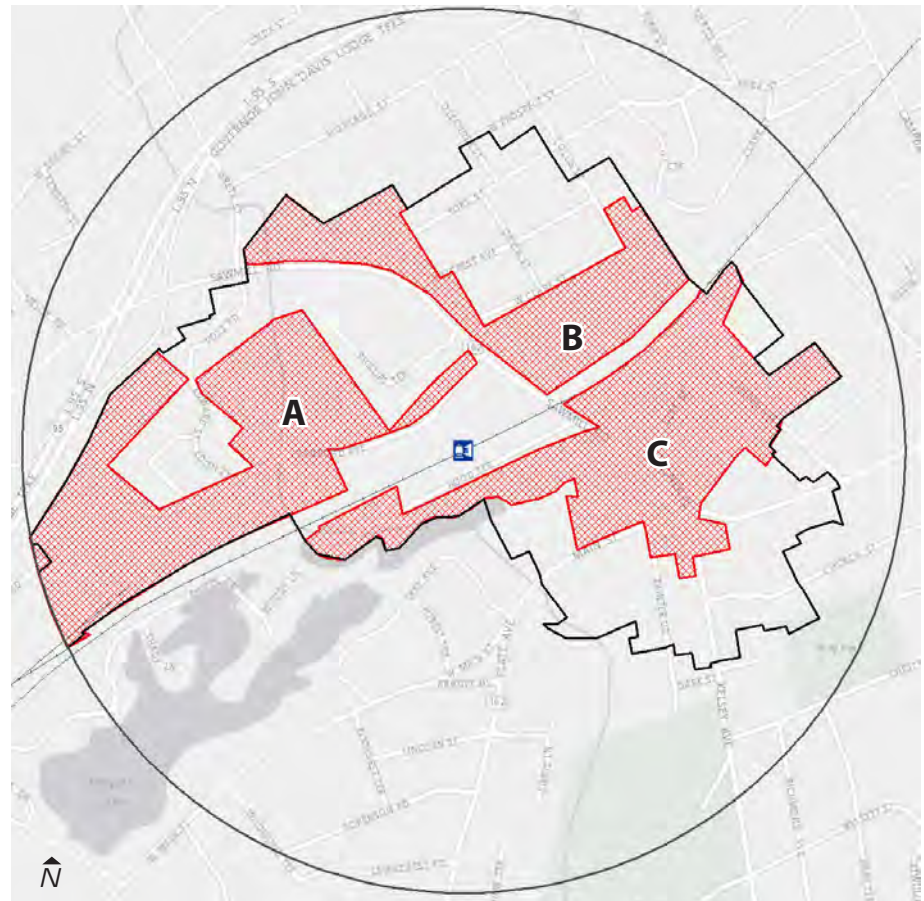
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - a. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - b. Municipal and institutional parcels such as schools and churches
 - c. Protected open space such as public parks, cemeteries, and conservation areas
 - d. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
3. Subtract from the remaining area land that is physically prohibitive to development:
 - a. Wetlands
 - b. Water bodies
 - c. Floodways
4. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: The area, located on Railroad Avenue, contains commercial and industrial land uses with direct access to the station site. Most of the area is outside of West Haven’s TOD zone, but should be considered for redevelopment to include high density residential land uses.

Area B: This area includes the Armstrong North building and commercial properties along Sawmill Road. The Armstrong North building has considerable potential for mixed-use redevelopment.

Area C: This area includes the Armstrong South building, and commercial properties located on Elm Street and Hood Terrace. The Hood Terrace properties are low density commercial/industrial land uses which have considerable potential for redevelopment given their proximity to the rail station.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	41.5	Commercial, industrial	Light Manufacturing	
B	23.6	Commercial, industrial	TOD, Neighborhood Business	
C	39.8	Commercial, industrial	TOD, Commercial, Public Facility	Floodplain

*Inclusive of municipal right-of-way within each opportunity area



1. Hood Terrace

Comprised of several parcels, this site currently hosts a number of commercial/ industrial uses. The site is bordered by the rail station to the north and a watercourse to the south.



2. 25 Railroad Ave and 130 Saw Mill Road

Located immediately northwest of the station site. Current uses include a warehouse on the Railroad Avenue parcel and offices in a converted residential building on the Saw Mill Road parcel.



3. Armstrong South Building

The former Armstrong building is located immediately east of the station. It contains over 320,000 square feet of floor space

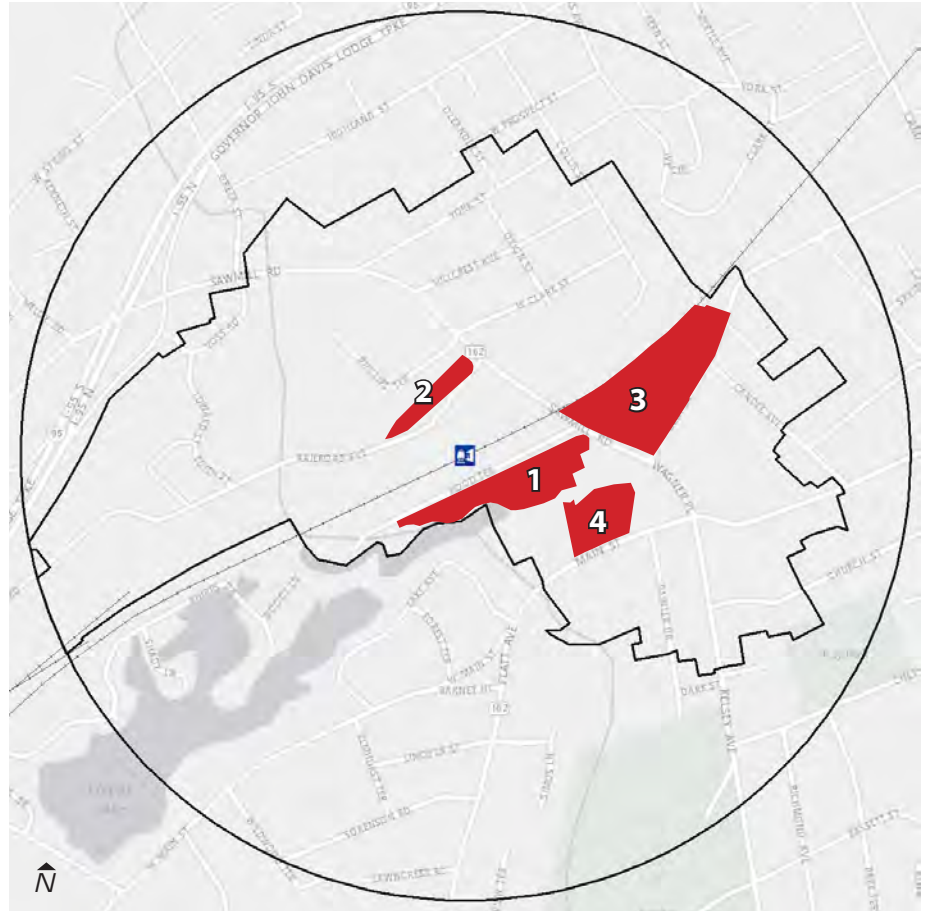


4. 561 Main Street

This former school has been closed and is likely to be redeveloped.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	4.5	Commercial & Industrial	TOD	Active land uses	
2	1.4	Offices, warehouse	TOD	Active land uses	
3	7.3	Industrial, warehouse	TOD	Potential contamination	Armstrong South building site
4	2.7	Vacant	Public Facility		Former school



Summary

(Combined 1/2 mile radius of both stations unless otherwise noted)

Service	Metro North, Shoreline East, Hartford Line
Population	13,855
Households	4,893 (Union) 8,962 (State)
Median household income	\$25,071 (Union) \$37,472 (State)
Median home value	\$193,367 (Union) \$279,605 (State)
Housing units	2,644 (Union) 4,704 (State)
Autos per household	1.2
Commute via transit within 3 minute drive time	12-13%
Drive to work alone within 3 minute drive time	44% (Union) 37% (State)
Miles of roadway within 1/2 mile walk of station platform	17.2
Roadway with sidewalk on at least one side of road	100%
Walk Score	89
Departing transit trips from stations per week	>3,000
Weekday station ridership (2010)	5,500 (Union) 250 (State)
Housing units planned or in development	800
Housing vacancy within 3 minute drive time of each station	18.9% (Union) 16.3% (State)
Total number of businesses within 3 minute drive time of station	693 (Union) 1,674 (State)
Total number of jobs	19,697

New Haven

New Haven’s Union and State Street Stations are serviced by Metro North, Shore Line East, Amtrak, and will be serviced by Hartford Line commuter rail. The combined area has more than 3,000 departing transit trips per week including local bus and shuttle service.

The population within the combined 1/2 mile station radii is 13,855. Automobile dependency is relatively low with 1.2 autos per household and only 37-44% of the local population of workers driving to work alone. The use of the station by commuters within the station area is relatively high, with 12-13% of commuters travelling by transit (train or bus). Sidewalks are available on all the 17.2 miles of roadways within the station areas. The station area has a high Walk Score of 89 (out of 100) due to good street connectivity and access to goods and services located in Downtown New Haven.

There has been considerable planning within both station areas, the most recent efforts include the “Hill to Downtown” plan which provides a vision for linking residential areas west of Union Station to the station and Downtown New Haven. New Haven is also undergoing a mobility study which is expected to be complete this year. The study is being managed by the Parking Authority and will include the review of previous and on-going studies and plans affecting the Union Station area; a detailed analysis of the Air Rights Garage; assessment of job growth, real estate development and parking demand impact; development of strategies for parking demand management; and the creation of a plan for development. The study will likely recommend the construction of an additional parking garage at Union Station that would serve the station and nearby developments. The City has also recently received a \$125,000 TOD grant from the State to promote walking and bicycling, and redevelop “underused” properties in the Wooster Square neighborhood. The New Haven Coliseum site, which is located in proximity to both stations, has been slated for redevelopment that will likely take the form of high rise housing, hotel, and street level retail.



Birdseye view of Union Station site. Source: Bing Maps



Birdseye view of State Street Station site. Source: Bing Maps

Transit Service

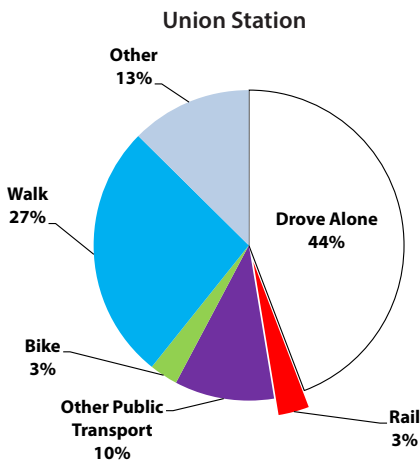
Metro North, Shore Line East, Future Hartford Line	Approximately 200 departures per day and more than 1,400 departures per week for combined stations.
Bus	CT Transit New Haven Line, New Haven Commuter Connection, Yale Shuttle, Inter-City bus service (Greyhound). More than 2,000 bus departures per week at combined stations.

Commuter Patterns

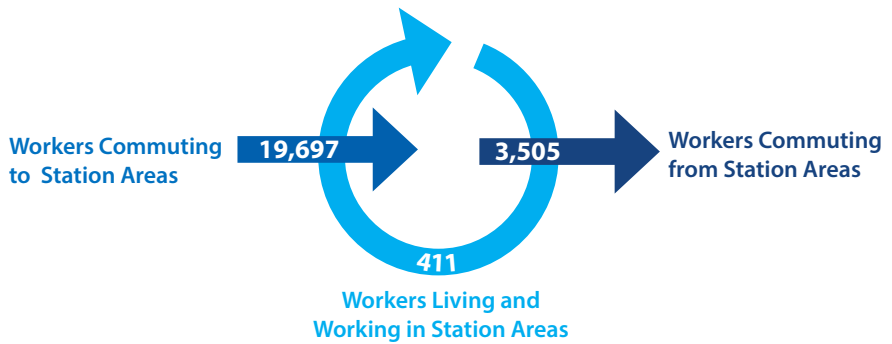
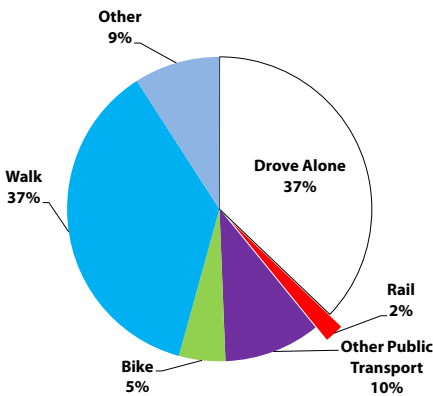
According to census data¹, local commuters within a three-mile drive time “drive shed” of Union and State Street Stations have a diverse mode share, with driving to work alone being the most prominent commuting mode. A high proportion of people from both station areas walk to work, with 27% of workers in the Union Station driveshed walking to work and 37% of workers in the State Street driveshed walking to work. Bus transit, which represents most of the “other public transport” share, is 10% in both station drivesheds, which is a high mode share for bus transit. Rail transit varies from 2% in the State Street driveshed to 3% at the Union Station driveshed.

The latest census based origin-destination employment statistics² show that 19,697 workers commute to the station area (combined area within 1/2 mile radius of both stations), with 3,505 workers who live in the station area commuting to work outside of the station area. Additionally, 411 workers live and work within the station area.

Transportation to Work ¹
(workers within 3 mile drive of station)



State Street Station



Of workers who commute to the station area, most commute from other areas of New Haven, with West Haven being the second most common origin. East Haven, North Haven and Milford are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is within New Haven (outside of the station area). This is followed by New York City, with West Haven, Hartford and Milford being amongst the top five destinations of workers who reside in the station area.

Three of the top five commuting destinations for workers are serviced by Metro North, with the fourth most common destination (Hartford) being serviced in the future by Hartford Line service. Overall, commuting patterns suggest that most of the commuting trips in both station areas are internal to New Haven and independent of rail service. Transit oriented development in the station areas would more likely be occupied by people who live and work locally than by people commuting to or from outside communities via transit.

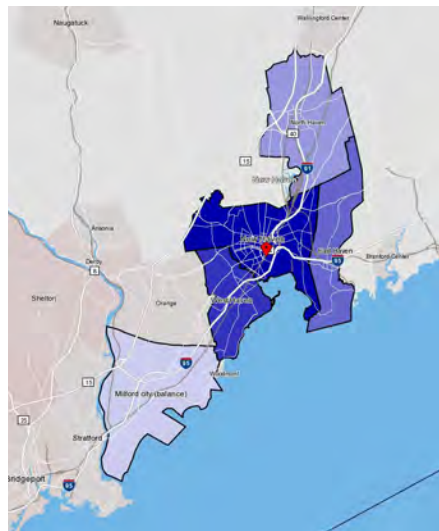
1. 2009-2013 American Community Survey
2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OntheMap.com

New Haven

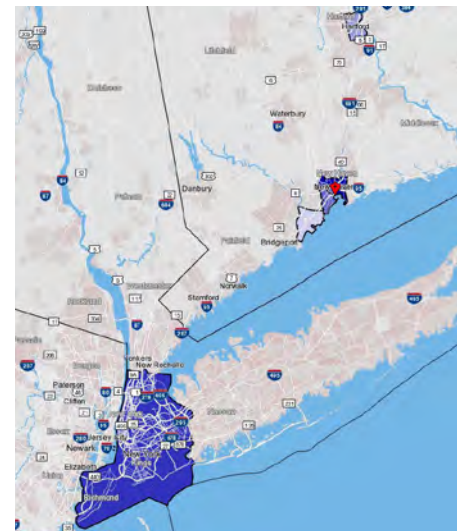
Commuting Patterns of Workers to and from New Haven Station Areas ¹ (Top 5 origins/destinations)

Inbound Commuters From		
	#	%
New Haven	4,252	21.6
West Haven	1,239	6.3
East Haven	922	4.7
North Haven	636	3.2
Milford	543	2.8
Outbound Commuters To		
	#	%
New Haven	1,847	47.2
New York City	188	4.8
West Haven	117	3
Hartford	95	2.4
Milford	93	2.4

Combined 0.5 mile radius of both stations



Top five origins of workers who commute to New Haven Station areas ¹



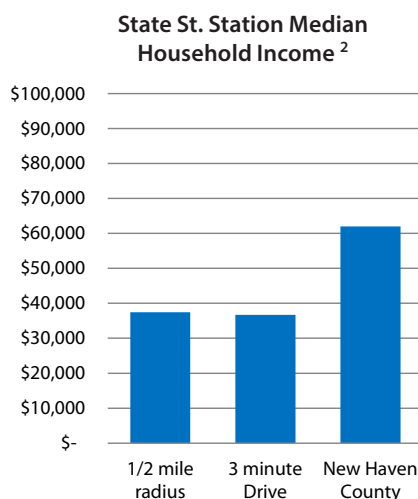
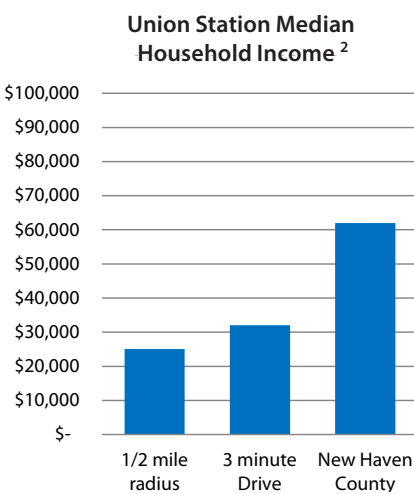
Top five destinations of workers who live in New Haven Station areas ¹

Market Assessment

New Haven is a low-moderate income city with a 2012 median household income (MHHI) of nearly \$38,500, well below the state average of over \$68,000². The City is home to approximately 129,898 residents and it is the area's largest city. New Haven is about as educated as the state average, with 33% of residents having obtained a Bachelor's Degree or higher. Housing is largely renter occupied, with over 73% of all New Haven housing stock being renter occupied, significantly higher than state average.

The median home value in New Haven is \$155,900³. Home values have declined 1.2% over the past year and are predicted to fall 0.4% within the next year³. Median sales price of single family homes have risen since the end of 2014, while the median sales price of condominium homes have declined steadily since 2014. The median single family home sales price improved 50.6% over that period to \$217,000 with condo units down 46.6% to a median sales price of \$150,000⁴.

Median Home Value Trends, City of New Haven ³



Household Income is well below the state average, with lower incomes closer to the station area.



1. 2013 Census Longitudinal Origin-Destination Employment Statistics

2. 2009-2013 American Community Survey

3. Zillow.com, New Haven, CT Home Prices & Values, www.zillow.com/newhaven-ct/home-values

4. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Metro Renters

Average Household Size: 1.66
 Median Age: 31.8
 Median Household Income: \$52,000

Highly mobile and educated. Live alone or with a roommate in older apartment buildings and condos located in the urban core of the city. One of the fastest growing segments; the popularity of urban life continues to increase for consumers in their late twenties and thirties. Income is close to the US average, but spend a lot on rent, clothes, and the latest technology.

Social Security Set

Average Household Size: 1.72
 Median Age: 44.2
 Median Household Income: \$16,000

An older market located in metropolitan cities across the country. Over one-third are aged 65 or older and dependent on low, fixed incomes, primarily Social Security. Live alone in low-rent, high-rise buildings, located in or close to business districts that attract heavy daytime traffic.

Fresh Ambitions

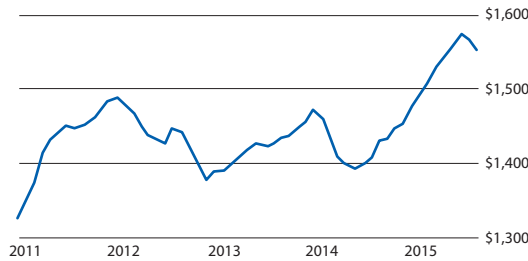
Average Household Size: 3.13
 Median Age: 28.0
 Median Household Income: \$26,000

Young families, many recent immigrants, focus on their children. Not highly educated, but many have a high school diploma. Work overtime in skilled and unskilled service jobs. Income is often supplemented with public assistance and Social Security. Spend more than one-third of their income on rent.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

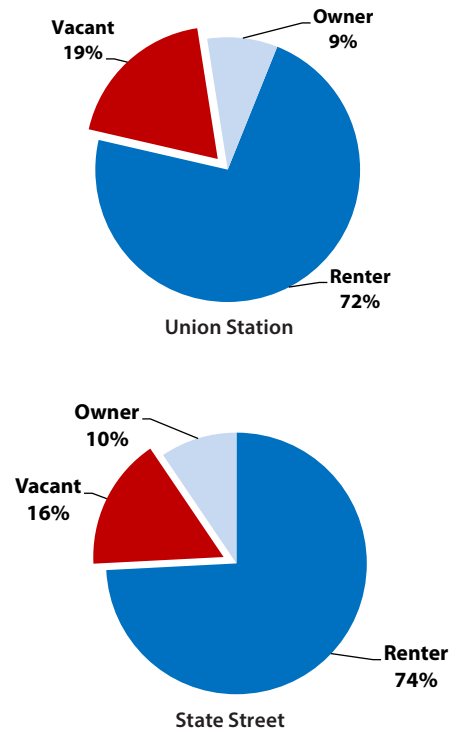
The median monthly rental list price in New Haven is \$1,500, which is higher than the New Haven Metro median of \$1,295. The monthly rental cost index, which is a calculation of listing prices and actual rental costs is slightly higher at \$1,542. Rents in New Haven have gradually increased since 2014, reaching a five-year high in 2015¹.

Monthly Rental Cost Index, City of New Haven ¹



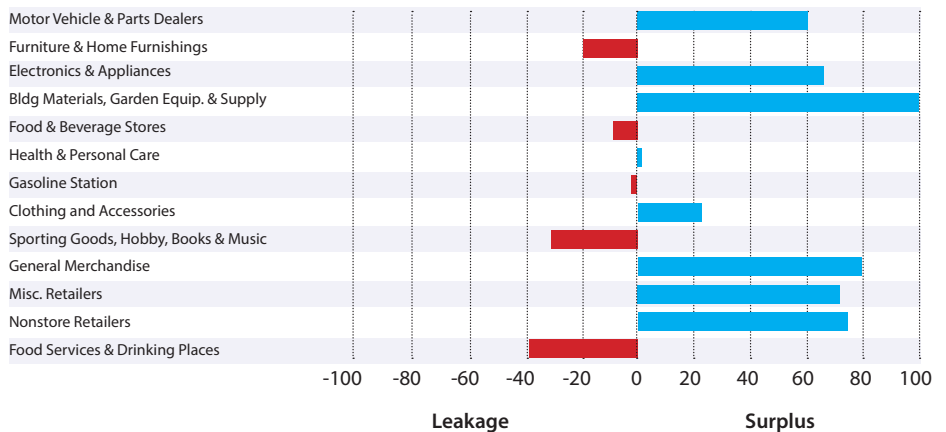
Both stations are located in proximity of New Haven's central business district, contributing to a strong retail presence. Many retail sectors are abundantly represented in the study area. The only sectors that are underrepresented include: food services and drinking places, sporting goods, hobby, books, & music, furniture & home furnishings, and food & beverage stores.

Housing Occupancy ⁴
 (within 3 minute drive of station)



The vacancy rate is well above the state average of 6.8%. It decreases as you move away from the station. Renters vastly outnumber Owners.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, New Haven, CT Home Prices & Values, www.zillow.com/newhaven-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data
 4. 2009-2013 American Community Survey

Connectivity

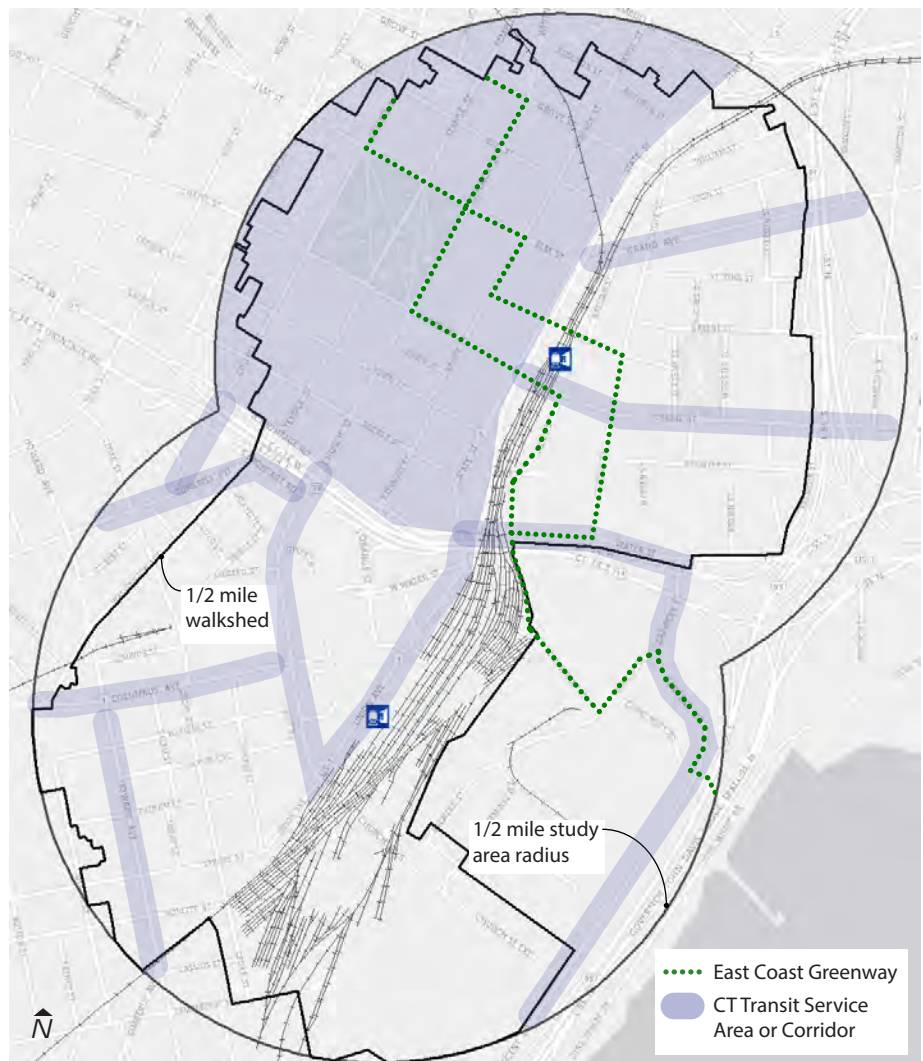
Of the 847 acres located within the combined station area comprised of the overlapping half mile radii of each station, 574 acres are accessible within a 1/2 mile walk of the station platforms (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the half-mile walkshed.

All roadways within the walkshed have sidewalks on at least one side of the street. Due to this high level of connectivity and both station's proximity to Downtown, the area has an exceptionally high Walk Score of 89 (out of 100) points. Local transit service (CT Transit) is available through most of the study area with routes concentrated in the downtown area west of State Street Station.

The study area is traversed by the East Coast Greenway, a bicycle route extending along the East Coast. The route is accommodated on local streets by a combination of sharrows and bicycle lanes.



CT Transit routes converge on New Haven's Downtown with much of the Downtown acting as a transit mall.



- Phase 3:**
 - New development garage 500 spaces
 - New retail 20,000sf
 - New office 90,000sf
 - New loft apartments 138 units
- Phase 2:**
 - New North Garage 530 spaces
 - Develop retail frontage at existing garage 14,000sf
- Phase 1:**
 - New South Garage 667 spaces
 - Pedestrian Bridge to Union Station
 - Multi-modal connections at grade
 - Expand mixed use development of Union Station 50,000sf



Development concept for Union Station is shown above including two new garages and additional parking to be included in a residential tower at the north end of the site.

Source: New Haven Union Station Transit Oriented Development Study February 2008

Parking

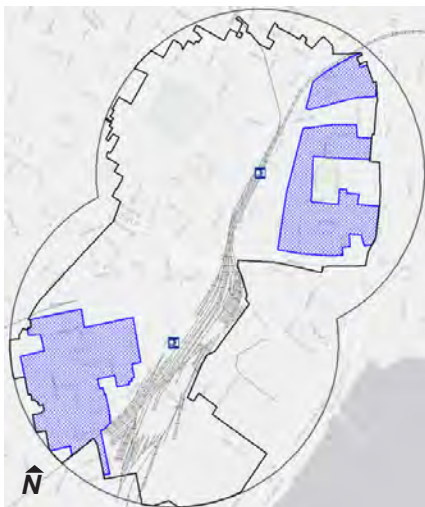
State Street Station does not have a parking facility, but is served by local vendors including a private lot at 360 State Street. Union Station is served by the Union Station Garage, which is managed by the New Haven Parking Authority. The garage contains 1,200 spaces and parking demand at the station typically exceeds available supply, with an average utilization rate of 96%.

The existing garage and surface lot often fill to capacity and drivers park at off-site locations and take a free shuttle to the station. With continued ridership growth, the City will have insufficient supply to meet future demand without new garage construction.

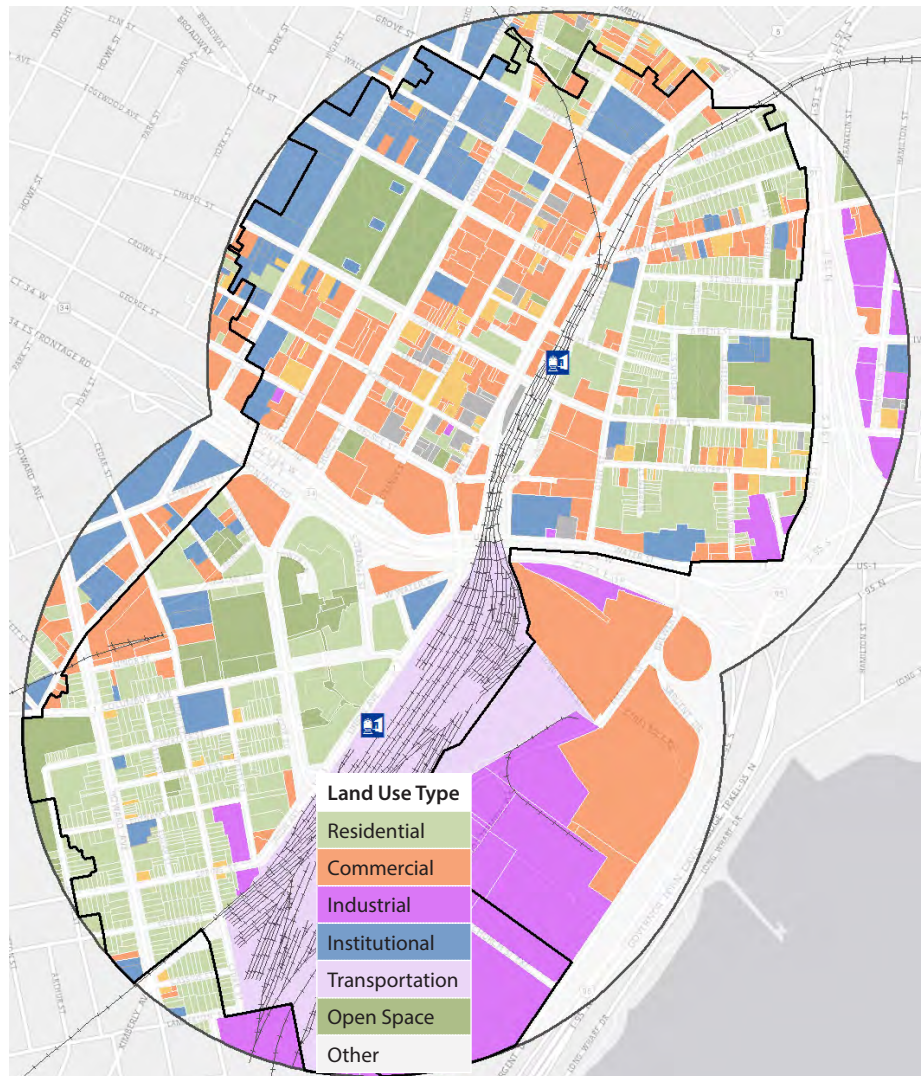
A 2008 TOD study for Union station recommended building two garages, one north and one south of the station. The proposed garages double the parking capacity of Union Station by adding approximately 1,200 spaces.

Land Use

Of the 574 acres within the 1/2 mile walkshed, 199 acres (35%) are occupied by transportation infrastructure such as roadways and the rail line and station site. 126 acres (22%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 55 acres (10%), and dedicated open space occupies 8 acres (1%). The total remaining parcel area, being commercial, industrial, vacant or underutilized residential land is 186 acres.



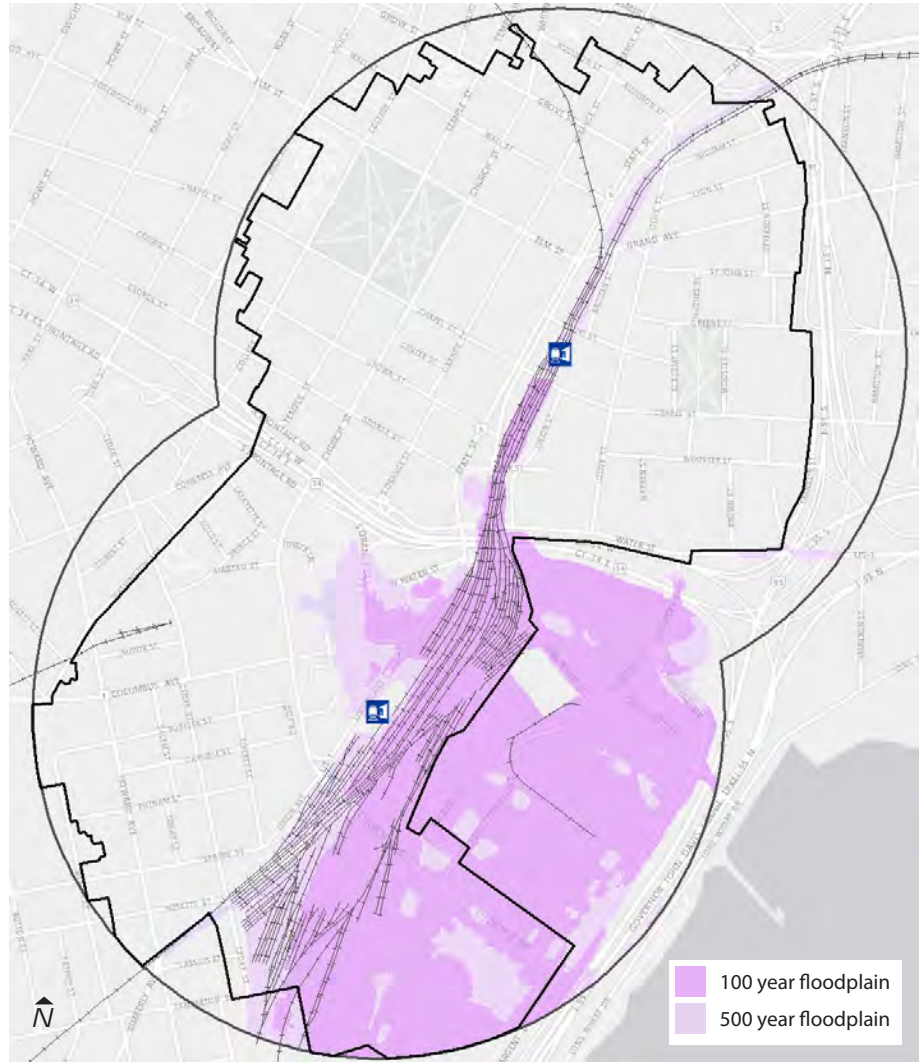
Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 22% of the 1/2 mile walkshed.



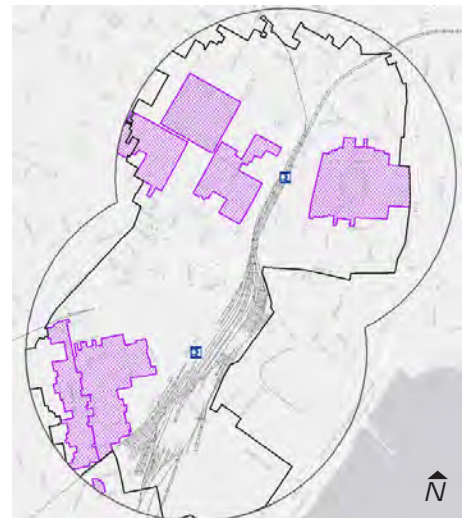
Environmental & Historical Features

A significant percentage (24%) of the station area walkshed is within the 100 or 500 year floodplain. Most of this area is in the Long Wharf area to the east of Union Station. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas.

24% of dry land within the 1/2 mile walkshed is within a floodplain



There are several National Register Historic Districts in proximity to both stations. These districts include the New Haven Green, Wooster Square, Ninth Square, Chapel Street, Trowbridge Square, and Howard Avenue. National Register Districts are less restrictive than local or state districts and do not prohibit the redevelopment of properties.



Zoning Recommendations

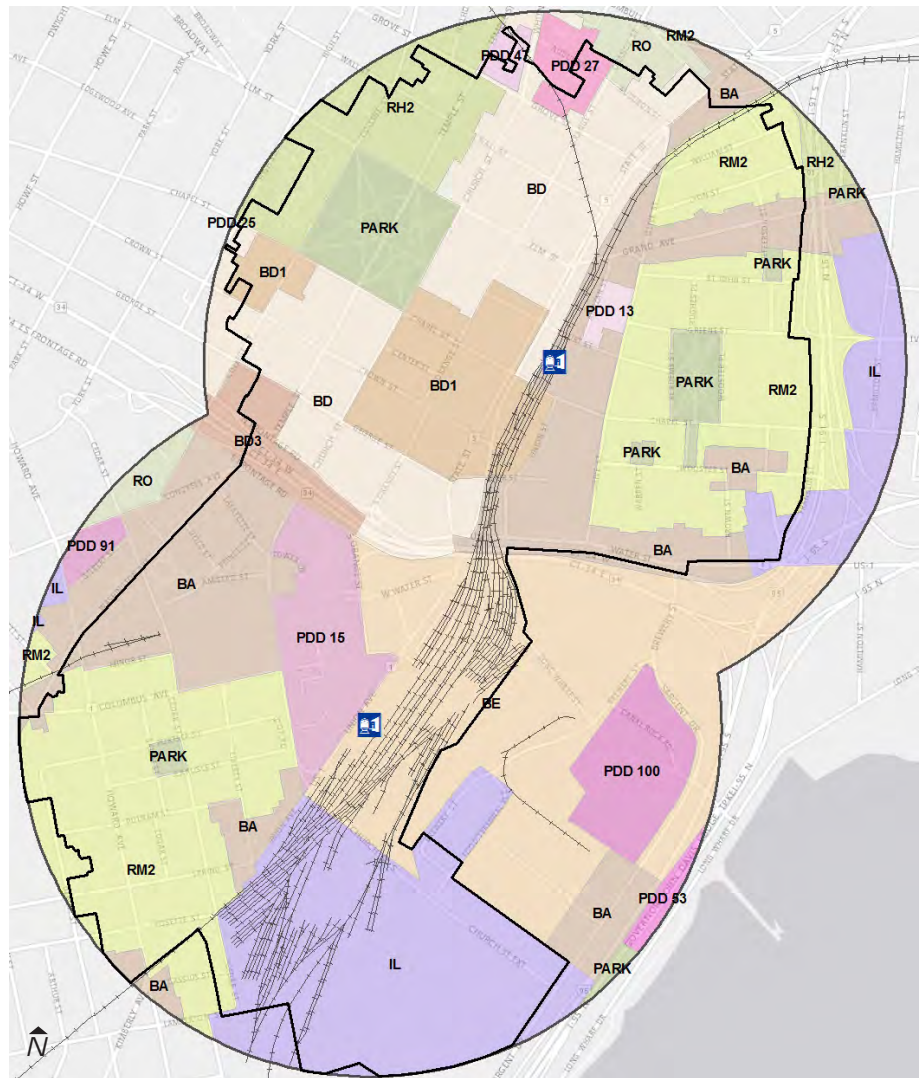
➔ *Rezone Long Wharf area to allow for high density residential and mixed-use development*

The existing light industrial and wholesale & distribution zoning in the Long Wharf area do not support residential or mixed use development. This area has good access to Union Station and views of the waterfront.

Zoning

New Haven has ten different zoning district types within the combined station areas, this includes multiple separate planned development districts. The existing zoning in the immediate vicinity of the station site is industrial zoning that prohibits residential uses. The prominent zoning districts include the following:

- RM-2: intended for high density residential – does not allow non-residential uses unless essential to the residential purposes, yet permits live-work lofts; allows 4 story buildings and 22 dwelling units per acre, yet limits lot coverage to 30%; has flexible parking standards and requires minimum usable open space.
- BA: General Business District: It permits uses allowed in the RM-2 District and Live-Work Lofts; it prohibits Mixed-Uses that have upper floor residential where the lower floor is a high traffic retail/convenience commercial generator
- BD: Central Business District: Permits a mix of residential and non-residential uses, yet it prohibits mixed-uses that have upper floor residential where the lower floor is a high traffic retail/convenience commercial generator; development can be at high intensities (permits FAR of 6), includes design standards and flexible parking standards
- BD-1: area of historic structures suitable for mix of residential and commercial uses while retaining historic character of an urban neighborhood (permits FAR of 3), and it prohibits mixed-uses that have upper floor residential where the lower floor is a high traffic retail/convenience commercial generator; it requires a minimum of usable open space, and includes design standards and flexible parking standards



Zoning Legend

PARK:	Open Space
RH2:	General High Density
RM2:	Low Middle Density
RO:	Residence-Office
BA:	General Business
BE:	Wholesale & Distribution
BD:	Central Business
BD1:	Central Business/Residential
IL:	Light Industrial
PDD13-	
PDD100:	Planned Development

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

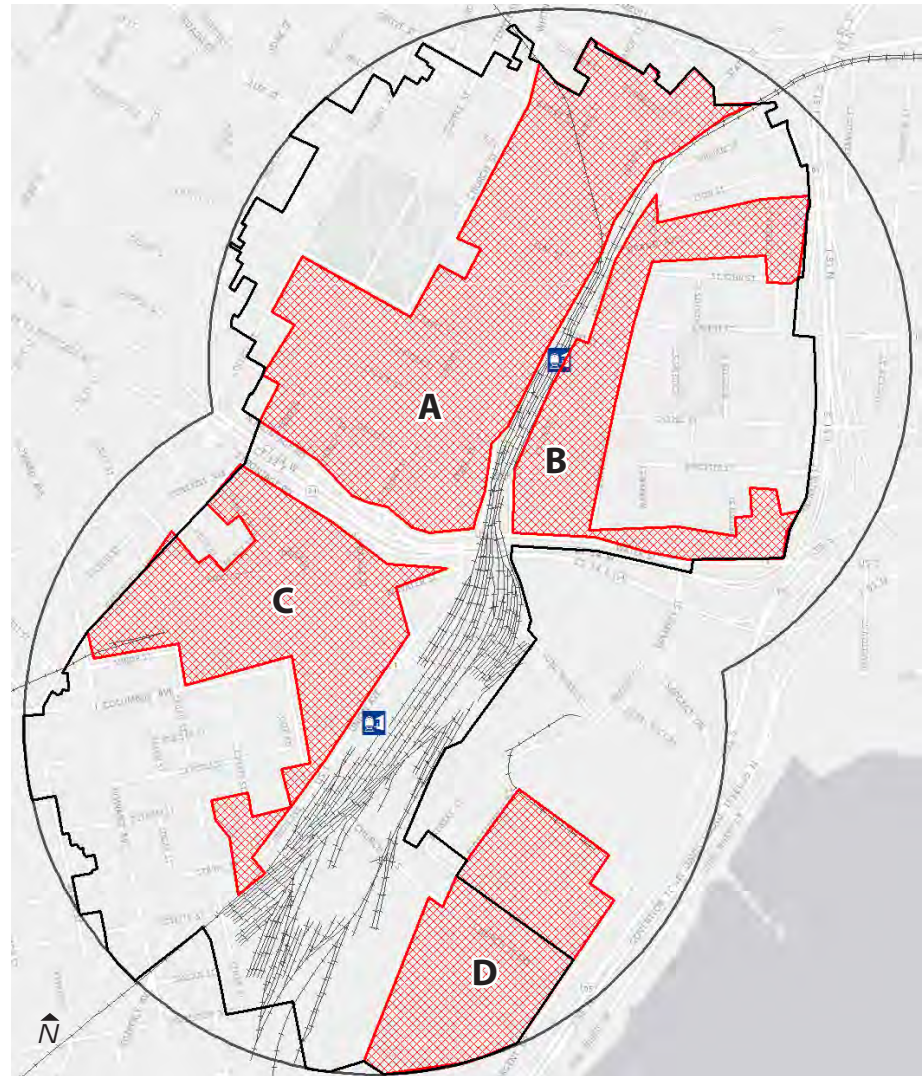
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area "walkshed".
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - a. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - b. Municipal and institutional parcels such as schools and churches
 - c. Protected open space such as public parks, cemeteries, and conservation areas
 - d. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
3. Subtract from the remaining area land that is physically prohibitive to development:
 - a. Wetlands
 - b. Water bodies
 - c. Floodways
4. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: This area includes Downtown New Haven which contains a mixture of high density commercial, retail, office, and residential land uses. TOD opportunities in this area would take the form of infill development and redevelopment of existing properties.

Area B: This area includes commercial properties to the east of State Street Station and west of the Wooster Square neighborhood. Redevelopment and infill development has potential along Olive Street, Water Street, and Grand Avenue.

Area C: This area has direct proximity to Union Station and is comprised of high density commercial, office, and residential land uses. A considerable amount space within this area is occupied by surface parking.

Area D: The Long Wharf area is a commercial/industrial area with a number of warehouses. Future redevelopment could include high-density housing, benefiting from views of the Harbor and access to Union Station.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	113.8	Commercial, retail, office, residential	Central Business, Central Bus./Residential	Historic districts
B	41.0	Commercial	General Business, Planned Dev. District	
C	61.9	Commercial, office, residential	General Business, Planned Dev. District	Floodplain
D	49.0	Commercial, industrial	Wholesale & Distribution, General Business, Light Industrial	Floodplain

**Inclusive of municipal right-of-way within each opportunity area*



1. New Haven Coliseum Site
 This 4.3 acre site is located within walking distance of both stations. A high density mixed-use development has been proposed for the site. The \$400m project has received \$21.5m in state bond funding.



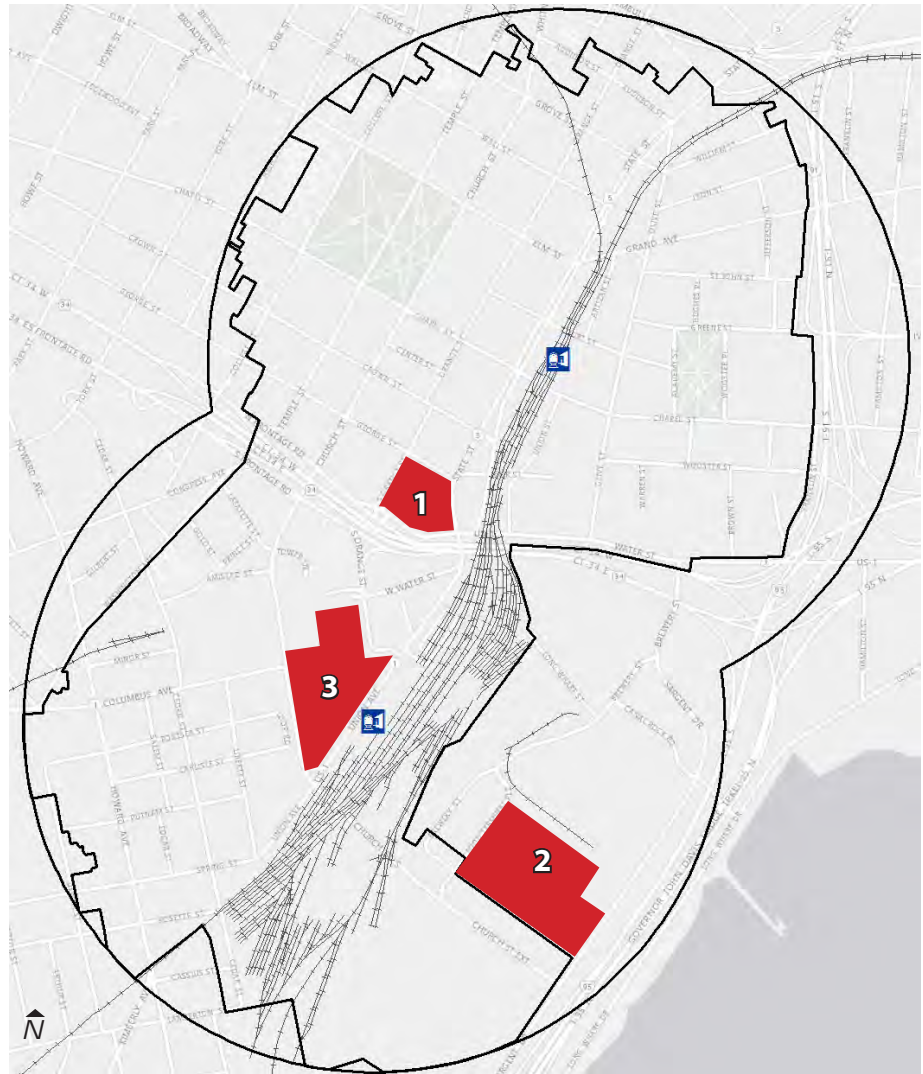
2. New Haven Food Terminal
 The terminal recently went into bankruptcy and the future of operations is uncertain. High-rise residential development has been discussed as a future potential use.



3. Church Street South
 Located directly across from the New Haven Union Station; this site is currently being used for subsidized housing with a history of deferred maintenance.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	4.3	Parking	Central Business		Planned high density, mixed-use development
2	18.3	Warehouse-Distribution	Wholesale/Distribution, General Business	Active land use	Tenant is in bankruptcy
3	12.5	Medium density housing	Planned Dev. District	Active land use	Buildings are in poor condition



The Shore Line East Corridor

Shore Line East is a commuter rail service that provides east-west service along the eastern shoreline of the state between New Haven and New London with limited express service to/from West Haven, Bridgeport and Stamford. Shore Line East runs most of its trains in the westbound direction from New London to New Haven during the morning commute period with the reverse pattern during the afternoon commuting period. Average weekday ridership is reported to be approximately 2,000¹ passengers per average weekday. The service has been continually upgraded with planned and programmed station improvements along the corridor with a steady and increasing ridership over the most recent years. The corridor includes five stations within the SCRCOG region: Guilford, Madison, Branford, New Haven–State Street, and New Haven–Union Station. Of these stations, Branford, Guilford and Madison Stations are served exclusively by Shore Line East and are detailed in this section.

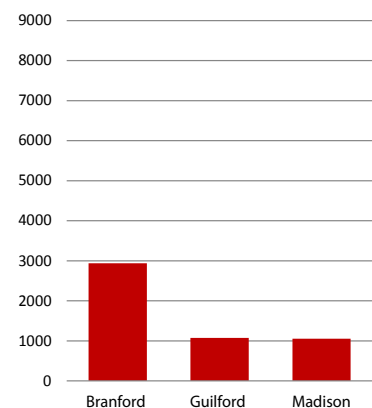


Population and Employment

All three communities have relatively low populations in the station areas, Branford having the greatest population of the three with 2,938 people¹. Guilford and Madison each have slightly more than 1,000 people within the station area¹. While lower station area populations suggest less local ridership, these areas also hold potential for gaining population.

Employment along the corridor is concentrated in the Town Center areas. The most prevalent industry sectors within one mile of the rail corridor include retail trade, health care & social assistance and accommodation & food services. Other high employment job sectors include educational services and professional, scientific & technical services².

2014 Station Area Population ¹

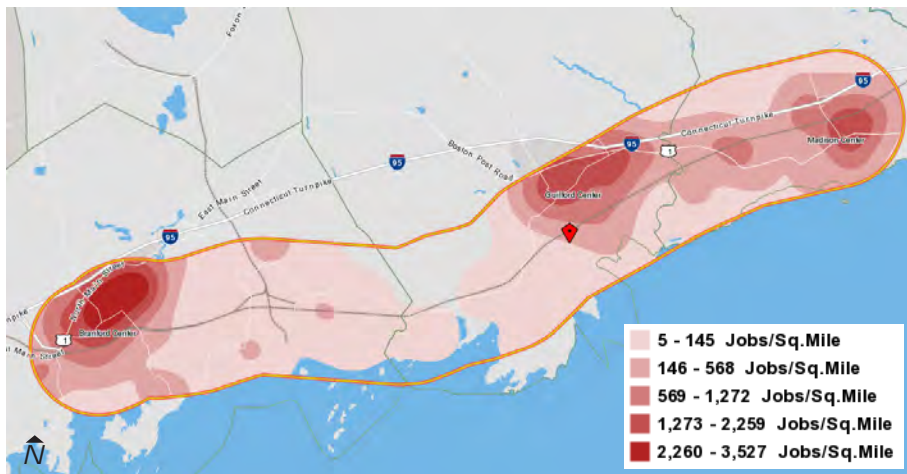


1. 2009-2013 American Community Survey

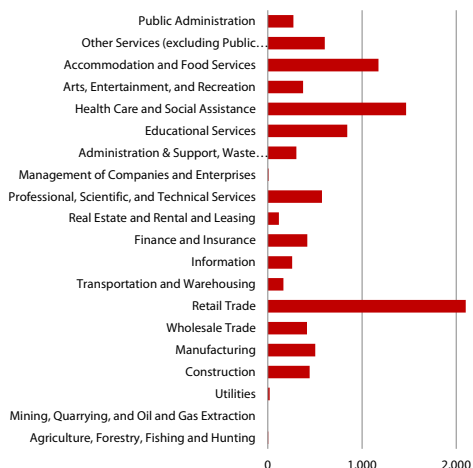
2. 2013 Census Origin-Destination Employment Statistics, OntheMap.com

Job Concentration, 2013¹

(Within 1 mile of Shore Line East corridor from Branford Station to Madison Station)



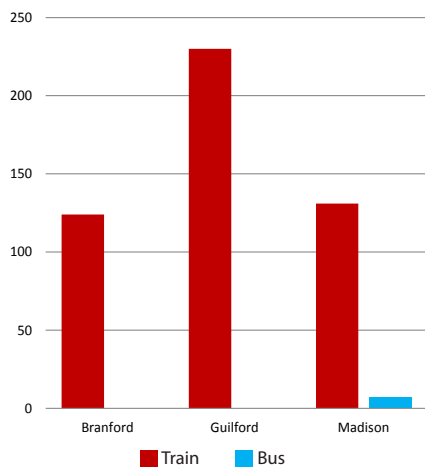
Jobs by Sector, 2013¹
(Within 1 mile of Shore Line East corridor from Branford Station to Madison Station)



Commuting Patterns and Level of Transit Service

Transit service level was measured as the number of departing transit trips per week per station. With 230 departures per week, Guilford has the most train departures per week of the three communities. Madison is the only station that has a bus connection at the station site, but this service only operates on Saturdays and has only seven departures.

Weekly Transit Departures per Station

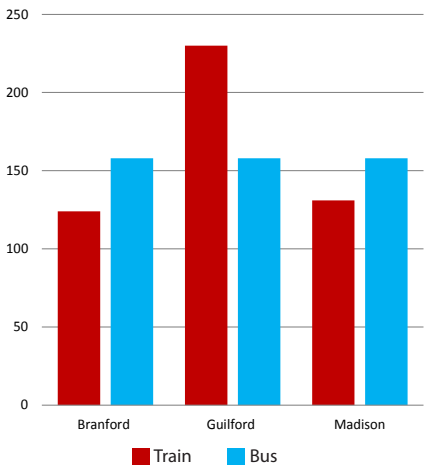


Potential future weekly departures were also estimated. Transit access at each station could be substantially expanded by modifying local bus routes (New Haven S line) to provide a stop at each station. Modification of this route would add an additional 30 departures per weekday and 8 total per weekend at each station.

Transit oriented development feasibility is greatly influenced by the level of service at the supporting station. Service on Shore Line East is low when compared to Metro North's service, but is not prohibitive of transit oriented development.

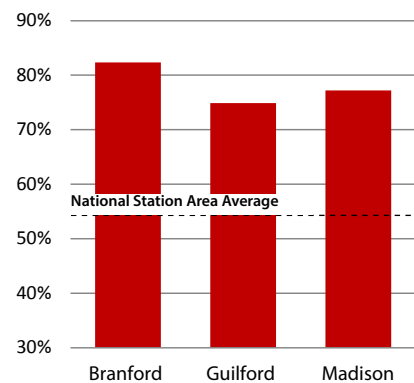
Data extracted for a three-minute driving radius indicates a relatively high number of workers drive alone to work from the Branford, Guilford, and Madison station areas². This varied from 75 to 82% for those stations. The national station area average of commuting by car of residents living in transit zones is 54%³. With all three stations well above this average, the level of automobile dependency is high.

Potential Future Weekly Transit Departures per Station

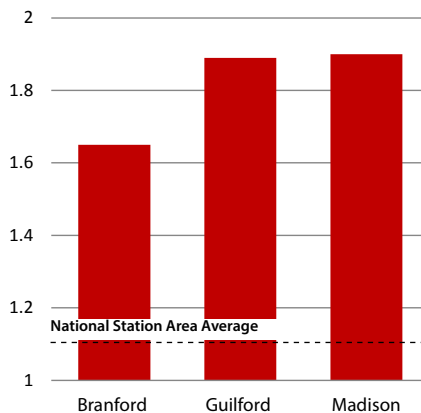


Drove Alone to Work²

(workers within a 3 minute driving radius of station)



Autos per Household within Station Area²

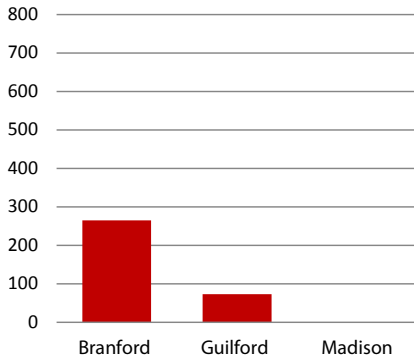


1. 2013 Census Origin-Destination Employment Statistics, OntheMap.com

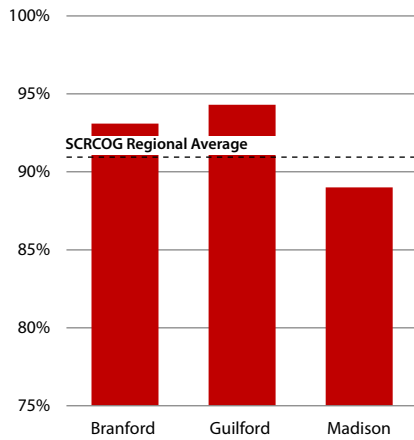
2. 2009-2013 American Community Survey

3. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004

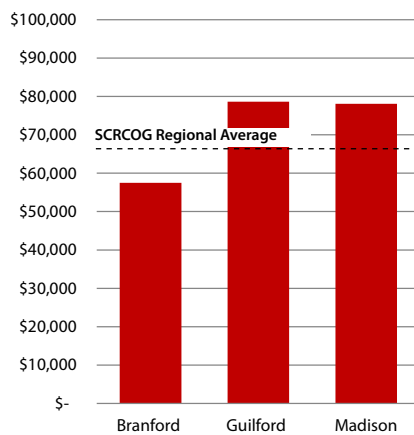
Planned Residential Units within Station Area



Housing Occupancy²
(within 3 minute drive of station)



Median Household Income²
(within 1/2 mile station radius)



The number of automobiles per household roughly corresponds to the commuting habits of residents. This figure ranges from 1.65 to 1.9 autos per household with the Branford station area having the lowest ownership per household and Madison and Guilford having the highest. The national station area average auto ownership per household is 1.1 vehicles¹. The high rate of car ownership compared to national rates suggests that station area residents depend upon private vehicles for commuting and personal trips.

Market Demand

Market demand is a key factor in determining the feasibility of transit oriented development. A key measure of this demand is the presence of residential development activity within the station area. Branford leads this metric with 265 units of housing planned or in development. Madison has no current activity.

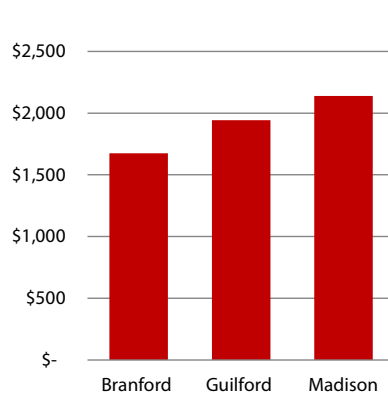
Other key measures of the market potential for development include the local housing occupancy and median household income. High housing occupancies suggest market demand for housing while high median household incomes demonstrate the spending potential of local residents. The median home value also suggests potential capacity of the local market to support new development.

Branford and Guilford have high occupancy rates (above 90%) which suggest a strong latent demand for additional housing². Madison’s occupancy rate lags slightly at 89%². Median station area household income is highest in Guilford and Madison (\$78,667, \$78,094 respectively) and lowest in the Branford area (\$57,520)². The highest median home value (\$379,082) of station areas along the Shoreline East corridor is in Madison, with the lowest in Branford (\$258,140)³.

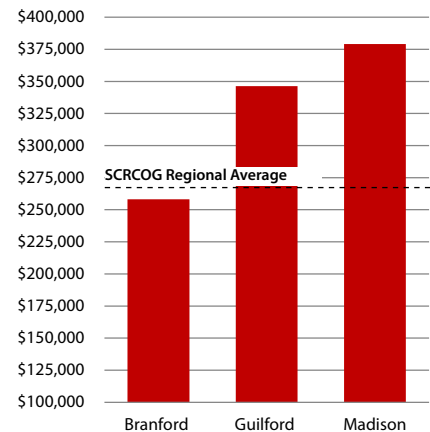
When compared to South Central regional averages, both Guilford and Madison exceed the regional average for median household income and home value. Of the three station areas, Madison is the only station area that falls below the regional average housing occupancy.

The monthly rental cost of residential dwellings is also a factor in determining the feasibility of transit oriented residential development. Higher rental costs are more supportive of new development. Of the three communities on the Shore Line East corridor, Madison has the highest monthly rental costs (\$2,139), followed by Guilford, and Branford which has the lowest monthly rental cost (\$1,675)³.

Monthly Rental Cost Index³



Median Home Value³
(within 1/2 mile station radius)

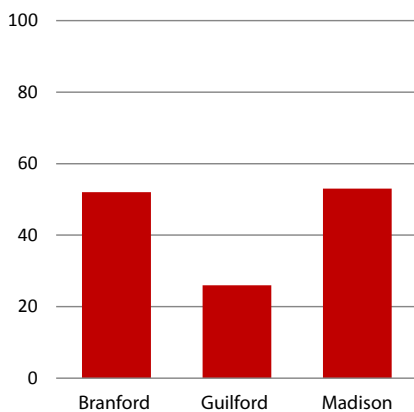


1. Center for Transit Oriented Development, *Hidden in Plain Sight*, September 2004
 2. 2009-2013 American Community Survey
 3. Zillow.com, *New Haven Metro Home Prices & Values*, (www.zillow.com/new-haven-metro-ct_r394908/home-values)

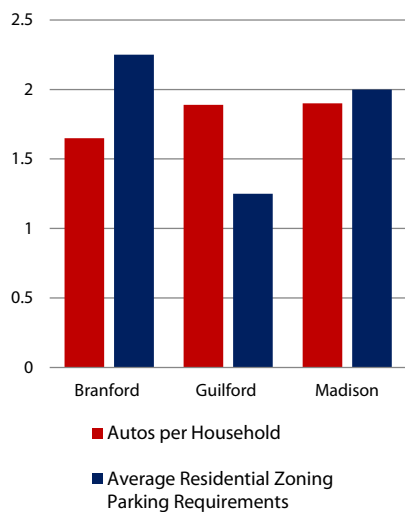
Miles of Roadway Within 1/2 mile Walk of Station Platform(s)



Walk Score¹



Autos per Household vs Zoning Parking Requirements



Station Area Connectivity

The level of pedestrian connectivity within the station area is a significant factor in the feasibility of transit oriented development. One measure of this connectivity is the total miles of roadway (assumed walkable) within a half mile walk of the station platform. Of the stations along the Shore Line East corridor, Branford Station has the highest connectivity, with Guilford and Madison having comparable levels of connectivity. Branford’s higher connectivity is due to the station’s proximity to the Town Center.

Another measure of pedestrian connectivity is the station Walk Score¹. This metric is based upon the level of street network connectivity and the number of services and destinations available within walking distance of the station. Branford and Madison have comparable Walk Scores, 52 and 53 respectively. Guilford’s Walk Score, owing to it’s distance from the town center, is lower at 26.

Sewer and Water Infrastructure

Adequate sewer and water infrastructure is critical for the feasibility of new development. All three towns have drinking water infrastructure in the station areas. Branford is the only town with sewer infrastructure in the station area.

Station Area	Drinking Water Infrastructure	Sewer Infrastructure
Branford	Yes: RWA	Yes
Guilford	Yes: CT Water	No
Madison	Yes: CT Water	No

Zoning

All three towns along the Shore Line East corridor have zoning that is supportive of transit oriented development. The zoning in each community is tailored to the needs of each town center, but is generally supportive of residential densities and mixture of uses that are necessary for transit oriented development.

Station Area	TOD Zoning	Notes
Branford	Supportive	Town Center Village District, Planned Development District
Guilford	Supportive	Town Center South Overlay Zone
Madison	Supportive	Mixed-use zoning in Downtown, Village Center Overlay District

In addition to TOD specific zoning, parking requirements as set forth by zoning can have an impact on the feasibility of TOD development. Lower parking requirements reduces the cost of construction and space dedicated to parking.

Both Branford’s and Madison’s requirements exceed the average autos per household. Branford’s average per household zoning requirement is 2.25 spaces per household (for the purpose of this analysis, a household is assumed to contain an average of two bedrooms) while the average ownership rate is only 1.65. Guilford has a higher average auto ownership per household, but it’s requirements are the lowest of the three communities, requiring only 1.25 parking spaces per household.

1. *walkscore.com*: Walk Score measures the walkability of any address by analyzing hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a 5 minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30 minute walk. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density.

Land Use and Environmental Conditions

Of the three towns along the Shore Line East corridor, Guilford has the largest area of parcels that are accessible within a 1/2 mile walk of the station area. This is due in part to large parcels in the proximity of the station area. Guilford is, however, constrained by significant floodplains in the station area that would add cost and regulatory burden to transit oriented development in much of the area.

The net area available to each community, after subtracting out land uses that won't support TOD, ranges from 60 acres in Madison to 44 acres in Guilford. This area is considered the TOD opportunity area. This calculation does not imply that property is available for development, but rather suggests a potential area that could be available for development or redevelopment under supporting conditions.

Methodology used in Establishing the TOD Opportunity Area

The methodology used in establishing the TOD Opportunity Area is outlined in detail in each station area section. The repetition of this information within the document is intended to ensure that the methodology is readily accessible within each station area section.

Station Area	Parcels within 1/2 mile walk (acres)	Municipal, Institutional, Transportation, Open Space Land Uses (acres)	Built-out Residential Areas (acres)	Wetlands & Water bodies within TOD Opportunity Area (acres)	Net TOD Opportunity Area* (acres)
Branford	229	29	122	10	68
Guilford	262	35	118	65	44
Madison	150	18	41	31	60

**Excludes municipal right-of-way within opportunity area*

1. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Shore Line East
Population	2,938
Households	1,358
Median household income	\$57,520
Median home value	\$258,140
Housing units	1,512
Autos per household	1.65
Commute via transit within 3 minute drive time	4%
Drive to work alone within 3 minute drive time	82%
Miles of roadway within 1/2 mile walk of station platform	6.5
Roadway with sidewalk on at least one side of road	68%
Walk Score	52
Departing transit trips from station per week	124
Weekday station ridership (2010)	214
Housing units planned or in development	265
Housing vacancy within 3 minute drive time	7%
Total number of businesses within 3 minute drive time	538
Total number of jobs	1,153

Branford

Branford Station is serviced by Shore Line East, which provides commuter rail service with 20 departing trains per day. The station area is comprised largely of residential land uses, commercial land uses primarily associated with the Town Center, and a small amount of industrial land and institutional land uses. The station is used primarily by commuters who arrive by car and park for free in the 417 space parking lot which is only approximately 50% utilized.

An “up and over” structure is currently being constructed. The structure will connect platforms on both sides of the tracks and will provide a more direct connection to Kirkland Street on the north side of the tracks.

The Town is eager to encourage development along the waterfront with 265 units of housing are currently being planned or in development. Active developments include 205 residential units and mixed-use development at the Atlantic Wire Building and 60 planned units at Anchor Reef which is situated along the waterfront with close proximity to the train station. Multiple other sites have potential for development including the Branford Landing Marina and Richlin Plaza.

Constraints to development within the station area include environmental constraints such as the floodplains which encompass the station site and much of the area near the tracks and contaminated sites associated with former industrial land uses. Much of the area is also comprised of single family home land uses which are not supportive of high density development or redevelopment.

The population within a 1/2 mile radius of the station is 2,938. Automobile dependency is relatively high with 1.65 autos per household and 82% of the local population of workers driving to work alone. The use of the station by commuters within the station area is relatively low, with only 4% of commuters travelling by transit (train or bus). Despite the automobile dependency, the station is within a ten minute walk of Branford Town Center where a number of goods and services are available. A sidewalk link is available between these locations and sidewalks are located on at least one side of the street on 68% of the station area roadways.

Planned infrastructure improvements include a greenway trail which is planned for Meadow Street where sidewalks are now lacking. The Town is also the recipient of a \$3 million grant to complete traffic and pedestrian improvements on Main Street in the Town Center.



Aerial view of station site. Source: Google Earth

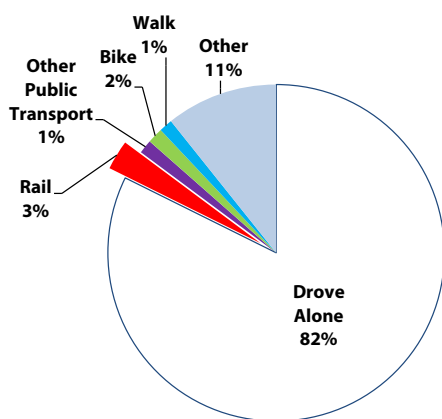
Branford

Transit Service

Shore Line East	20 departures per weekday, 12 total weekend departures
Bus	CT Transit New Haven S Line (no stop at station) and F3 Line (part time service only) 30 departures per weekday at nearest stop, 8 departures on Saturdays

Transportation to Work ¹

(workers within 3 minute drive of station)



Commuting Patterns of Workers to and from Branford Station Area² (Top 5 origins/destinations)

Inbound Commuters From	#	%
East Haven	88	7.6
New Haven	78	6.8
Branford	77	6.7
West Haven	35	3
North Haven	33	2.9
Outbound Commuters To	#	%
New Haven	276	18.8
Branford	119	8.1
Guilford	43	2.9
Hartford	43	2.9
North Haven	43	2.9

Commuter Patterns

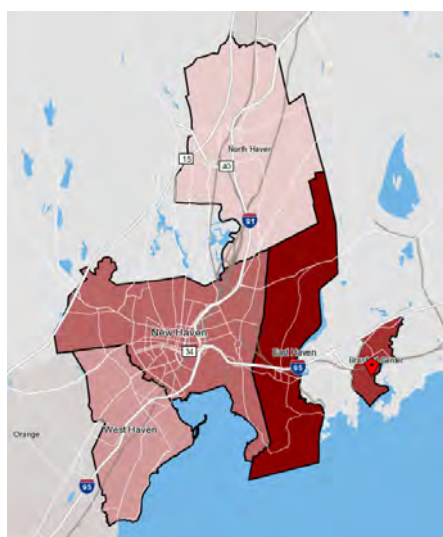
According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 82% driving alone to work, 3% using the train, and 1% using other transit such as the bus. Only 3% of commuters walk or bicycle to work.

The latest census based origin-destination employment statistics² show that 1,112 workers commute to the station area (area within 1/2 mile radius of station), with 1,430 workers who live in the station area commuting to work outside of the station area. A small number (41) of workers live and work within the station area.

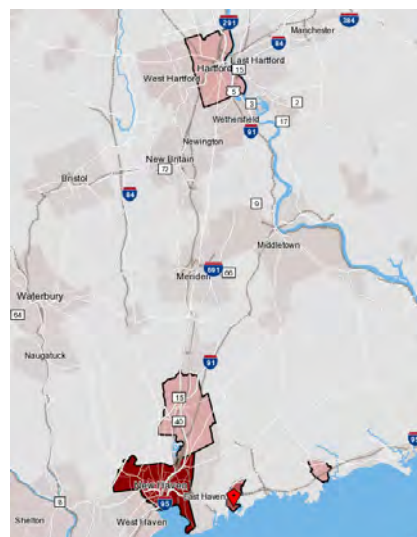


Of workers who commute to the station area, most commute from the East Haven, with New Haven being the second most common origin. Branford, West Haven, and North Haven are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is New Haven. This is followed by Branford, Guilford, Hartford and North Haven as the top five destinations of workers who reside in the station area.

Approximately 35.6% of commuters travelling to work from the station area have destinations in New Haven, Branford, Guilford, Hartford or North Haven. Given existing or proposed rail stations in those communities, these statistics would suggest the potential for expansion of transit use beyond the 3% of workers from the station area that currently commute via rail. This potential is governed by multiple factors including, but not limited to, the level of connectivity between place of employment and the local station.



Top five origins of workers who commute to Branford Station area.²



Top five destinations of workers who live in Branford Station area.²

1. 2009-2013 American Community Survey

2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OnTheMap.com

Market Assessment

Branford is a prosperous community with a 2012 median household income (MHHI) slightly over \$70,000, which itself is slightly above the Connecticut median¹. The Town is home to approximately 28,000 residents and it enjoys quick access to New Haven and is only 72 miles to New York City and less than 50 miles to Stamford. The town has a well-educated population as would be expected with the high MHHI. The predominant form of housing is single family but holds a significant percentage of renters relative to the state average.

Branford’s train station has the benefit of very good parking, the proximity of available land, new multi-family housing, an underutilized former mill building and marinas with access to Long Island Sound. It is, however, somewhat distant from the commercial center, with the Branford Town Center nearly 3/4 of a mile away.

Transit Oriented Development potential of Branford is promising. Branford Tapestry profiles suggest lifestyle groups that are attractive to new residents with income levels that are near state averages which should be adequate to support development. Surplus/leakage reports indicate potential for retail development and proximity to the marina and town center is attractive for potential residents.

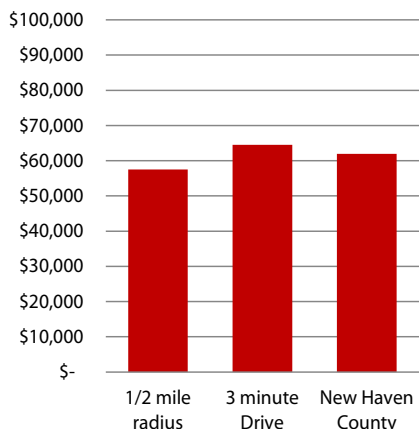
However, there are still challenges that need to be addressed to maximize development potential. The station has limited retail trade in its immediate vicinity, with the closest retail district (Main St.) 0.4 miles away. Main St. is limited in scope due to current Restricted Business (BR) zoning. Current housing stock surrounding the station is primarily single-family. There is limited multifamily development, primarily the Anchor Reef Club, in proximity to the station.

The median home value in the station area is \$258,140². Home values in Branford declined 1.2% between 2014 and 2015 and are predicted to rise 0.3% within the next year². The median single family home sales price in Branford increased 18.9% between 2014 and 2015 to \$352,500³. The median sales price of condo units in Branford decreased by 14.2% over the same period of time to \$151,900³.

Median Home Value Trends, Town of Branford ²

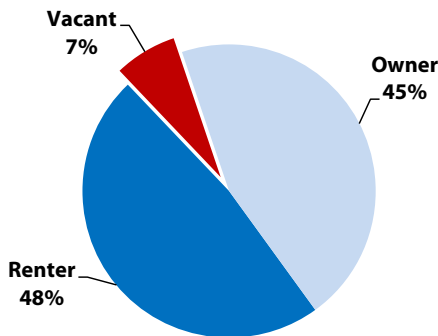


Median Household Income ¹



Household Income is approximately equal to the state average, with incomes slightly lower in the immediate station area.

Housing Occupancy ¹
(within 3 minute drive of station)



The vacancy rate is slightly above the state average of 6.8%. Rental rates are relatively high at 48% of housing.

1. 2009-2013 American Community Survey
 2. Zillow.com, Branford, CT Home Prices & Values, www.zillow.com/branford-ct/home-values
 3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

In Style

Average Household Size: 2.33
 Median Age: 41.1
 Median Household Income: \$66,000

Embrace an urbane lifestyle that includes support of the arts, travel, and extensive reading. Connected and make full use of the advantages of mobile devices. Professional couples or single households without children, they have the time to focus on their homes and their interests. The population is slightly older and already planning for their retirement.

Emerald City

Average Household Size: 2.05
 Median Age: 36.6
 Median Household Income: \$52,000

Live in lower-density neighborhoods of urban areas. Young and mobile, they are more likely to rent. Well educated and well employed. Incomes from wages and self-employment. Highly connected, using the Internet for entertainment and making environmentally friendly purchases. Enjoy cooking adventurous meals using local and organic foods. Music and art are major sources of enjoyment. Travel frequently, both personally and for business.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

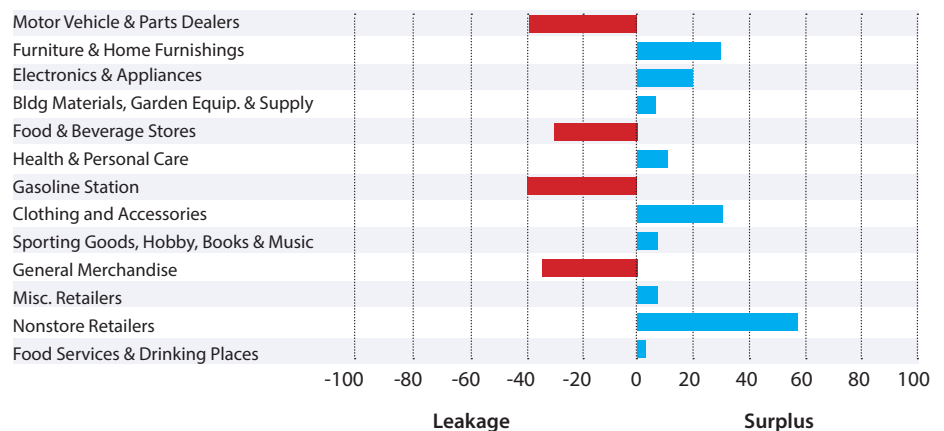
The median monthly rental list price in Branford is \$1,680, which is higher than the New Haven Metro median of \$1,295. The monthly rental cost index, which is a calculation of listing prices and actual rental costs is slightly higher at \$1,782. Rents in Branford have gradually increased since 2011, reaching a five-year high in 2015¹.

Monthly Rental Cost Index, Town of Branford ¹



Branford's Town Center is northeast of the station area, contributing to a relatively strong retail presence within walking distance of the station. Retail sectors that are supportive of transit oriented development are underrepresented in the station area, these include food & beverage stores and general merchandise.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Branford, CT Home Prices & Values, www.zillow.com/milford-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

- ➔ *Modify CT Transit bus route to provide a stop at station.*

CT Transit's S line provides service on Main Street, but does not stop at the station. Modifying the route to include a station stop would improve local connectivity and cause only a minor delay to bus service.

- ➔ *Provide sidewalks west of the station site to improve access from the west.*

Sidewalks are currently lacking on Curve Street, West End Avenue, Bridge Street, Bradley Street and North Harbor Drive. Providing sidewalks in this area would improve the safety of pedestrians currently walking and encourage additional walking trips to the station.

- ➔ *Provide a pedestrian entrance at Harbor Street*

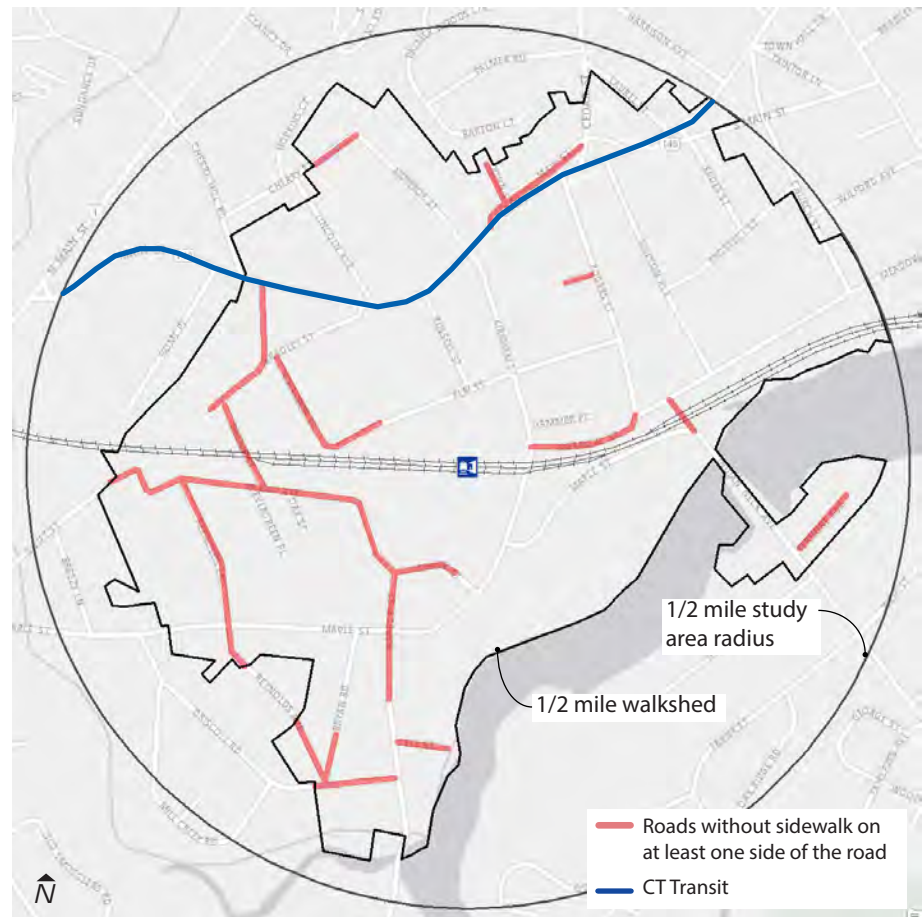
The existing station access at this location is for emergency only and is currently gated. Creating a pedestrian entrance at this location would improve access to the station.

Connectivity

Of the 502 acres located within a 1/2 mile radius of the station, 270 parcel acres (total area of parcels with frontage on a public roadway within a 1/2 mile road distance of the station) are accessible within a 1/2 mile walk of the station. The map at right displays the difference between the two areas.

Access to the train station is primarily served from the north by a single road, Kirkham St./Maple St. with its other bridge going through a single lane residential neighborhood.

Thirty-two percent of roadways within the walkshed do not have sidewalks on at least one side of the street. Because of the station's proximity to the Town Center, the area has a walk Score of 52 (out of 100) points, designating the area as "somewhat walkable".



Parking

There are 471 parking spaces located in two public lots at Branford Station. Parking at the station is free and is managed by the Connecticut Department of Transportation. The western lot, which holds 272 spaces, was opened in 2011 and was built due to considerable parking demand that was not met by the original 199 space lot immediate south of the station facility. Both lots are well utilized on a daily basis.

A limited amount of parking will also be provided on the north side of the station upon completion of ongoing construction of an overpass and platform on the north side of the tracks.

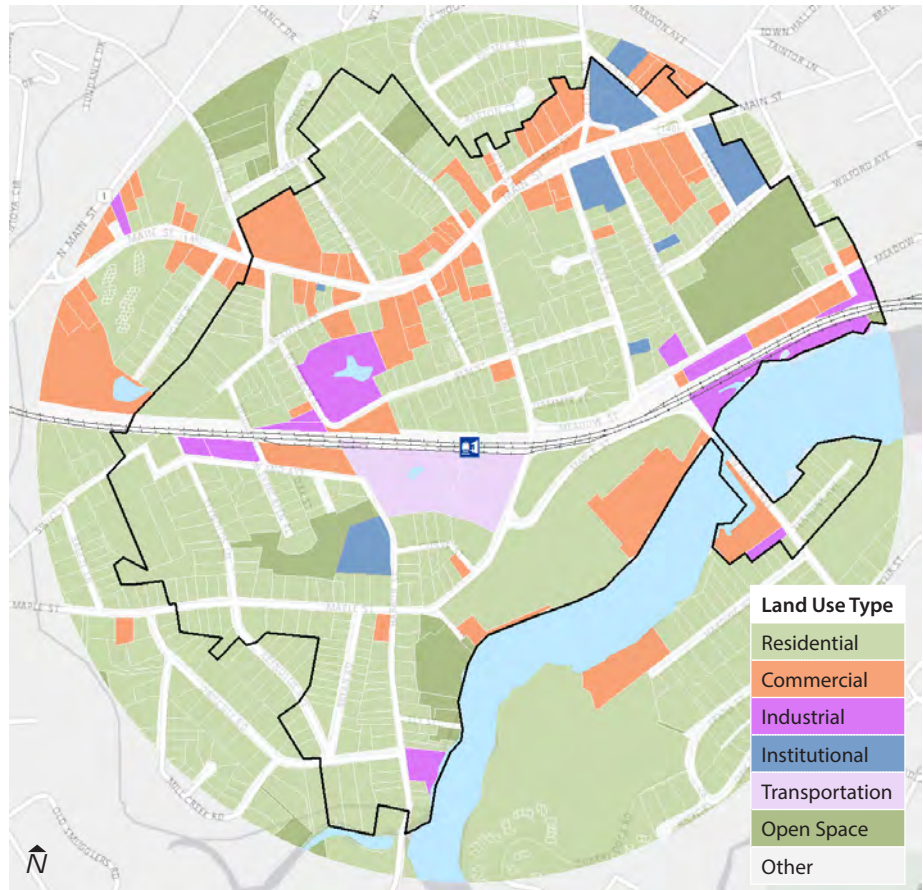


Parking is located in one of two public lots south of the station. A third, smaller lot north of the station is being constructed.

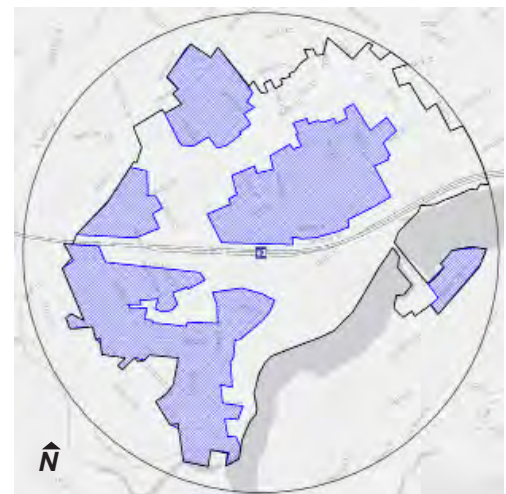
Land Use

There are 270 parcel acres within the 1/2 mile walkshed, 50 of those acres (19%) are occupied by transportation infrastructure such as roadways and the rail line and station site. 122 acres (45%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 9 acres, and dedicated open space occupies 12 acres.

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 72 acres. Of this 72 acres, 10 acres are occupied by waterbodies or wetlands leaving 62 parcel acres that are potentially available for transit oriented development or redevelopment.



Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 47% of the 1/2 mile walkshed.



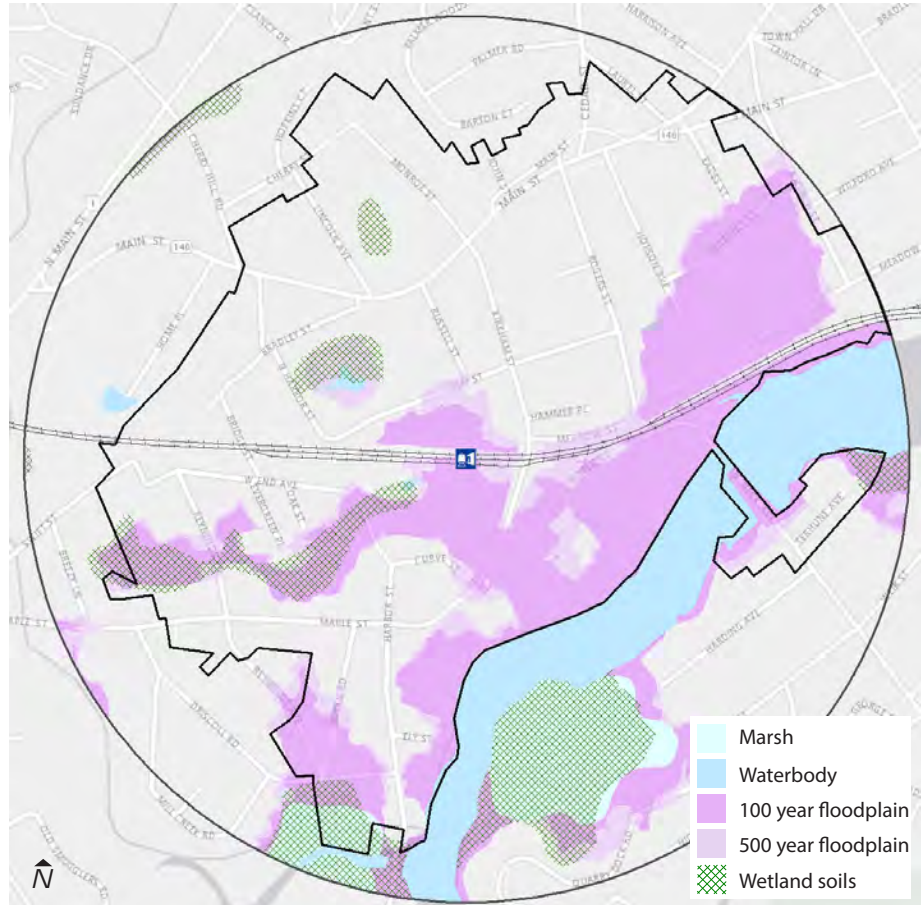
Environmental & Cultural Features

Nine percent (9%) of the watershed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. Additionally, 102 acres (38%) of the watershed is located within a 100 year or 500 year floodplain. The total dry land area within the floodplain is 84 acres which comprises 31% of the watershed area. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

38% of the 1/2 mile watershed is within a floodplain

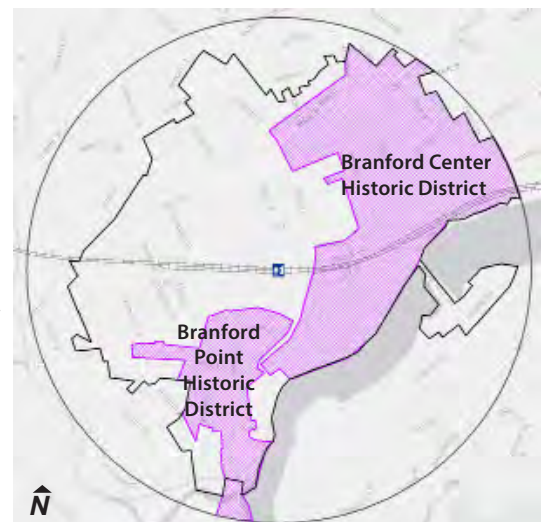
9% of the 1/2 mile watershed is covered by wetlands and/or waterbodies

31% of dry land within the 1/2 mile watershed is within a floodplain



The Branford Center Historic District covers much of the Town Center and extends to the Branford River to the south and Kirkham and Cedar Streets to the west. The Branford Point Historic District is located principally along Harbor and Maple streets and on Bryan Road.

The map at right shows the area of both districts located within the 1/2 mile study area radius. The districts are National Register districts, as such are not highly restrictive of development.



Zoning Recommendations

➔ *Change the General Light Industrial (IG-1), Restricted Business (BR), and Local Business (BL) zoning in the station area to TOD supportive zoning that allows residential development.*

While these areas are within the Town Center Village District, residential development is not permitted within these underlying districts.

Zoning

Branford has eight different zoning districts within the ½ mile station radius. The existing zoning in the immediate vicinity of the station site is industrial zoning that prohibits residential uses. Residential zones are the predominant zoning type within the ½ mile radius - it is strictly for residential and accommodates up to about 8 units per acre – structures can be no more than 3 stories.

The BR zone (Business Residential) which stretches through the northern half of the station walkshed is an area designated for commercial and residential development while retaining residential character. This is an area where former residential uses are transitioning to commercial – but offers no TOD supportive elements such as high densities, and flexible parking standards.

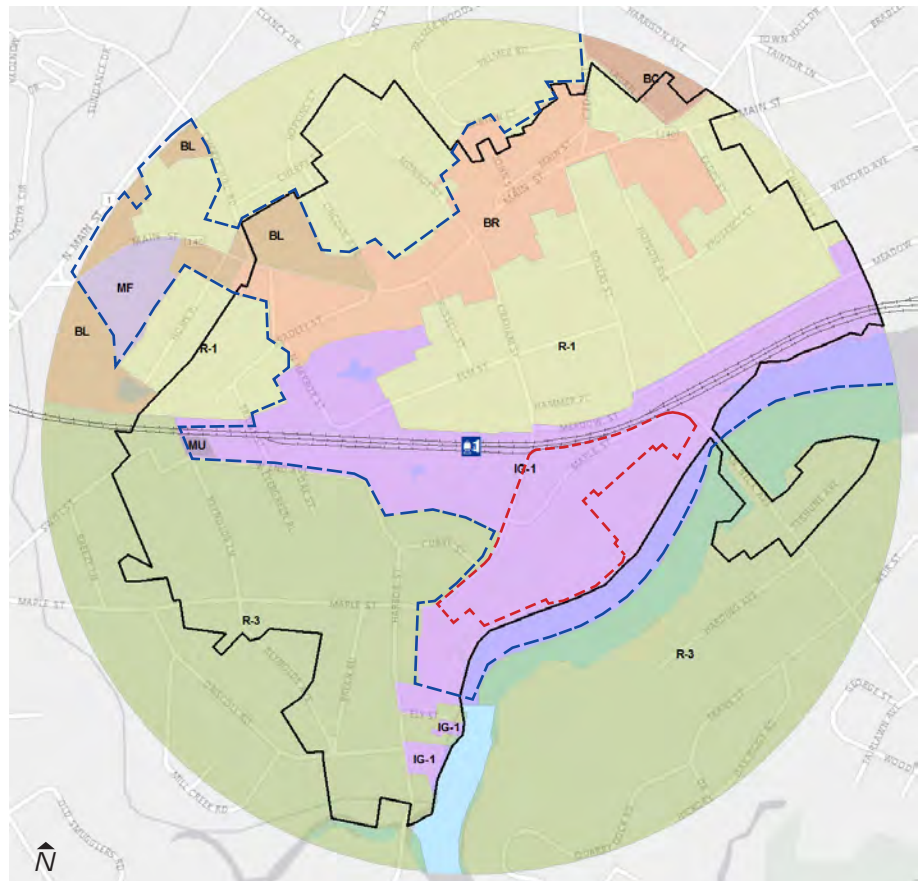
Additionally, comprising much of the study area is the Town Center Village District (TCVD) which overlays the existing districts to insure that the development, preservation, or use of land proceeds in a manner that focuses on design principles and results in creative solutions that preserve the village and historic character of the district. Only uses which are permitted in the underlying zones are permitted in the TCVD.

A Planned Development District (PDD) is also located within proximity of the station. The PDD permits the use of land, buildings and other structures for purposes that would be beneficial to and consistent with the character of the Town and the long range improvement of the neighborhood and consistent with any comprehensive plan of development. Included in the permitted uses is residential development.

Town-wide design guidelines are also in place that encourage place-making, landscaping and pedestrian accommodation, all of which are TOD supportive elements.

Zoning Legend

- BC: Business Center
- BL: Local Business
- BR: Restricted Business
- IG-1: General Industrial
- MU: Mixed Use
- R-1: Residential
- R-3: Residential
- MF: Multi-Family
- Planned Dev. District
- Town Center District



Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

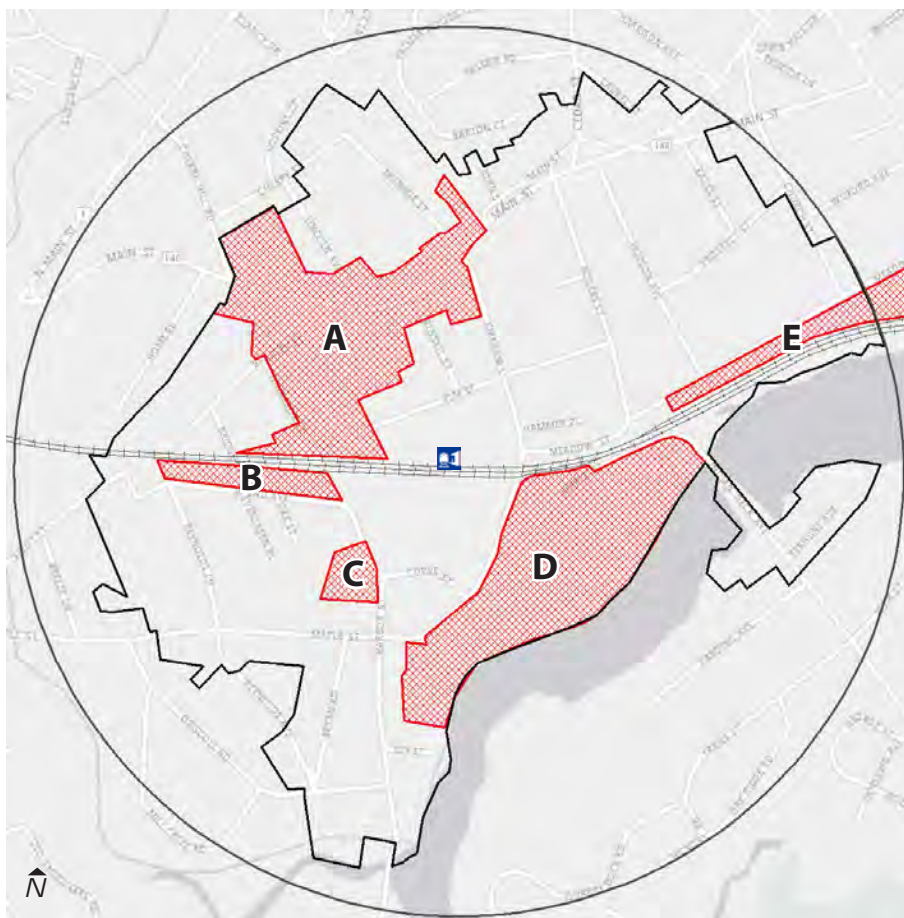
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - a. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - b. Municipal and institutional parcels such as schools and churches
 - c. Protected open space such as public parks, cemeteries, and conservation areas
 - d. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
3. Subtract from the remaining area land that is physically prohibitive to development:
 - a. Wetlands
 - b. Water bodies
 - c. Floodways
4. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: The area, in the vicinity of North Harbor Street, Elm Street, and Main Street includes the “Fourth Ward” area which is currently occupied by commercial land uses and includes small areas of vacant land. The area is situated within a residential setting and may be suitable for medium density residential development.

Area B: This area is comprised of a vacant lot and commercial properties and has direct access to the west end of the station site.

Area C: This area is comprised of a two acre municipally owned property that has potential for conversion to TOD.

Area D: This area includes vacant land located between the rail corridor and Indian Neck Avenue and the Anchor Reef development where an additional 60 residential units are currently being planned for the site. The area also includes a large marina and boat storage site that has potential for future waterfront development. Stony Creek Brewery has recently been developed on the northeast corner of the development area.

Area E: This area includes the Atlantic Wire Site which is currently being developed as a mixed use building with 205 residential units. While much of the site extends beyond the study area, the parcel is accessible within a 1/2 mile walk of the station platform. Adjacent properties on Meadow Street to the west are currently occupied by industrial and commercial uses. Much of this area is comprised of vacant land or underutilized parking areas.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	28.1	Commercial	Local Business, Restricted Business, General Industrial, Town Center District	Wetlands, Floodplain
B	3.1	Commercial	General Industrial, Town Center District	
C	2.1	Municipal	Residential	Floodplain, Historic District
D	26.9	Residential, Commercial	General Industrial, Town Center District, Planned Dev. District	Floodplain, Historic District
E	7.9	Mixed Use	General Industrial, Town Center District	Floodplain, Historic District

**Inclusive of municipal right-of-way within each opportunity area*



1. Anchor Reef

Located between Indian Neck and Kirkham Avenues, this lot is part of the larger Anchor Reef site. Development has yet to be proposed for this 1.7 acre site, but its proximity to the station makes it promising for development.

2. Branford Landing

This 4.6 acres site is currently used as a marina. The waterfront property has good access to the station site and is bordered by the Anchor Reef development.



3. Richlin Plaza

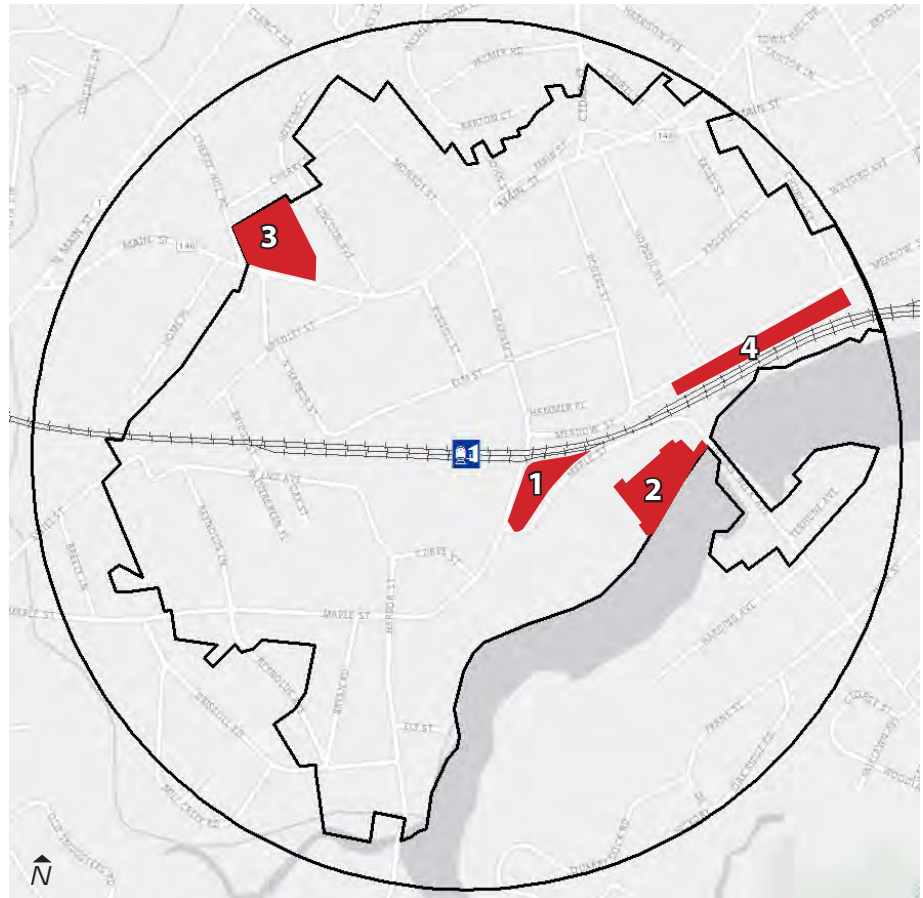
This 3.6 acre site is occupied by an aging shopping center and has been identified by the Town as having potential for redevelopment.



4. 95-155 Meadow Street, 2 Church Street
These multiple parcels are currently occupied by commercial and industrial uses and are within walking distance of the train station. Combined they total 3.2 acres.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	1.7	Undeveloped	General Industrial, Town Center District, Planned Dev. District		Part of the larger Anchor Reef site, development has yet to be proposed
2	4.6	Boat Yard	General Industrial, Town Center District, Planned Dev. District	Active land use	Waterfront views, close proximity to station
3	3.6	Shopping Center	Local Business, Town Center District	Active land use	Aging shopping center
4	3.2	Commercial/Industrial	General Industrial, Town Center District	Active land uses	Adjacent to Atlantic Wire site, waterfront views



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Shore Line East
Population	1,077
Households	494
Median household income	\$78,667
Median home value	\$346,382
Housing units	536
Autos per household	1.89
Commute via transit within 3 minute drive time	4%
Drive to work alone within 3 minute drive time	75%
Miles of roadway within 1/2 mile walk of station platform	3.1
Roadway with sidewalk on at least one side of road	68%
Walk Score	26
Departing transit trips from station per week	230
Weekday station ridership (2010)	214
Housing units planned or in development	73
Housing vacancy within 3 minute drive time	5.7%
Total number of businesses within 3 minute drive time	260
Total number of jobs	468

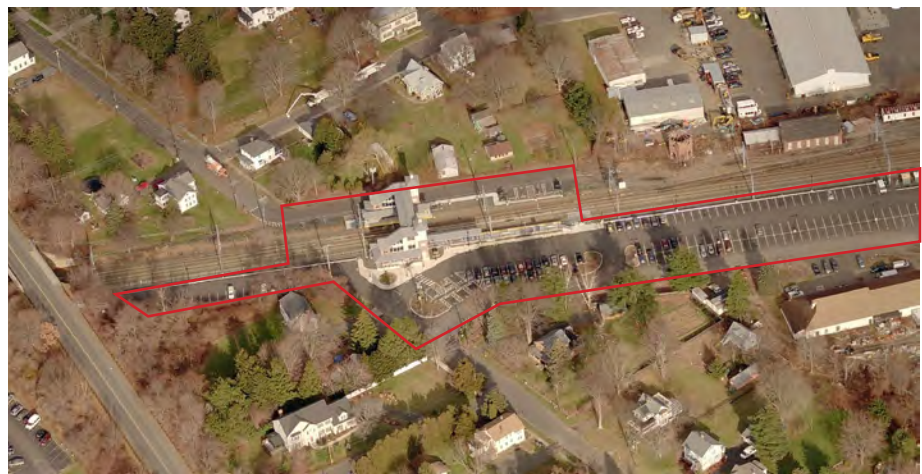
Guilford

Guilford Station is serviced by Shore Line East, which provides commuter rail service with 36 departing trains per weekday. The station area is comprised of residential land uses with smaller amounts of open space, industrial and commercial land uses. The station is used primarily by commuters who arrive by car and park for free in the station lot which is heavily utilized. Property on the north side of the tracks is being considered for a parking structure. However, there are no immediate plans for the development of additional parking.

The Town is interested in encouraging new development in the station area. A 15-unit townhouse development has been approved on the Arrow Paving property on Whitfield Street. Additionally, the Town is currently reviewing plans for an industrial-style apartment complex with 58 units, at 66 High Street, and if approved would be the first of its kind in Guilford. There is potential for development along the waterfront and on parcels near the public works garage and yacht club. Industrial site development is more encouraged by the Town. Much of the area is also comprised of single family home land uses which are not supportive of high density development or redevelopment.

The primary constraint to development within the station area is the lack of a sewer system that would support development. Independent sewer feasibility studies have been conducted; however, the Town is concerned about the financing, implementation, and service area for a new system. There are no current approved plans for a new sewer system in the area surrounding the station.

The population within a 1/2 mile radius of the station is 1,077. Automobile dependency is relatively high with 1.89 autos per household and 75% of the local population of workers driving to work alone. The use of the station by commuters within the station area is relatively low, with only 4% of commuters travelling by transit (train or bus). Despite the automobile dependency, the station is within a ten minute walk of Guilford Town Center where a number of goods and services are available. A sidewalk link is available between these locations and sidewalks are located on at least one side of the street on 68% of the station area roadways.



Birdseye view of station site. Source: Bing Maps

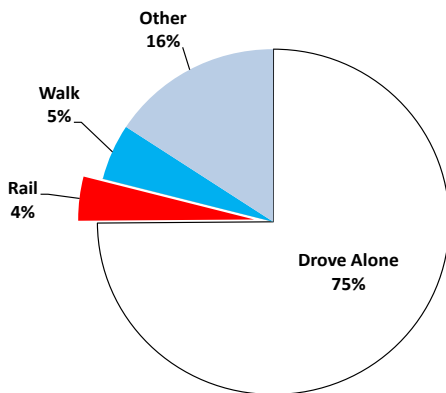
Guilford

Transit Service

Shore Line East	36 departures per weekday, 25 total weekend departures
Bus	CT Transit New Haven S Line (no stop at station), 30 departures per weekday at nearest stop, 8 departures on Saturdays

Transportation to Work ¹

(workers within 3 minute drive of station)



Commuting Patterns of Workers to and from Guilford Station Area² (Top 5 origins/destinations)

Inbound Commuters From	#	%
East Haven	27	5.8
New Haven	26	5.6
Guilford	23	4.9
Branford	13	2.8
West Haven	10	2.1
Outbound Commuters To	#	%
New Haven	68	21.7
Guilford	61	19.4
Milford	11	3.5
Branford	8	2.5
Meriden	8	2.5

Commuter Patterns

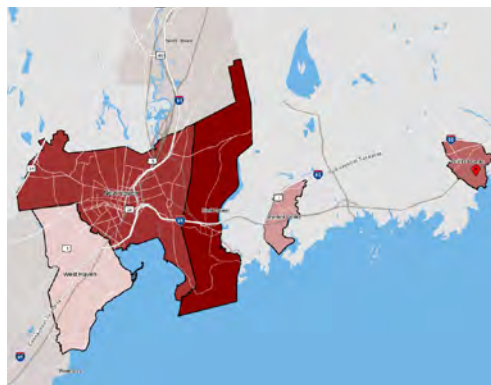
According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 75% driving alone to work. Transit use and walking to work is relatively low with only 4% using the train and 5% of commuters who walk to work.

The latest census based origin-destination employment statistics² show that 465 workers commute to the station area (area within 1/2 mile radius of station), with 311 workers who live in the station area commuting to work outside of the station area. A small number (3) of workers live and work within the station area.

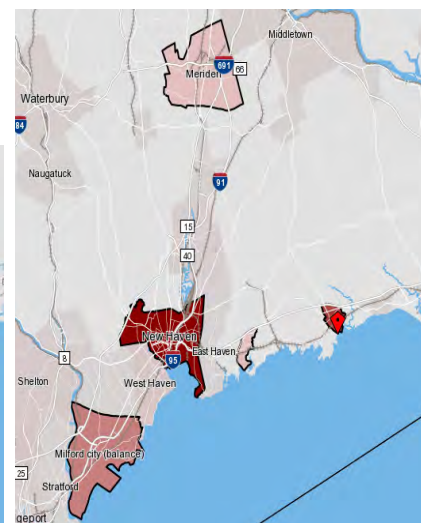


Of workers who commute to the station area, most commute from the East Haven, with New Haven being the second most common origin. Guilford, Branford, and West Haven are also the most common origins of workers in the station area. The top destination of workers who reside in the station area is New Haven. This is followed by Guilford, Milford, Branford, and Meriden as the top five destinations of workers who reside in the station area.

Approximately 30.2% of commuters travelling to work from the station area have destinations in New Haven, Milford, Branford, or Meriden. Given existing or proposed rail stations in those communities, these statistics would suggest the potential for expansion of transit use beyond the 4% of workers from the station area that currently commute via rail. This potential is governed by multiple factors including, but not limited to, the level of connectivity between place of employment and the local station.



Top five origins of workers who commute to Guilford Station area.²

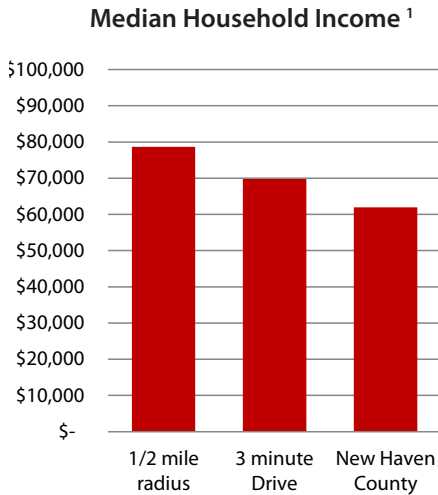


Top five destinations of workers who live in Guilford Station area.²

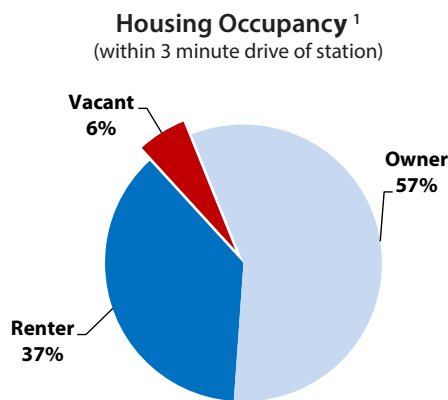
1. 2009-2013 American Community Survey

2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OnTheMap.com

Market Assessment



Household income is approximately equal to the state average, with incomes higher away from the station area.



Housing vacancy varies only slightly with distance from the station. Vacancy in the station area (5.7%) is only slightly lower than the state average (6.8%).

Guilford is a prosperous community with a 2012 median household income (MHHI) over \$95,745, which itself is significantly above the Connecticut median of nearly \$68,000¹. The Town is home to approximately 22,353 residents and it enjoys quick access to New Haven and is 75 miles from Providence and less than 32 miles to Hartford. The town has a well-educated population as would be expected with the high MHHI. The predominant form of housing is single family, with a significantly higher percentage than the state average.

Guilford train station is relatively new, being built in 2005. It is proximate to the Guilford Center being just over 1/2 a mile away and has access to the marinas on the Long Island Sound. It does, however, lack available developable land, with the majority of the land in the immediate station area being wetlands

Transit Oriented Development potential around the Guilford Station is weak when compared to other stations included in this study. The Guilford train station is outside of the customary 0.5 miles from Guilford’s attractive Town Center which reduces the potential for transit-originated businesses. The immediate station area is largely characterized by wetlands and land that is developable is currently being used for low-density residential, marine services and industrial uses. While Guilford Tapestry profiles reveal residents attracted to transit oriented development, the low population density in the surrounding area makes achieving critical density for such development difficult.

The realization of any potential transit-oriented development will require a long-term strategy to develop the Whitfield Street corridor south from Guilford Center. By encouraging higher density residential development in the Center and in the immediate station area along with some limited retail business along Whitfield Street, Guilford could facilitate capturing the benefit of the train station.

The median home value in the station area is \$346,382². Home values in Guilford declined 3.6% between 2014 and 2015 and are predicted to fall another 1.0% within the next year². The median single family home sales price in Guilford decreased 6.5% between 2014 and 2015 to \$359,900³. The median sales price of condo units in Branford increased by 34.9% over the same period of time to \$229,300³.

Median Home Value Trends, Town of Guilford 2



1. Zillow.com, Guilford, CT Home Prices & Values, www.zillow.com/guilford-ct/home-values
 2. Berkshire Hathaway 2015 Q2 Connecticut Market Report
 3. 2009-2013 American Community Survey

Dominant Socioeconomic Profiles ³

In Style

Average Household Size: 2.33
 Median Age: 41.1
 Median Household Income: \$66,000

Embrace an urbane lifestyle that includes support of the arts, travel, and extensive reading. Connected and make full use of the advantages of mobile devices. Professional couples or single households without children, they have the time to focus on their homes and their interests. The population is slightly older and already planning for their retirement.

Golden Years

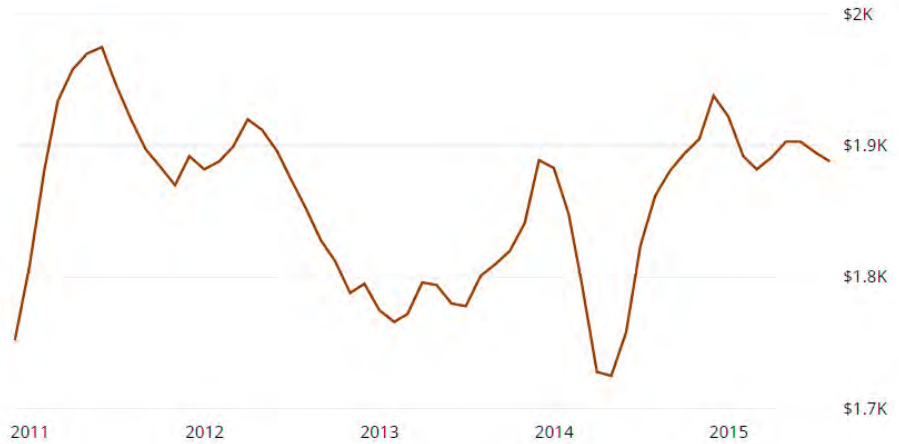
Average Household Size: 2.05
 Median Age: 51.0
 Median Household Income: \$61,000

Independent, active seniors nearing the end of their careers or already in retirement. Primarily singles living alone or empty nesters. Actively pursuing a variety of leisure interests -travel, sport, dining out, museums, and concerts. Involved, focused on physical fitness, and enjoying their lives. This market is smaller, but growing, and financially secure.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

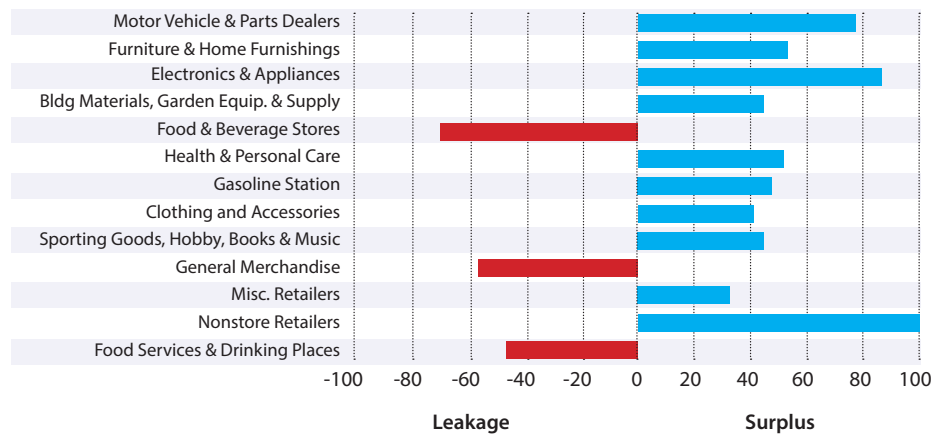
The median monthly rental list price in Guilford is \$2,000, which is significantly higher than the New Haven Metro median of \$1,295. The monthly rental cost index, which is a calculation of listing prices and actual rental costs is slightly higher at \$1,942. Rents in Guilford have fluctuated since 2011, reaching a five-year low in mid 2014¹.

Monthly Rental Cost Index, Town of Guilford ¹



Guilford's Town Center is north of the station area, contributing to a relatively strong retail presence within walking distance of the station. Retail sectors that are supportive of transit oriented development and are also underrepresented in the station area include food & beverage stores, general merchandise and food services & drinking places.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Guilford, CT Home Prices & Values, www.zillow.com/guilford-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

➔ *Modify CT Transit bus route to provide a stop at station.*

CT Transit’s S line provides service to the Town Center, but does not stop at the station. Modifying the route to include a station stop would improve local connectivity and potentially expand ridership at the station.

➔ *Add “Share the Road” signage and sharrow pavements markings to Whitfield and/or Old Whitfield Streets.*

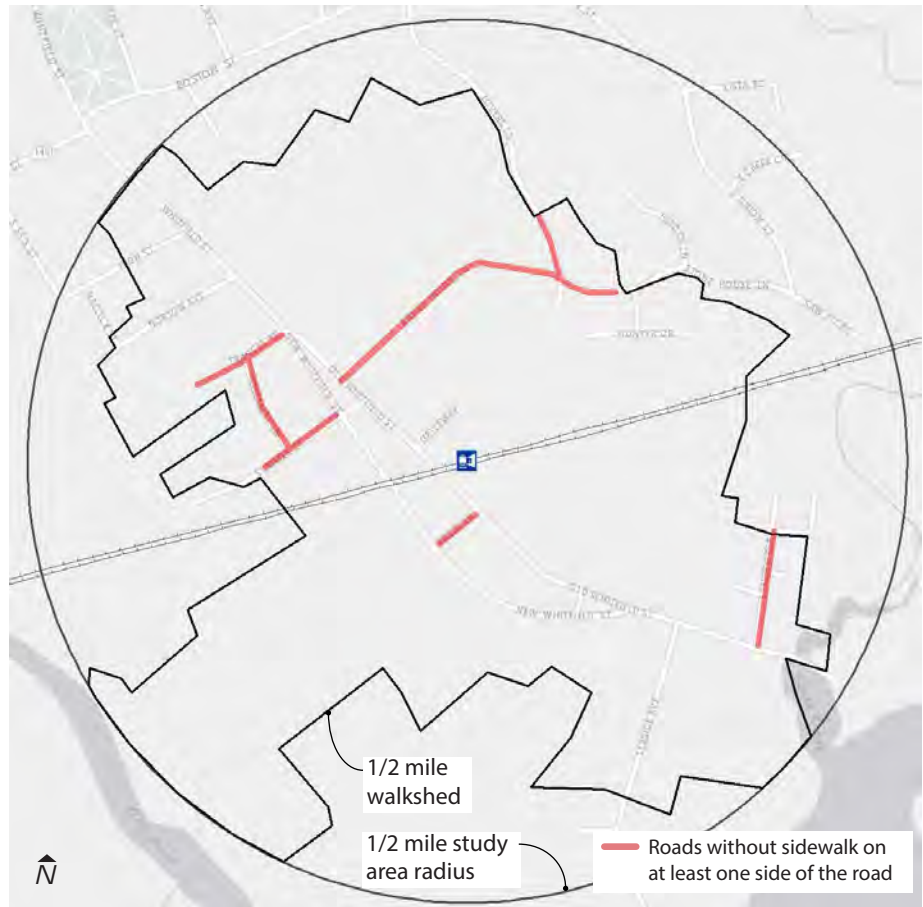
Cycling is an effective mode of travel from the Town Center to the station area and shore. There are currently no bicycle facilities or signage in the station area.

Connectivity

Of the 502 acres located within a 1/2 mile radius of the station, 289 parcel acres (total area of parcels with frontage on a public roadway within a 1/2 mile road distance of the station) are accessible within a 1/2 mile walk of the station. The map below displays the difference between the two areas.

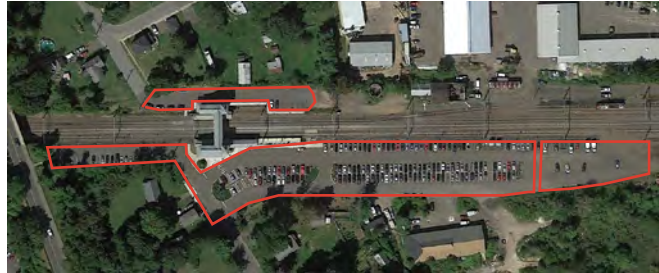
Access to the train station is primarily served from the north by a single road, Old Whitfield Street. There are few public roadways within the walkshed, with most connectivity in the north/south direction along Old Whitfield Street. Of the 3.1 miles of roadways within the walkshed, 68% have sidewalks on at least one side of the street (see map below).

Because of the station’s distance from the Town Center, and lack of connectivity and services near the station, the area has a walk Score of only 26 (out of 100) points.



Parking

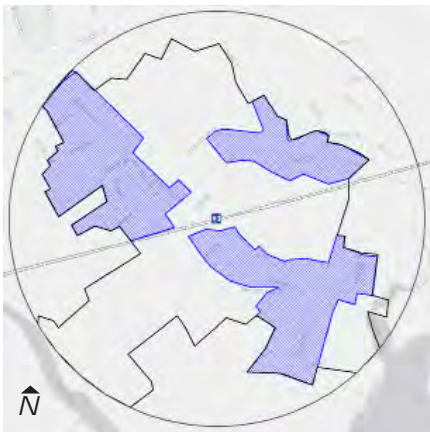
There are 186 marked parking spaces located in two public lots at Guilford Station. Parking at the station is free and is managed by the Connecticut Department of Transportation. The southern lot has 176 marked spaces with capacity for an additional +/- 50 spaces in a gravel area east of the lot. The northern lot is a small lot with ten parking spaces, most of them being handicap parking. All marked parking spaces are well utilized and are filled to capacity on a daily basis.



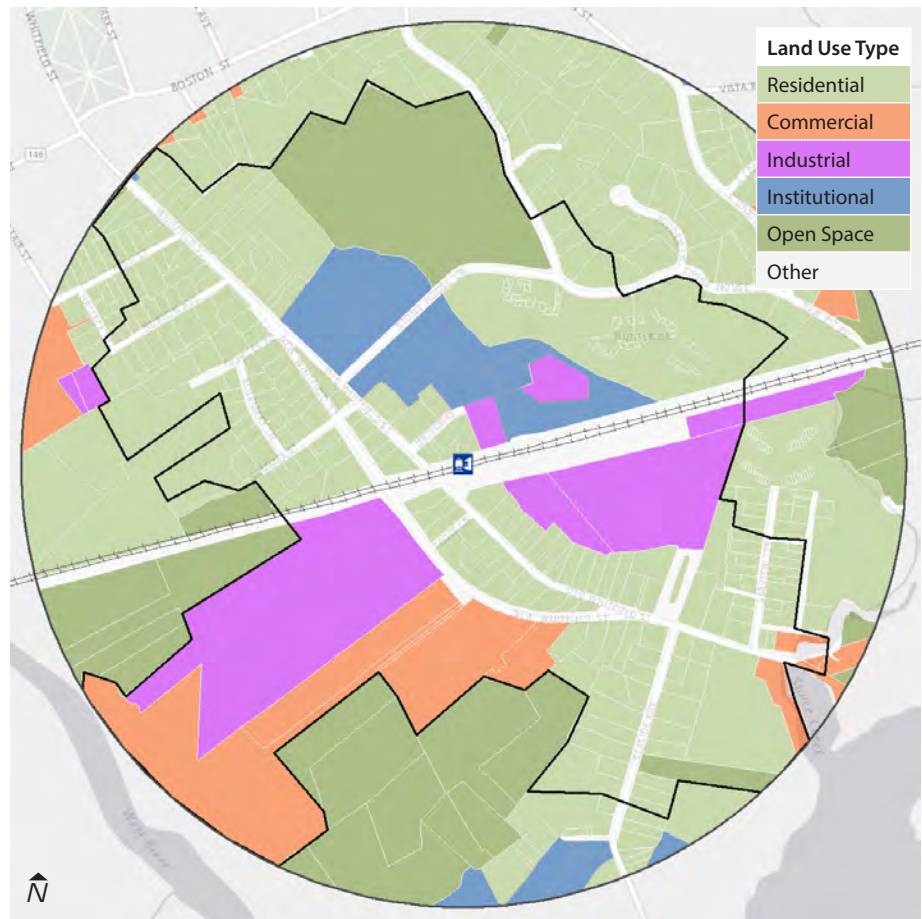
Land Use

Of the 289 parcel acres within the 1/2 mile walkshed, only 27 acres (9%) is occupied by transportation infrastructure such as roadways and the rail line and station site. 124 acres (43%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 5 acres (2%), and dedicated open space occupies 30 acres (10%).

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 103 acres. Of this 103 acres, 65 acres are occupied by waterbodies or wetlands leaving 38 parcels acres that are potentially available for transit oriented development or redevelopment.



Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 43% of the 1/2 mile walkshed.



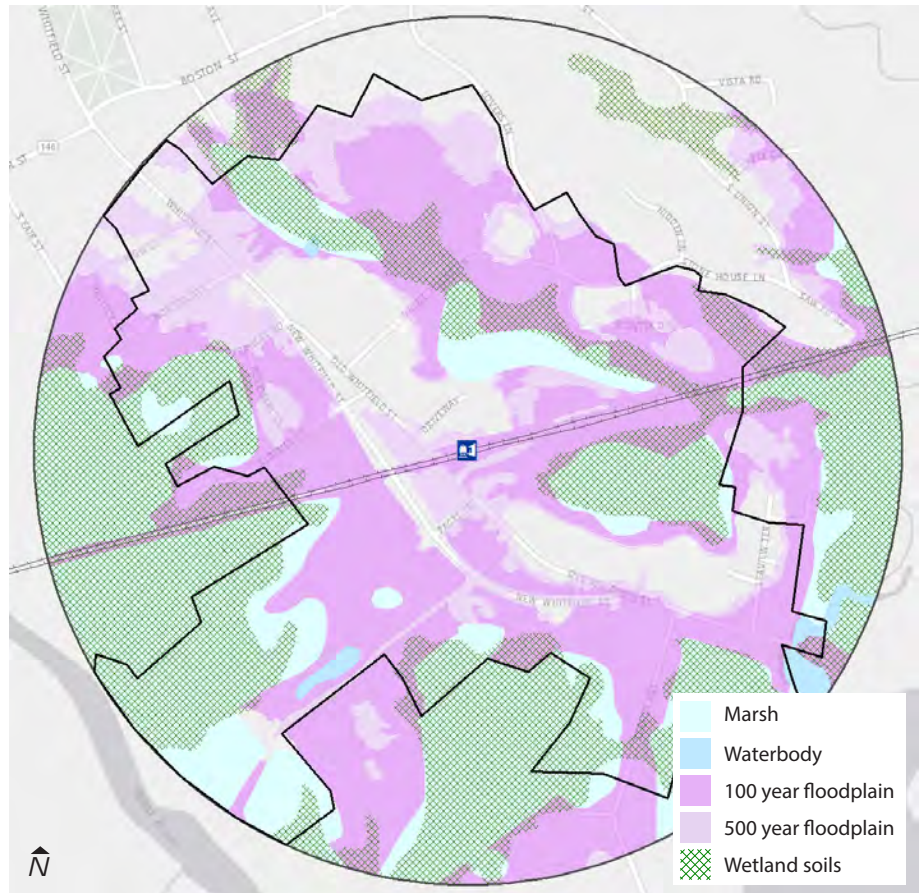
Environmental & Cultural Features

A significant percentage (37%) of the walkshed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. Additionally, 241 acres (84%) of the walkshed is located within a 100 year or 500 year floodplain. The total dry land area within the floodplain is 138 acres which comprises 48% of the walkshed area. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

84% of the 1/2 mile walkshed is within a floodplain

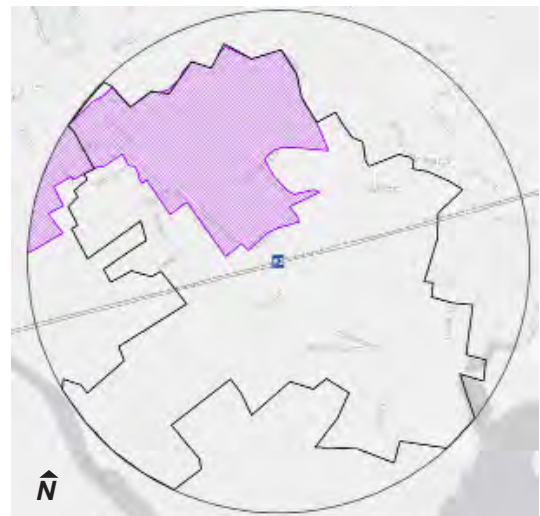
37% of the 1/2 mile walkshed is covered by wetlands and/or waterbodies

48% of dry land within the 1/2 mile walkshed is within a floodplain



The Whitfield Historic District covers the northern segment of the walkshed. The district is a local and state registered historic district. Additionally, the entire study area is located within a national register historic district.

The map at right shows the area of the district located within the 1/2 mile study area radius. As a local district, development within the district will be restricted.



Zoning

Guilford has eight different zoning districts within the 1/2 mile study area. The existing zoning in the immediate vicinity of the station site is split between residential (R-3) and industrial (I-1, I-2) zones.

Residential zones are the predominant zoning type within the station walkshed, comprised largely of the R-3 and R-1 zones.

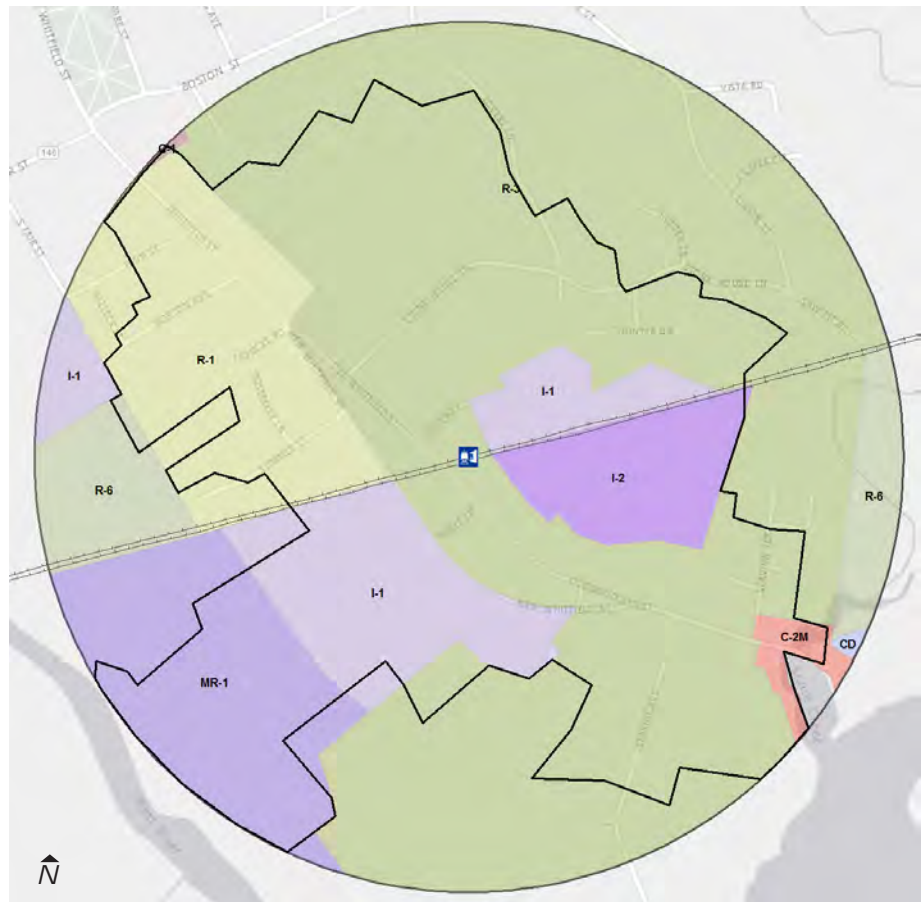
The Town Center South overlay zone is applicable to the station area and is structured to encourage and facilitate TOD, although underlying zones are not generally complementary. Industrial zoning areas north and south of train station are not conducive to TOD.

TOD as fostered by Town Center South Overlay would be transit-supportive as opposed to traditional TOD (higher residential densities) to preserve character of overlay area at existing village scale (no more than 6 units/acre); commercial/retail uses must be transit/neighborhood scale and oriented. Supportive design standards include lot coverage allowed at 80% with shared parking encouraged.

Zoning Recommendations

→ Increase or eliminate the maximum number of residential units per acre (6) allowed in the Town Center South Overlay zone.

Higher densities should be allowed in order to maximize the few developable parcels within the station area. Density of development is already limited by septic capacity, bulk standards, and parking requirements.



Zoning Legend

- I-1: Industrial
- I-2: Industrial
- MR-1: Marine Recreational
- C2-M: Commercial
- CD: Commercial
- R-1: Residential
- R-3: Residential
- R-6: Residential

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

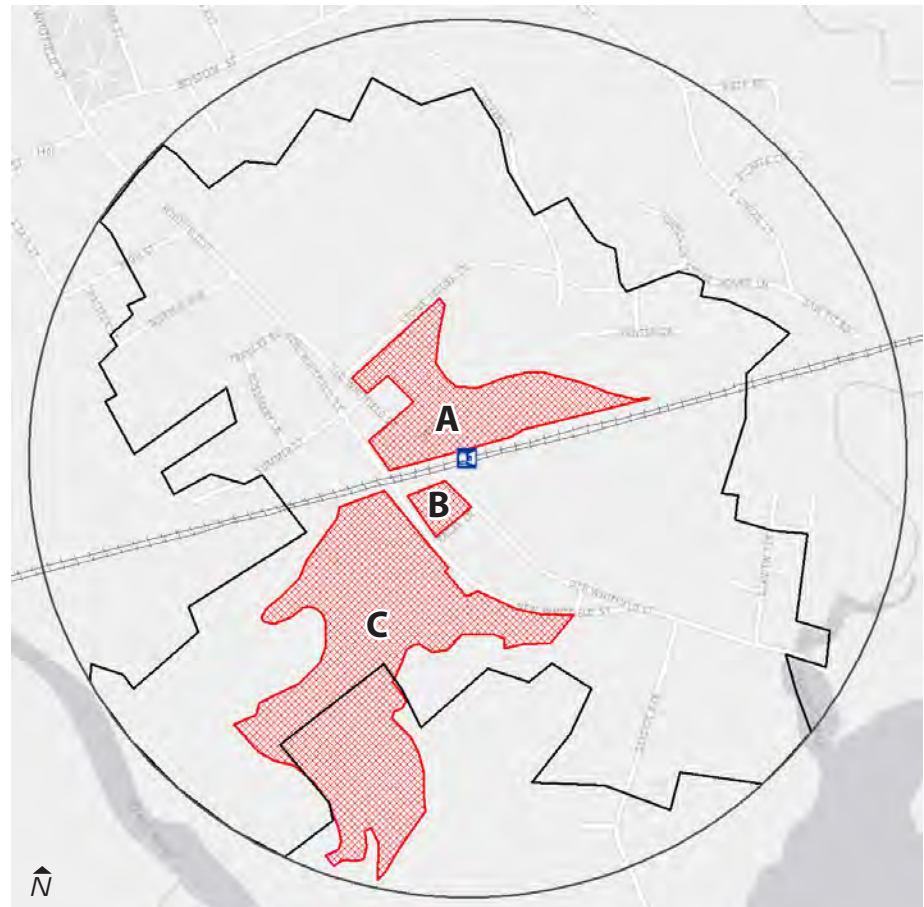
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - a. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - b. Municipal and institutional parcels such as schools and churches
 - c. Protected open space such as public parks, cemeteries, and conservation areas
 - d. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
3. Subtract from the remaining area land that is physically prohibitive to development:
 - a. Wetlands
 - b. Water bodies
 - c. Floodways
4. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: This area, immediately north of the station, is occupied by the Town’s Public Works garage, commercial buildings, and scattered single family residential structures. The area is constrained by a pond, marsh and wetlands to the northeast and an historic district to the northwest. This area has direct access to the train station and is within walking distance of Guilford Center. A former landfill is located on the Town’s property within this area.

Area B: This area includes 1.5 acres and is comprised of a small number of single family residential structures that directly abut the train station. Redevelopment of these properties over time would allow a greater density of development and potential retail uses as permitted by the Town Center South overlay district.

Area C: This area includes the Guilford Yacht Club property and commercial properties located on Whitfield Street. Fifteen units of housing have been approved for an existing industrial site on Whitfield Street. Approximately 14 acres within this area are comprised of town-owned parcels that extend beyond of the 1/2 mile walkshed. Those parcels are only accessible from the Yacht Club access road. While most of this town-owned area is located within floodplain, the area shown on the map above is dry land area which is constrained by wetlands and marsh to the east and west.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	14.1	Municipal, Commercial, Residential	Industrial, Residential	Historic District, Floodplain, former landfill
B	1.5	Residential	Residential	Floodplain
C	38.2	Commercial	Industrial, Marine Recreational	Floodplain

**Inclusive of municipal right-of-way within each opportunity area*



1. Drive Way

Four industrial/commercial parcels are located on Drive Way, the largest of which is owned by the Town and serves as a yard and garage for the Department of Public Works. Combined these parcels occupy 8.5 acres and are located immediately north of the station. The northeast edge of the Town's property is bordered by wetlands. A former landfill is also located on the Town's property within this area.



2. 351 Whitfield Street

This parcel is a total of 25 acres and is occupied by an industrial use. Approximately 10 acres of the parcel are occupied by marsh and wetlands. The property is located immediately west of the station. While the industrial use is active, the site has capacity for additional development, while maintaining use.

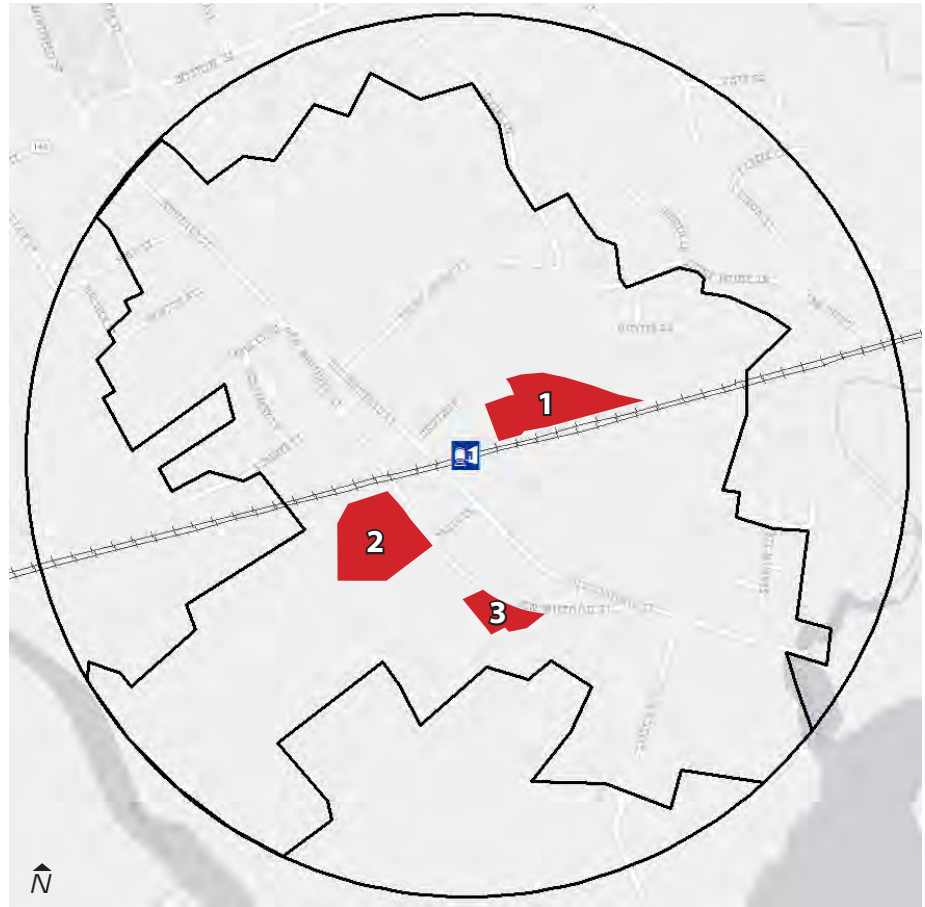


3. 405 + 419 Whitfield Street

Combined, these sites total 9.4 acres although much of each site is comprised of marsh and wetlands. The "buildable" area remaining is approximately 3.5 acres. 405 Whitfield is an industrial site which is currently used as a construction yard with garages and equipment storage. 419 Whitfield is occupied by a self storage facility.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	8.5	Municipal, Commercial	Industrial	Active land use, former land fill	Largest parcel is owned by Town and serves as a yard and garage for the Department of Public Works
2	15	Industrial	Industrial	Active land use	Active industrial property with significant undeveloped land
3	3.5	Industrial, Commercial	Industrial	Active land use	Construction yard and self storage facility

Madison



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Shore Line East
Population	1,057
Households	658
Median household income	\$78,094
Median home value	\$379,082
Housing units	698
Autos per household	1.9
Commute via transit within 3 minute drive time	2%
Drive to work alone within 3 minute drive time	77%
Miles of roadway within 1/2 mile walk of station platform	3.2
Roadway with sidewalk on at least one side of road	41%
Walk Score	53
Departing transit trips from station per week	138
Weekday station ridership (2010)	173
Housing units planned or in development	0
Housing vacancy within 3 minute drive time	11%
Total number of businesses within 3 minute drive time	316
Total number of jobs	1,245

Madison

Madison Station is serviced by Shore Line East, which provides commuter rail service with 36 departing trains per day. The station area is comprised of residential land uses, with some commercial and institutional land uses. The station is used primarily by commuters who arrive by car and park for free in the parking lot which is only approximately 50% utilized.

The State is planning a 3 to 4 level parking structure on the existing surface parking lot. The improvements would also include a north side platform. The Town is interested in encouraging new development in the station area and has had considered relocating the fire station house in the Town Center so as to create redevelopment opportunities for the site. There are also potential opportunities for development on Academy Street, at the former site of a demolished warehouse building and on underutilized parcels on Bradley Road near the train station.

The Town is also interested in extending its retail activity and streetscape quality along Wall Street. A streetscape project between Route 79 and Wall Street is currently planned and includes on-street parking, improved signage to municipal and business parking off Wall Street and south of Route 1 at Stop and Shop. Railroad Avenue has been reconstructed by the Town with the anticipation of new development and higher densities of development along the roadway. The Town has also planned improvements to the Tuxis walkway entrance as part of the Post Road streetscape improvements. This walkway has the potential to be utilized as a gateway into Town's pedestrian network. Additionally, a bike rental program at the station is being considered. The program would be operated by a local non-profit organization.

The primary constraint to development within the station area is the lack of a municipal sewer system to support development. The town is considering development of a small scale municipal treatment system with on-site effluent disposal on Scotland Avenue, which is east of the study area. Other constraints include environmental constraints such as potential impacts to wetlands.

The population within a 1/2 mile radius of the station is 1,057. Automobile dependency is relatively high with 1.9 autos per household and 77% of the local population of workers driving to work alone. The use of the station by commuters within the station area is relatively low, with less than 1% of commuters travelling by transit (train or bus). Despite this automobile dependency, the station is within a ten minute walk of Madison Town Center where a number of goods and services are available. A sidewalk link is available between these locations and sidewalks are located on at least one side of the street on 41% of the station area roadways.



Aerial view of station site. Source: Google Earth

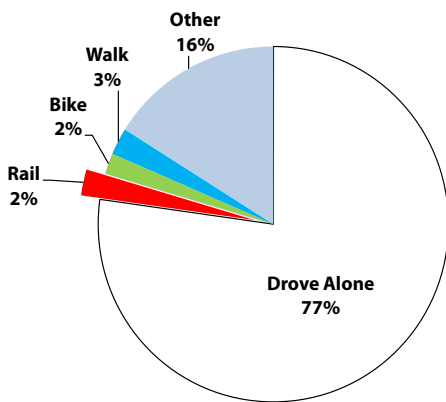
Madison

Transit Service

Shore Line East	36 departures per weekday, 25 total weekend departures
Bus	CT Transit New Haven S Line (no stop at station) 30 departures per weekday at nearest stop, 7 Estuary Transit District departures on Saturdays from station

Transportation to Work ¹

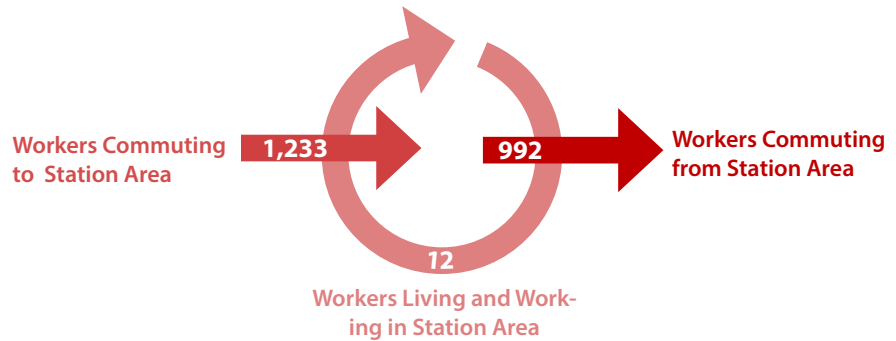
(workers within 3 minute drive of station)



Commuter Patterns

According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 77% driving alone to work. Transit use and walking to work is relatively low with only 2% using the train and 5% of commuters who walk or bike to work.

The latest census based origin-destination employment statistics² show that 1,233 workers commute to the station area (area within 1/2 mile radius of station), with 922 workers who live in the station area commuting to work outside of the station area. A small number (12) of workers live and work within the station area.



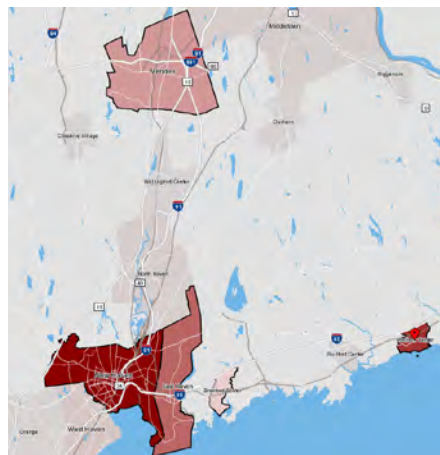
Of workers who commute to the station area, most commute from the New Haven, with Madison being the second most common origin. East Haven, Meriden, and Branford are also the most common origins of workers in the station area. The top destination of workers who reside in the station area is Hartford. This is followed by New Haven, Bridgeport, New York City, and Stamford as the top five destinations of workers who reside in the station area.

Approximately 30.2% of commuters travelling to work from the station area have destinations in Hartford, New Haven, Bridgeport, New York City, and Stamford. Given existing or proposed rail stations in those communities, these statistics would suggest the potential for expansion of transit use beyond the 2% of workers from the station area that currently commute via rail. This potential is governed by multiple factors including, but not limited to, the level of connectivity between place of employment and the local station.

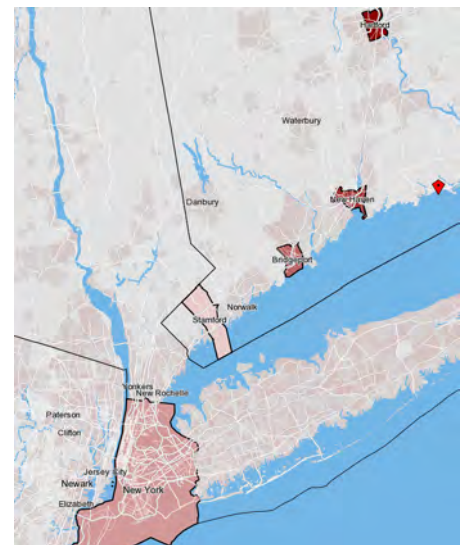
Commuting Patterns of Workers to and from Madison Station Area² (Top 5 origins/destinations)

Inbound Commuters From	#	%
New Haven	45	3.6
Madison	31	2.5
East Haven	26	2.1
Meriden	25	2.0
Branford	23	1.8

Outbound Commuters To	#	%
Hartford	105	10.5
New Haven	70	7.0
Bridgeport	47	4.7
New York City	38	3.8
Stamford	36	3.6



Top five origins of workers who commute to Madison Station area.²



Top five destinations of workers who live in Madison Station area.²

1. 2009-2013 American Community Survey

2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OnTheMap.com

Market Assessment

Madison is a prosperous community with a 2012 median household income (MHHI) over \$106,000, significantly above the state average of over \$68,000¹. The Town is home to approximately 18,264 residents and it enjoys good access to New Haven. The town has a well-educated population as would be expected with the high MHHI. The predominant form of housing is single family, with a significantly higher percentage than the state average.

Transit Oriented Development potential around the Madison station is relatively strong. The Madison train station's location near the Town Center is a favorable asset and current socioeconomic data indicates residents who are affluent and travel frequently. Retail businesses in the area are well established and represent a range of retail categories including entertainment and hospitality.

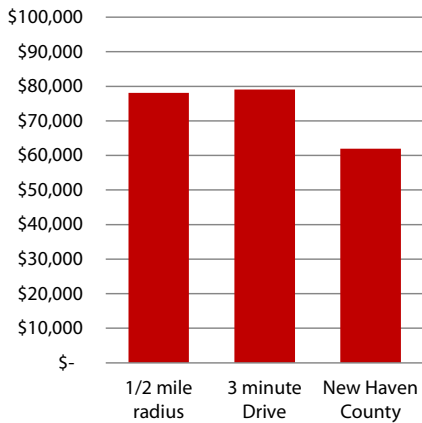
There is, however, limited developable land in the immediate station area, creating a need to repurpose existing sites. In addition, the following challenges need to be addressed to maximize development potential: The housing stock is predominantly owner-occupied, with over 75% of housing units in the immediate station area being single family. The percentage of owner-occupied single family increases along with drive times. Overall, the area would be characterized as low density. Over 6% of housing units in study area around the station have seasonal or weekend use. This increases to over 10% with more distant drive times within the Town. Higher levels of seasonality typically impair achieving correspondingly high levels of retail business. This in turn will result in seasonality to retail sales in the town center.

The median home value in the station area is \$379,482². Home values have declined 3.4% in Madison over the past year and are predicted to fall an additional 0.6% within the next year². The median single family home sales price in Madison decreased 8.2% between 2014 and 2015 to \$431,300³. The median sales price of condo units in Madison decreased by 20.8% over the same period of time to \$267,500³.

Median Home Value Trends, Town of Madison ²



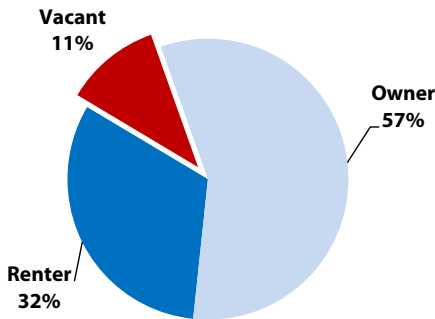
Median Household Income ¹



Household income is approximately equal to the state average, with incomes higher away from the station area.

Housing Occupancy ¹

(within 3 minute drive of station)



Housing vacancy varies only slightly with distance from the station. Vacancy in the station area (5.7%) is only slightly lower than the state average (6.8%).

1. 2009-2013 American Community Survey

2. Zillow.com, Branford, CT Home Prices & Values, www.zillow.com/branford-ct/home-values

3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Golden Years

Average Household Size: 2.05
 Median Age: 51.0
 Median Household Income: \$61,000

Independent, active seniors nearing the end of their careers or already in retirement. Primarily singles living alone or empty nesters. Actively pursuing a variety of leisure interests -travel, sport, dining out, museums, and concerts. Involved, focused on physical fitness, and enjoying their lives. This market is smaller, but growing, and financially secure.

Exurbanites

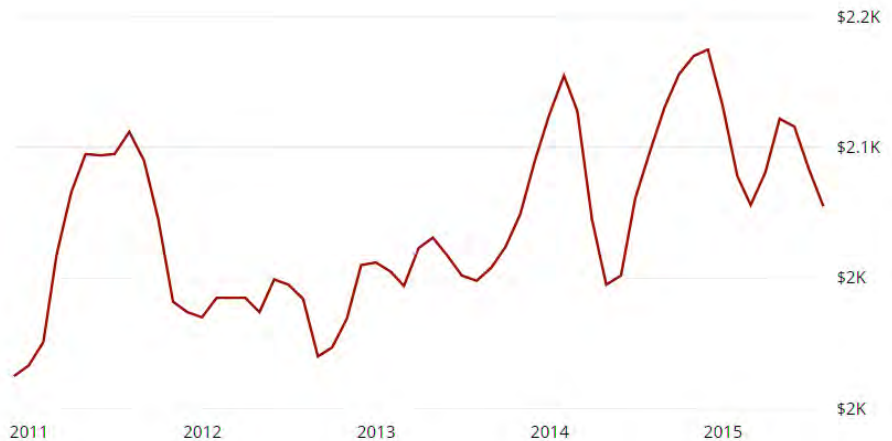
Average Household Size: 2.48
 Median Age: 49.6
 Median Household Income: \$98,000

Approaching retirement but showing few signs of slowing down. Active in their communities, generous in their donations, and seasoned travelers. Take advantage of their proximity to large metropolitan centers to support the arts, but prefer a more expansive home style in less crowded neighborhoods. Their lifestyle that is both affluent and urbane.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

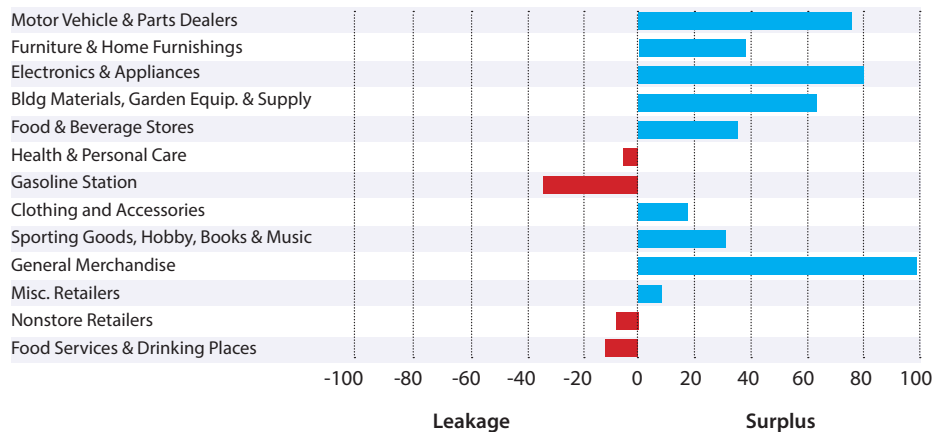
The monthly rental cost index, which is a calculation of listing prices and actual rental costs is \$2,139. Rental cost in Madison has fluctuated since 2011, but has been on an upward trajectory since 2011¹.

Monthly Rental Cost Index, Town of Madison ¹



Madison's Town Center is south of the station area, contributing to a relatively strong retail presence within walking distance of the station. Retail sectors that are supportive of transit oriented development and are also underrepresented in the station area include food services & drinking places and health & personal care.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Madison, CT Home Prices & Values, www.zillow.com/madison-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

- ➔ *Modify CT Transit bus route to provide a stop at station.*

CT Transit’s S line provides service to the Samson Rock Road Shopping Center, but does not stop at the station. Modifying the route to include a station stop would improve local connectivity and potentially expand ridership at the station while causing minimal delay. The Estuary Transit District bus route currently stops in both locations.

- ➔ *Enhance pedestrian connectivity through the Tuxis Pond “superblock”.*

A publicly accessible pedestrian right of way could be established between Bradley Road and Wall Street via Brookside Road. Such a right of way would improve access to Wall Street and the Boston Post Road retail area. Additionally, wayfinding and lighting should be enhanced to encourage greater use of the Tuxis walkway.

- ➔ *Make the Town Center Bike-Friendly*

A local organization has expressed interest in providing a bike share/rental program. The Town should foster this opportunity by increasing the presence of bicycle facilities such as bike lanes and bicycle racks in the Town Center area.

Connectivity

Of the 502 acres located within a 1/2 mile radius of the station, 150 parcel acres (total area of parcels with frontage on a public roadway within a 1/2 mile road distance of the station) are accessible within a 1/2 mile walk of the station. The map below displays the difference between the two areas.

Access to the train station is primarily served from Bradley Road. There are 3.2 miles of public roadways within the station area, 41% of which have a sidewalk on at least one side of the street. Because of the station’s proximity to the Town Center, the area has a Walk Score of 53 (out of 100) points, designating the area as “somewhat walkable”.

The station is separated from the Boston Post Road and Wall Street retail areas by the Tuxis “superblock”. The large block, bounded by Durham Road, Bradley Road, Wall Street, and the Boston Post Road presents a connectivity barrier between the station and the retail area along the Boston Post Road. The Tuxis path walkway connects through this block, but wayfinding is lacking and lighting is insufficient. Additionally, there is a pathway from Bradley Road near the station to Brookside Road, but this walkway and Brookside Road are private.

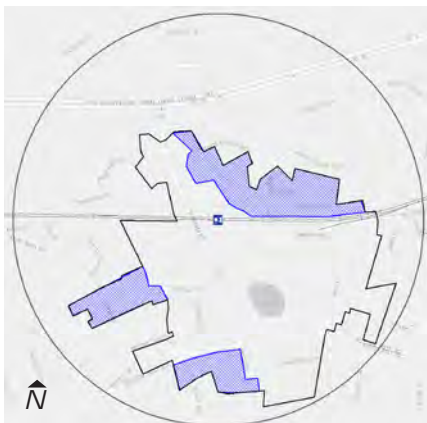




Parking

There are 199 marked parking spaces located in a large public lot at Madison Station. Parking at the station is free and is managed by the Connecticut Department of Transportation. The parking lot is well utilized but demand does not currently exceed capacity.

The Connecticut Department of Transportation (CTDOT) issued a Record of Decision in 2009 stating an intent to build a three-level parking garage with 585 parking spaces. The garage would be located on the existing parking lot, but construction of the facility is not certain and there is no definitive time line for its development. CTDOT's long term goal is to provide 400 to 500 spaces at each Shore Line East station.

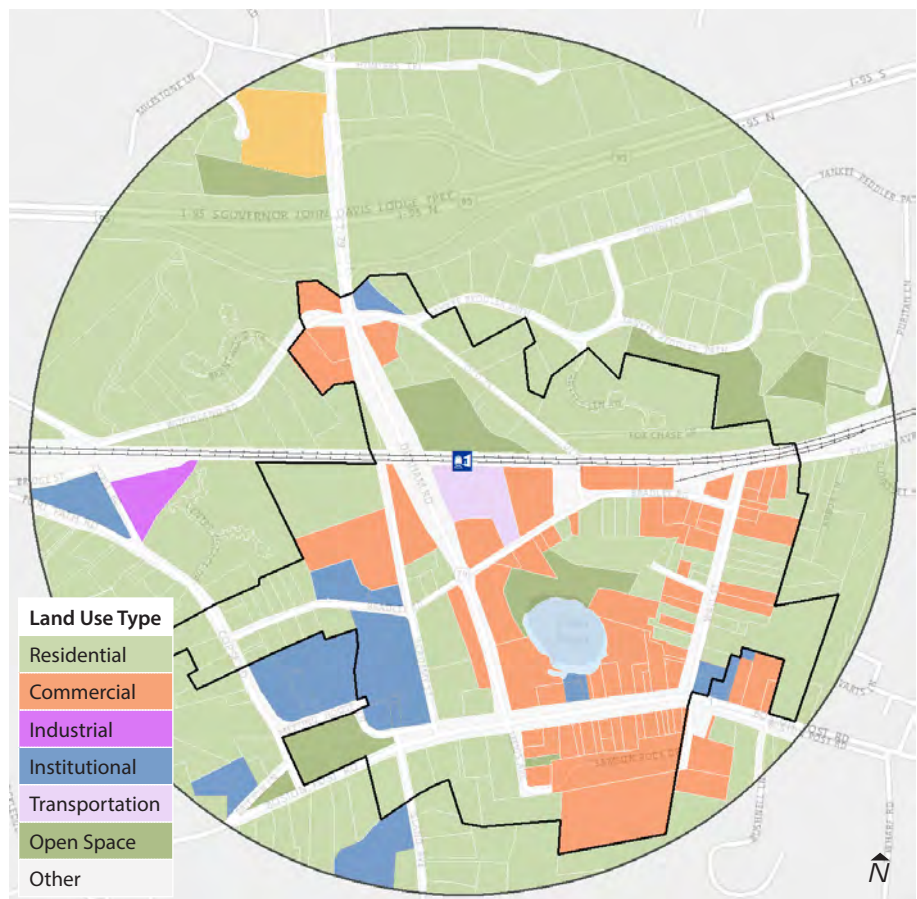


Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 23% of the 1/2 mile walkshed.

Land Use

Of the 150 parcel acres within the 1/2 mile walkshed, 43 acres (23%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 10 acres (5%), and dedicated open space occupies 8 acres (4%).

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 89 acres. Of this 89 acres, 47 acres are occupied by waterbodies or wetlands leaving 58 acres of land that is potentially available for transit oriented development or redevelopment.

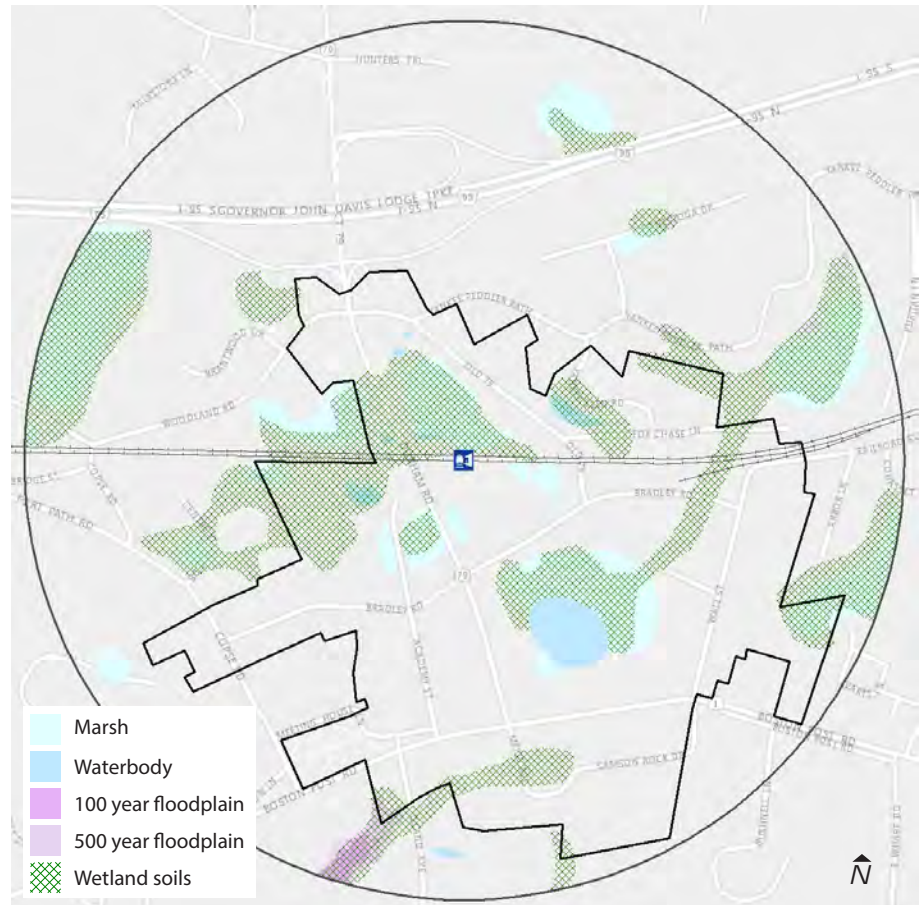


Environmental & Historic Features

A significant percentage (25%) of the walkshed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. However, less than 1% of the walkshed is located within a 100 year or 500 year floodplain. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

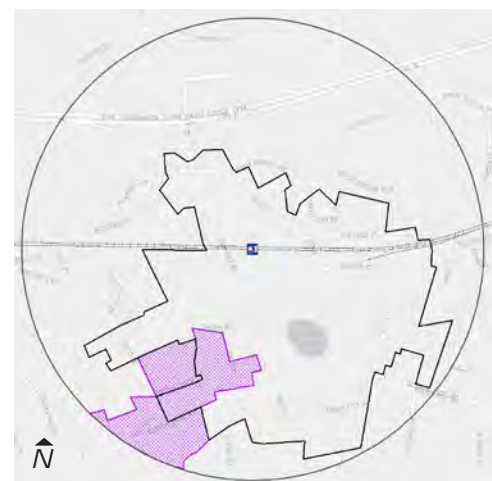
0.2% of the 1/2 mile walkshed is within a floodplain

25% of the 1/2 mile walkshed is covered by wetlands and/or waterbodies



The Madison Green Historic District is a local historic district that covers much of the southwest corner of the study area and includes the Deacon John Grave house on the corner of Academy Street and the Boston Post Road. The District's boundaries extended to the east and to the west of the green to encompass the adjoining historic houses along the Boston Post Road.

The map at right shows the area of the district located within the 1/2 mile study area radius. As a local historic district, the district is restrictive of development within its boundaries.



Zoning Recommendations

➔ *Expand and modify the Downtown Village District Overlay Zone so as to be more supportive of TOD*

The existing Village District Overlay Zone provides architectural and landscaping design standards but does not include incentives for TOD. The district should be geographically expanded to encompass more of the station area and modified to enable higher density residential development, reduced parking standards, and a mixture of uses in the station area would encourage transit oriented development.

Zoning

Madison has eight zoning districts within the ½ mile station area radius in addition to a Downtown Village District Overlay Zone. The rail station is located at the edge of downtown with commercially zoned districts intended to preserve the character of the downtown area; residential is permitted as a second floor use.

Downtown zones (which dominate the southeast quadrant of the ½ mile radius) only somewhat facilitate TOD in that they permit mixed-use and allow the Commission to reduce required parking and restrict it to the rear of the buildings, yet these zones;

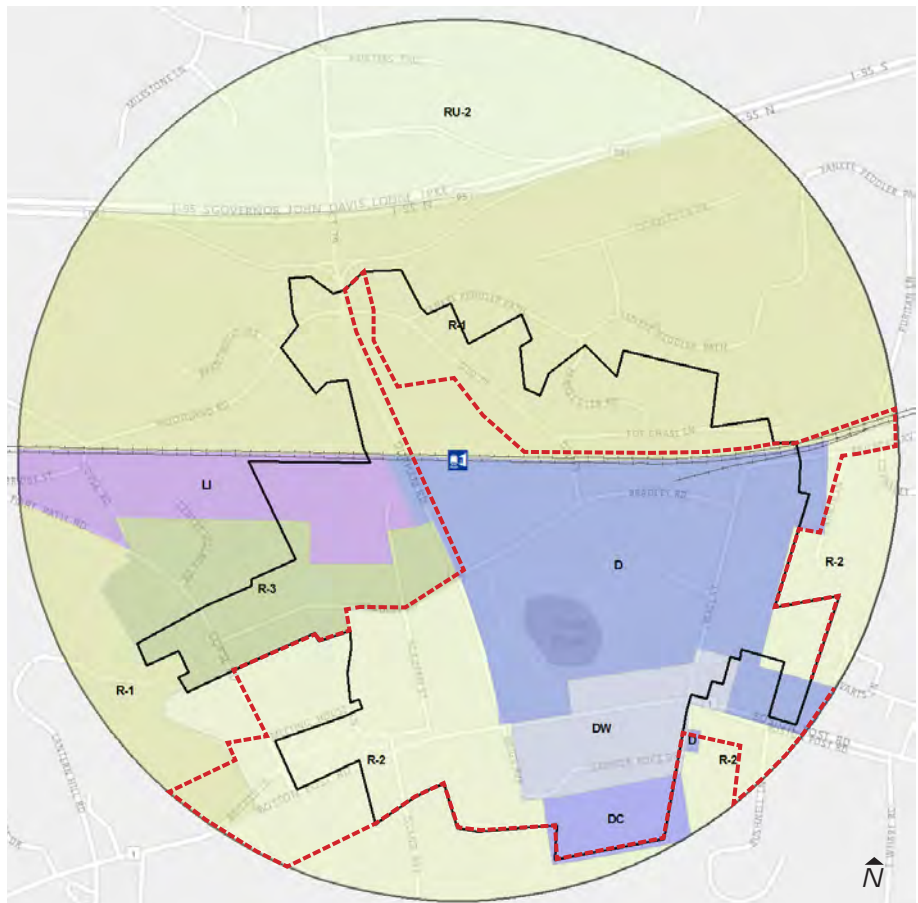
- require ½ acre minimum lot size,
- do not support high residential densities;
- limit lot coverage to 25%- 30%,
- allow some auto oriented-uses via Special permit;
- generally limit building height to 30 feet (2.5 stories);
- do not include design guidelines that foster walkability, and
- have limited landscaping standards

Overall, zoning immediately west of rail station is not conducive to TOD with limits on density, mix of uses, minimum lot sizes at 1/2 acre or more per dwelling unit, large residential setbacks, limited permissible lot coverage and suburban scale building heights (2 stories generally).

The single family residential zones north of the rail line do not accommodate TOD, nor do the light industrial zones west of rail station. Limited building heights are allowed overall – some increased heights (4 stories) are permitted for narrow lots. Some limited commerce (offices and banks for example) are permitted in the transition area between commercial and residential zones.

Zoning Legend

LI:	Light Industrial
D:	Commercial
DW:	Commercial
DC:	Commercial
R-1:	Residential
R-2:	Residential
R-3:	Residential
RU-2:	Residential
	Downtown Village District Overlay



Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

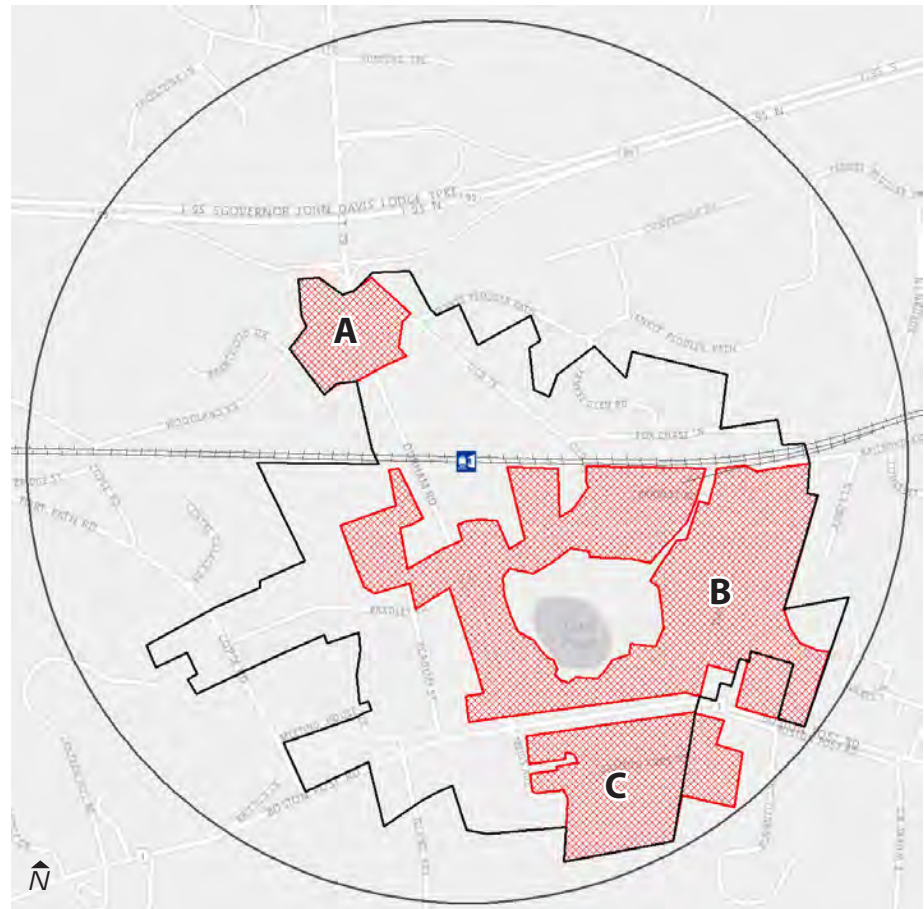
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Area A: This area, at the intersection of Durham and Woodland Roads and Old Route 79 is comprised of commercial office space and a town-owned parcel (Madison Ambulance Association). The area is currently zoned R1 (residential), rezoning of the area would be necessary to support a mixture of uses. Given the active uses, transition of the properties would likely occur over the long term.

Area B: This area comprises the core of the Town Center area and encompasses Bradley Road, Wall Street, Durham Road and the Boston Post Road. This area also directly abuts the station site. There are numerous opportunities within this area for infill development and redevelopment of existing properties. Development is constrained in the proximity of Tuxis Pond due to the presence of wetlands and marsh in that area.

Area C: This area is located on the south side of Boston Post Road and Samson Rock Road and includes a shopping center, grocery store, surface parking and vacant land. The area is currently zoned as commercial, but should be considered for mixed use development in the future. Future development is likely to occur slowly over time as individual parcels are redeveloped or repurposed. The eastern end of this development area extends slightly beyond the 1/2 mile walkshed.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	7.6	Office, Municipal	Residential	
B	56.0	Retail, Residential, Office	Commercial, Residential, Light Industrial	
C	17.0	Retail	Commercial, Residential	

**Inclusive of municipal right-of-way within each opportunity area*



1. 110-114 Bradley Road

Combined, these properties total 1.5 acres and have close proximity to the station. Current uses includes single family and small offices. Buildings are all over 50 years old, with some approaching 100 years old. The eastern end of 114 Bradley contains wetlands.



2. Former Train Station Site and 105 Wall St.

The former station site is still part of the rail right-of-way. The site as shown occupies approximately 1 acre, although it includes a limited area of wetlands. If combined with 105 Wall Street, the site would total approximately 1.4 acres.

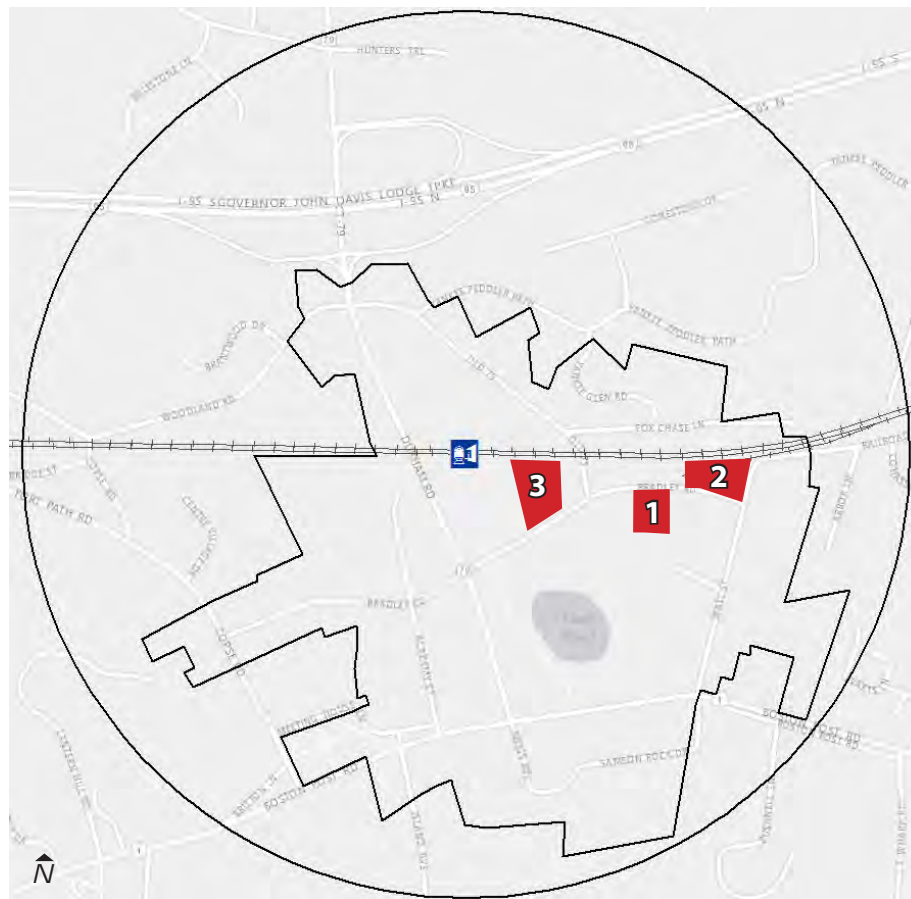


3. 85 Bradley Road

This 2.7 acres site is adjacent to the train station and is currently occupied by a lumber yard and hardware store.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	1.5	Residential, Office	Commercial	Active land use	Good proximity to train station and Wall Street. Large lots with potential for infill development or redevelopment
2	1.4	Office, Vacant	Commercial	Active land use	Includes former station site which is within the rail right-of-way.
3	2.7	Lumber yard, Hardware store	Commercial	Active land use	Adjacent to the train station



The Hartford Line Corridor

The Hartford Line Corridor extends from New Haven to Meriden with service continuing to Springfield. The corridor is served by Amtrak, but improvements are currently underway which will upgrade the rail corridor to commuter rail service in 2016. This new service will provide connections at the New Haven State Street and Union Stations to the existing Shore Line East and the Metro North New Haven Line services. It is anticipated that the service will attract up to 1.26 million trips per year by 2030.

The TOD study area includes Hartford Line stations in Meriden and Wallingford, and a planned station in North Haven.

Population and Employment

Meriden has the highest station area population of the three towns and cities along the Hartford Line corridor with 7,200 people within a half mile radius of the station. Wallingford's population is about half of Meriden's with a population of 3,621 in the station area.

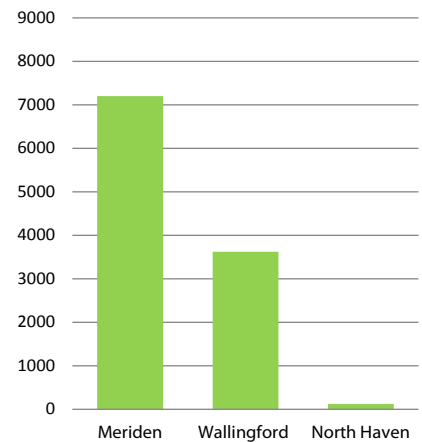
The proposed station in North Haven has the lowest population along the Hartford Line corridor due to its proximity to industrial sites and undevelopable land. While lower station area populations suggest less local ridership, these areas also hold potential for gaining population.

Employment along the corridor is concentrated in Meriden and Wallingford with pockets of employment located along the rest of the corridor. The most prevalent industry sectors within one mile of the rail corridor include health care & social assistance, retail, and manufacturing. Other high employment job sectors include administration & support (waste management & remediation), accommodation & food services, and wholesale trade².

- 5 - 360 Jobs/Sq.Mile
- 361 - 1,425 Jobs/Sq.Mile
- 1,426 - 3,201 Jobs/Sq.Mile
- 3,202 - 5,688 Jobs/Sq.Mile
- 5,689 - 8,885 Jobs/Sq.Mile

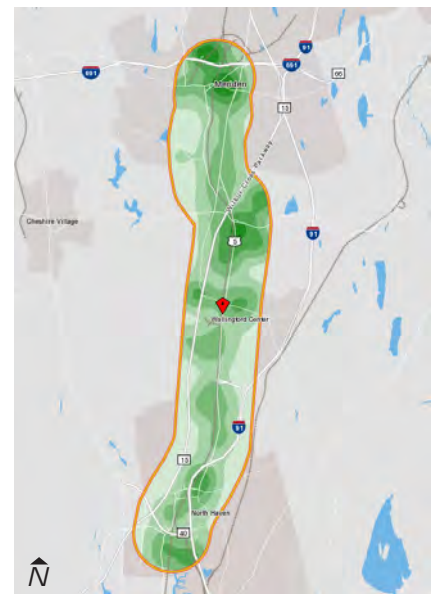


2014 Station Area Population ¹



Jobs by Sector, 2013 ²

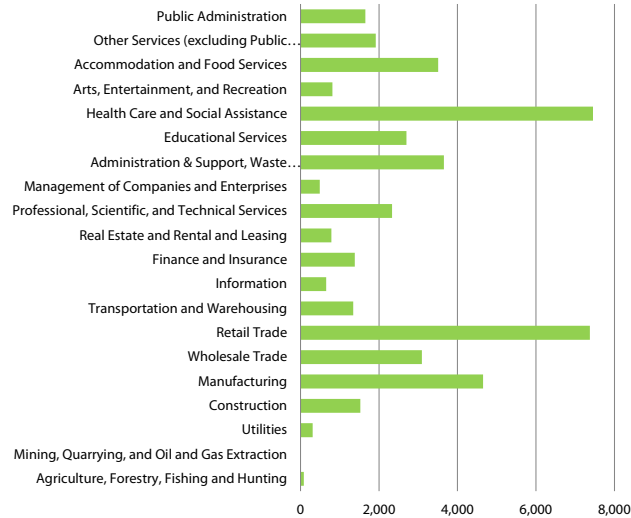
(within 1 mile of Hartford Line Corridor from Meriden Station to North Haven Station site)



1. 2009-2013 American Community Survey
 2. 2013 Census Origin-Destination Employment Statistics, OntheMap.com

Jobs by Sector, 2013 ¹

(within 1 mile of Hartford Line Corridor from Meriden Station to proposed North Haven Station)



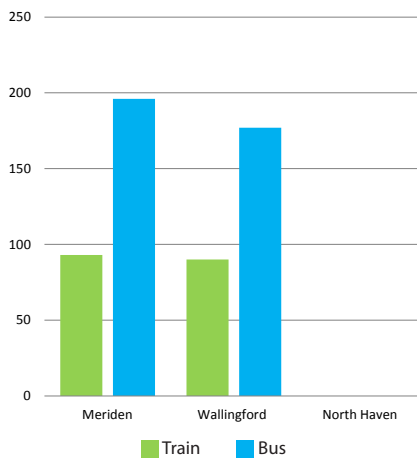
Commuting Patterns and Level of Transit Service

Transit service level was measured as the number of departing transit trips per week per station. Meriden and Wallingford have comparable levels of transit service with 93 and 90 train departures per week respectively. Bus service is high in both communities with 196 bus departures in Meriden and 177 bus departures per week in Wallingford. North Haven Station, once constructed, is expected to have levels of train service comparable to Meriden or Wallingford.

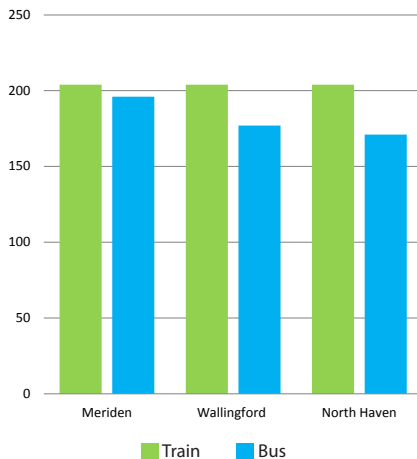
Potential future weekly departures were also measured. This estimate includes probable service at the proposed station in Wallingford. This estimate also includes a potential bus service at the North Haven station. This potential increase would be possible via a rerouting of existing local bus service to provide a direct connection at the station. Modification of the existing local route to provide a stop at the proposed station would greatly expand the level of transit service at that station. The introduction of commuter rail service on the Hartford line will also result in increased rail service at Meriden and Wallingford Stations.

Transit oriented development feasibility is greatly influenced by the level of service at the supporting station. With increased levels of service, these stations transit oriented development will be increasingly feasible at these locations.

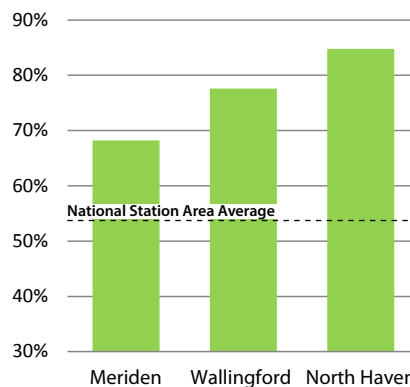
Weekly Transit Departures per Station



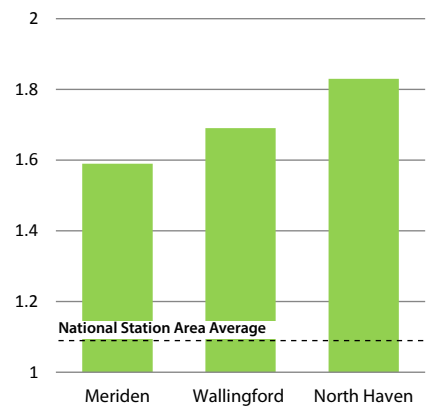
Potential Future Weekly Transit Departures per Station



Drove Alone to Work ²
(workers within a 3 minute driving radius of station)



Autos per Household within Station Area ²



1. 2013 Census Origin-Destination Employment Statistics, OntheMap.com

2. 2009-2013 American Community Survey

Data extracted for a three-minute driving radius indicates a relatively high number of workers drive alone to work from all three station areas, with the highest percentage (85%) driving to work alone from the North Haven Station area¹. The national station area average of commuting by car of residents living in transit zones is 54%¹. Meriden, which has the lowest percentage of workers driving alone (68%) is still well in excess of the national station area average.

The number of automobiles per household roughly corresponds to the commuting habits of residents. This figure ranges from 1.59 in Meriden to 1.83 autos per household in North Haven. The national station area average auto ownership per household is 1.1 vehicles². The high rate of car ownership compared to national rates suggests that station area residents depend upon private vehicles for commuting and personal trips.

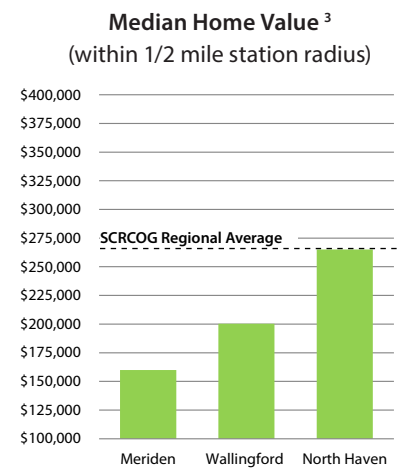
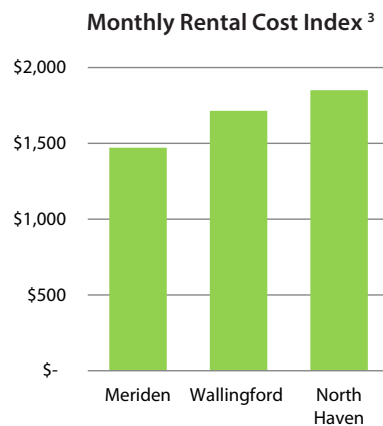
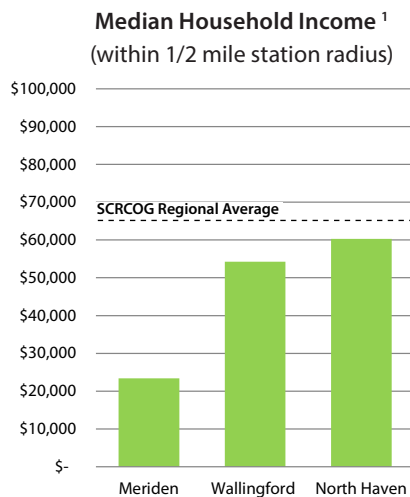
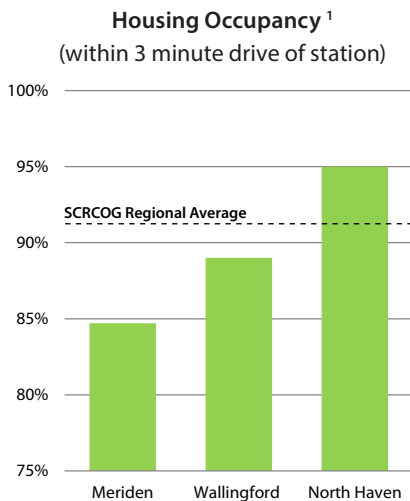
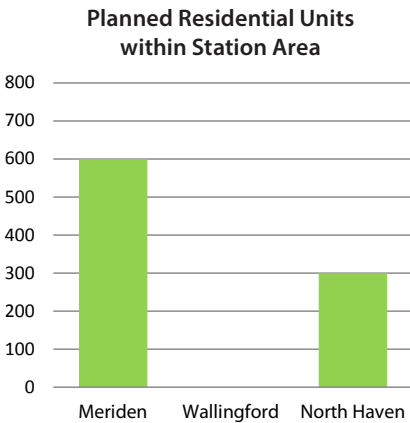
Market Demand

Market demand is a key factor in determining the feasibility of transit oriented development. A key measure of this demand is the presence of residential development activity within the station area. Meriden leads this metric with 600 units of housing planned or in development within the station area. North Haven has 300 units of planned housing, Wallingford does not currently have any planned housing.

Other key measures of the market potential for development include the local housing occupancy and median household income. High housing occupancies suggest market demand for housing while high median household incomes demonstrate the spending potential of local residents. The median home value also suggests potential capacity of the local market to support new development.

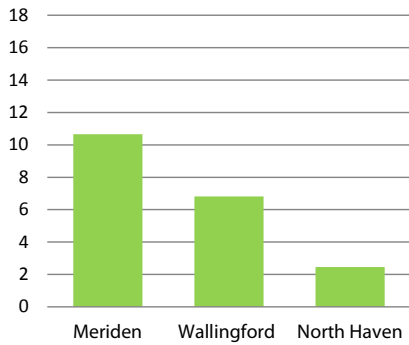
North Haven has the highest station area occupancy rate (95%) which suggest a strong latent demand for additional housing¹. Wallingford and Meriden are below the regional average with Meriden's station area occupancy rate the lowest at 84.7%¹. Median station area household income is highest in Wallingford and North Haven (\$54,281, \$60,310 respectively) and lowest in the Meriden area (\$23,365)¹. The highest median home value (\$265,000) of station areas along the Hartford Line corridor is in North Haven, with the lowest in Meriden (\$160,000)³.

When compared to SCRCOG regional averages, all three station areas fall below average in median household income and home value. With the exception of North Haven, which has limited housing in the station area, the station areas fall below the region's average housing occupancy.



1. 2009-2013 American Community Survey
 2. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004
 3. Zillow.com, New Haven Metro Home Prices & Values, (www.zillow.com/new-haven-metro-ct_r394908/home-values)

Miles of Roadway
Within 1/2 mile Walk
of Station Platform(s)



Walk Score ¹



Station Area Connectivity

The level of pedestrian connectivity within the station area is a significant factor in the feasibility of transit oriented development. One measure of this connectivity is the total miles of roadway (assumed walkable) within a half mile walk of the station platform. Of the stations along the Hartford Line corridor, Meriden’s station has the highest connectivity, followed by Wallingford. The proposed station in North Haven has the lowest connectivity. This is due in part to the station’s isolated location.

Another measure of pedestrian connectivity is the station Walk Score. This metric is based upon the level of street network connectivity and the number of services and destinations available within walking distance of the station. Meriden has the highest Walk Score of the three communities (79), Wallingford’s Walk Score is similar (71), with North Haven having the lowest Walk Score (29).

Sewer & Water Infrastructure

Adequate sewer and water infrastructure capacity is critical for the feasibility of new development. All cities and towns along the Hartford Line corridor have adequate capacity of this infrastructure in the station areas. In Meriden and Wallingford, drinking water is supplied by the municipality. North Haven is supplied by the South Central Regional Water Authority. Sewer infrastructure is managed by each municipality and capacity is available at each station area.

Station Area	Drinking Water Infrastructure	Sewer Infrastructure
Meriden	Yes: Municipal	Yes
Wallingford	Yes: Municipal	Yes
North Haven	Yes: RWA	Yes

Zoning

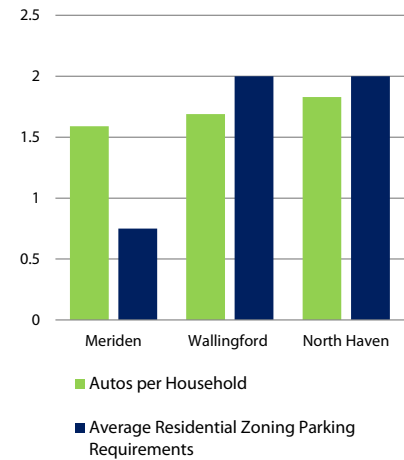
With the exception of North Haven, towns and cities along the Hartford Line corridor have TOD zoning or zoning that is supportive of transit oriented development. While Wallingford does not have TOD zoning in place, the Town has recently implemented an Incentive Housing Zone (IHZ) in the station area. This zone is supportive of the densities required by TOD. North Haven does not currently have TOD supportive zoning, the MEERZ overlay zone which is west of the station site and is targeted towards commercial and office development.

Station Area	TOD Zoning	Notes
Meriden	Yes	Five TOD subdistricts
Wallingford	Supportive	Incentive housing zone
North Haven	No	MEERZ overlay zone targeted towards office and commercial

1. walkscore.com: Walk Score measures the walkability of any address by analyzing hundreds of walking routes to nearby amenities. Points are awarded based on the distance to amenities in each category. Amenities within a 5 minute walk (.25 miles) are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30 minute walk. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density.

In addition to TOD specific zoning, parking requirements as set forth by zoning can have an impact on the feasibility of TOD development. Lower parking requirements reduces the cost of construction and space dedicated to parking. With the exception of Meriden, the residential parking requirements of towns and cities along the Hartford Line corridor exceed the autos owned per household (for the purpose of this analysis, a household is assumed to contain an average of two bedrooms). The national average number of autos per household in transit oriented zones is 1.1 cars per household¹. Wallingford and North Haven require an average of 2.0 parking spaces per household despite average ownership rates between 1.7 and 1.8 autos per household, respectively. Meriden has an average of 1.6 autos per household but only requires an 0.75 parking spaces per household within the TOD zone due to development incentives.

Autos per Household vs Zoning Parking Requirements



Land Use and Environmental Conditions

Of the towns and cities along the Hartford Line corridor, the North Haven station area has the most area that has opportunity for transit oriented development. This is due in part to the presence of vacant and underutilized industrial land in proximity to the proposed station site. Wallingford has the least amount area presenting an opportunity for TOD, due in part to a large area of low density residential development near the station site.

The net area available to each community, after subtracting land uses that won't support TOD, ranges from 75 acres in Wallingford to 139 acres in North Haven. This area is considered the TOD opportunity area. These areas are comprised of occupied, underutilized, and/or vacant commercial, industrial, and residential land uses. These figures do not imply that the stated area is available for development, but rather suggests a potential for development or redevelopment under supporting conditions.

Methodology used in Establishing the TOD Opportunity Area

The methodology used in establishing the TOD Opportunity Area is outlined in detail in each station area section. The repetition of this information within the document is intended to ensure that the methodology is readily accessible within each station area section.

Station Area	Parcels within 1/2 mile walk (acres)	Municipal, Institutional, Transportation, Open Space Land Uses (acres)	Built-out Residential Areas (acres)	Wetlands & Water bodies within TOD Opportunity Area (acres)	Net TOD Opportunity Area (acres)*
Meriden	263	64	81	0	132
Wallingford	297	107	112	3	75
North Haven	208	0	33	36	139

*Excludes municipal right-of-way within opportunity area

1. Center for Transit Oriented Development, Hidden in Plain Sight, September 2004

Meriden



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Hartford Line
Population	7,200
Households	2,915
Median household income	\$23,365
Median home value	\$160,000
Housing units	3,372
Autos per household	1.59
Commute via transit within 3 minute drive time	4%
Drive to work alone within 3 minute drive time	68%
Miles of roadway within 1/2 mile walk of station platform	10.7
Roadway with sidewalk on at least one side of road	100%
Walk Score	79
Departing transit trips from station per week	289
Weekday station ridership (2010)	49
Housing units planned or in development	600
Housing vacancy within 3 minute drive time	13.6%
Total number of businesses within 3 minute drive time	677
Total number of jobs	4,176

Aerial view of station site and adjacent construction
Source: Google Maps

Meriden

Meriden Station is identified as a station for enhanced passenger commuter rail service as part of the Hartford Line. It is anticipated that as many as 200 trains will depart from the station per week. The station area is comprised of residential, government, and commercial land uses with some small amounts of industrial land uses. The station is anticipated to be used primarily by commuters who arrive by car and park in the station lot which is anticipated to be fully utilized.

Meriden has developed a Transit Oriented Development Master Plan, wherein many TOD strategies and planning projects are already underway. As stated in the plan, the redevelopment and reuse of potential land for development includes the following:

- Meriden Intermodal Center: a pedestrian link across the rail line from Colony Street to the HUB Park; a new mixed-use, multi-modal interface and parking structure
- Colony Street: revitalization of the north-south commercial-retail corridor with strategic infill development and the preservation of historic buildings; connect to the new Meriden Intermodal Center
- HUB Park: 14.4-acre park affording public amenities, Harbor Brook flood control, and 150,000 square feet of mixed-use development; the future centerpiece of the Downtown
- Meriden Housing Authority site: a plan to provide quality affordable housing for residents of the Mills Housing complex could facilitate construction of a variety of mixed-income residential typologies within walking distance of the Meriden Intermodal Center
- East and West Main Street: utilizing historic building fabric, plus new infill of the commercial-retail streetscape to revitalize and reconnect civic, educational and community facilities
- Factory H Area: potential mixed-use project (100 housing units / 35,000 square feet commercial- retail space) to anchor area south of Hanover Street. Viable development tied to new traffic, greenway and pedestrian connectivity
- Pratt Street "Gateway": a grand, landscaped boulevard that connects the interstates directly to the new City Center will be a catalyst for development to the north and east of the park, connecting to the library and City Hall

The primary constraint to development within the station area is flooding. The City is working on a Long Term Flood Control Plan. Once implemented, the control plan will remove approximately 100 properties from the 100-year flood zone, creating more potential opportunities for development.

The population within a 1/2 mile radius of the station is 7,200. Automobile dependency is relatively high with 1.59 autos per household and 68% of the local population of workers driving to work alone. The current use of the station by commuters within the station area is relatively low, with only 4% of commuters travelling by transit (train or bus). Despite the automobile dependency, the station is within a ten minute walk of Meriden Center where a number of goods and services are available. Multiple sidewalk links are available between these locations and sidewalks are located on at least one side of the street on all of the station area roadways.



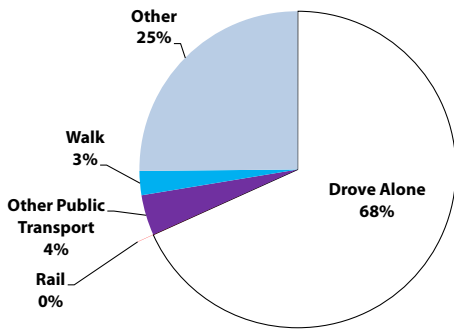
Transit Service

Hartford Line 200 departures per week (34 per weekday) are anticipated with start of commuter rail service in late 2016

Bus CT Transit New Haven C1, Middletown Area Transit M link. 196 total departing bus trips from station per week

Transportation to Work ¹

(workers within 3 minute drive of station)



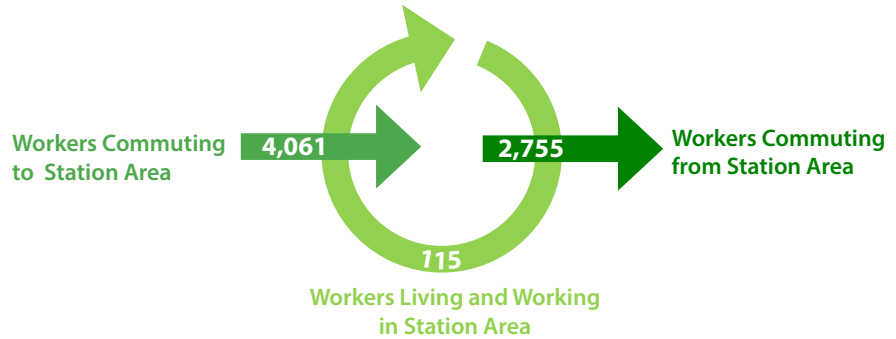
Commuting Patterns of Workers to and from Meriden Station Area² (Top 5 origins/destinations)

Inbound Commuters From	#	%
Meriden	1,626	39.9
Middletown	133	3.2
Waterbury	120	2.9
Wallingford	100	2.4
New Britain	93	2.2
Outbound Commuters To	#	%
Meriden	551	19.2
Hartford	150	5.2
Wallingford	117	4.1
New York City	112	3.9
Middletown	104	3.6

Commuter Patterns

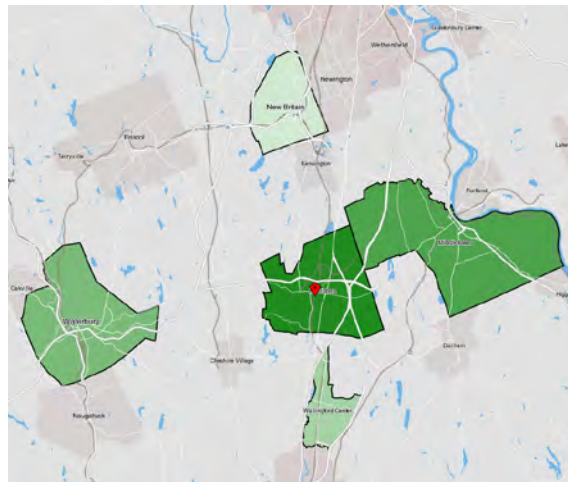
According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 68% driving alone to work, 3% walking to work, and 4% using transit.

The latest census based origin-destination employment statistics² show that 4,061 workers commute to the station area (area within 1/2 mile radius of station), with 2,755 workers who live in the station area commuting to work outside of the station area. A small number (115) of workers live and work within the station area.



Of workers who commute to the station area, most commute from the City of Meriden, with Middletown being the second most common origin. Waterbury, Wallingford and New Britain are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is also the City of Meriden. This is followed by Hartford, with Wallingford, New York City, and Middletown being amongst the top five destinations of workers who reside in the station area.

Approximately 13.2% of commuters travelling to work from the station area have destinations in Hartford, Wallingford, and New York City. Given rail station locations in those communities, these statistics would suggest the potential for expansion of transit use beyond the 49 trips made per day from Meriden Station. This potential is governed by multiple factors including but not limited to the level of connectivity between place of employment and the local station.



Top five origins of workers who commute to Meriden Station area.²

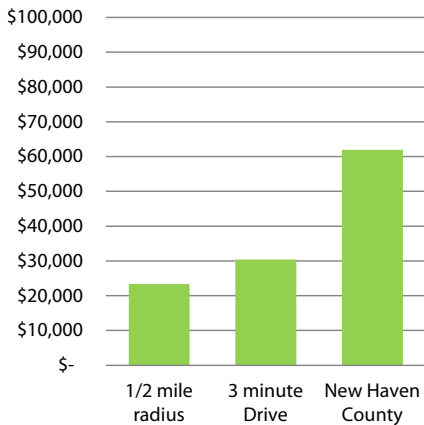


Top five destinations of workers who live in the Meriden Station area.²

1. 2009-2013 American Community Survey

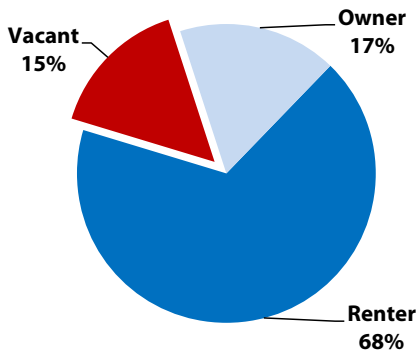
2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OntheMap.com

Median Household Income ¹



Household Income is well below the regional average, with significantly lower incomes closer to the station area.

Housing Occupancy ¹
(within 3 minute drive of station)



The vacancy rate is well above the state average of 6.8%. It decreases as you move away from the station. Renters vastly outnumber the rest within the 3 minute radius.

Market Assessment

Meriden is a moderate income community with a 2012 median household income (MHHI) over \$53,000, below the state average of over \$68,000¹. The City is home to approximately 60,674 residents and it enjoys access to both New Haven and Hartford. Meriden overall is less educated than the state average, with 20% of the population achieving a Bachelor's degree or higher. Meriden has a slight preference for single family homes, with single family homes making up 53% of the housing stock.

The Meriden Transit Center has promising TOD potential as contemplated in the comprehensive Meriden 2020 TOD plan. The future Meriden Transit Center station area features high population density, the Meriden Hub Park, walkable proximity to the Meriden Downtown, and a thoughtful vision plan that includes public amenities.

In addition, Meriden is accessible by I-91, I-691, and State Route 15. However, Meriden's low household incomes and high levels of vacancy will limit private investment in the area.

The median home value in Meriden is \$149,700². Meriden home values have declined 2.9% over the past year and are predicted to fall 0.8% within the next year². Median home values have fluctuated for several years, staying below \$180,000 since 2008². The median single family home sales price is currently \$147,800³. The median condominium sales price is \$89,500³.

Median Home Value Trends, City of Meriden ²



1. 2009-2013 American Community Survey

2. Zillow.com, Meriden, CT Home Prices & Values, www.zillow.com/meriden-ct/home-values

3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Fresh Ambitions

Average Household Size: 3.13
 Median Age: 28.0
 Median Household Income: \$26,000

Young families, many recent immigrants, focus on their children. Not highly educated, but many have a high school diploma. Work overtime in skilled and unskilled service jobs. Income is often supplemented with public assistance and Social Security. Spend more than one-third of their income on rent, though they can only afford to live in older row houses or multi-unit buildings. Budget wisely not only to make ends meet but also to save for a trip back home.

Front Porches

Average Household Size: 2.55
 Median Age: 34.2
 Median Household Income: \$39,000

Blend household types, more young families with children or single households than average. Half of householders are renters, and many of the homes are older town homes or duplexes. Make household buying decisions with help of friends and family. Enjoy cars that are fun to drive. Income and net worth are well below the US average, and many families have taken out loans to make ends meet.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

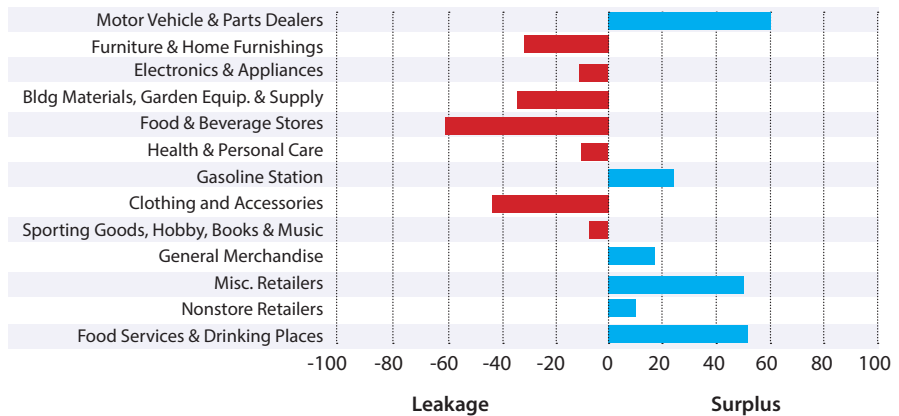
The median monthly rental list price in Meriden is \$1,300¹, which is comparable to the New Haven Metro median of \$1,295. The monthly rental cost index, which is a calculation of listing prices and actual rental costs is slightly higher at \$1,399¹. Rents in Meriden have increased since 2014, reaching a five-year high in mid-2015.

Monthly Rental Cost Index, City of Meriden ¹



Meriden Station is located in Meriden's downtown, contributing to a relatively strong retail presence near the station. Retail sectors that are underrepresented include food & beverage stores and clothing & accessories, both of which are generally favorable to transit oriented development.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Meriden, CT Home Prices & Values, www.zillow.com/meriden-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

➔ Provide bicycle facilities in the station area.

Downtown Meriden lacks bicycle lanes, shared lanes, and bicycle warning or route signage. The provision of bicycle facilities leading to the station would expand access to the station.

Connectivity

Of the 502 acres located within a 1/2 mile radius of the station site, 329 acres are accessible within a 1/2 mile walk of the station platform (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the half-mile walkshed.

The Meriden Transit Center is currently under construction. It will serve as a hub for the Hartford Line, local bus, taxi, and van service. Access to the train station is provided by a number of local roads including State Street and West and East Main Streets. There are 10.7 miles of public roadways within a 1/2 mile walk of the station platform, 100% of those roadways have sidewalks on at least one side of the street. Due to the station's proximity to Downtown Meriden, the area has a Walk Score of 79 (out of 100) points.



Site plan of new station showing planned parking areas

Parking

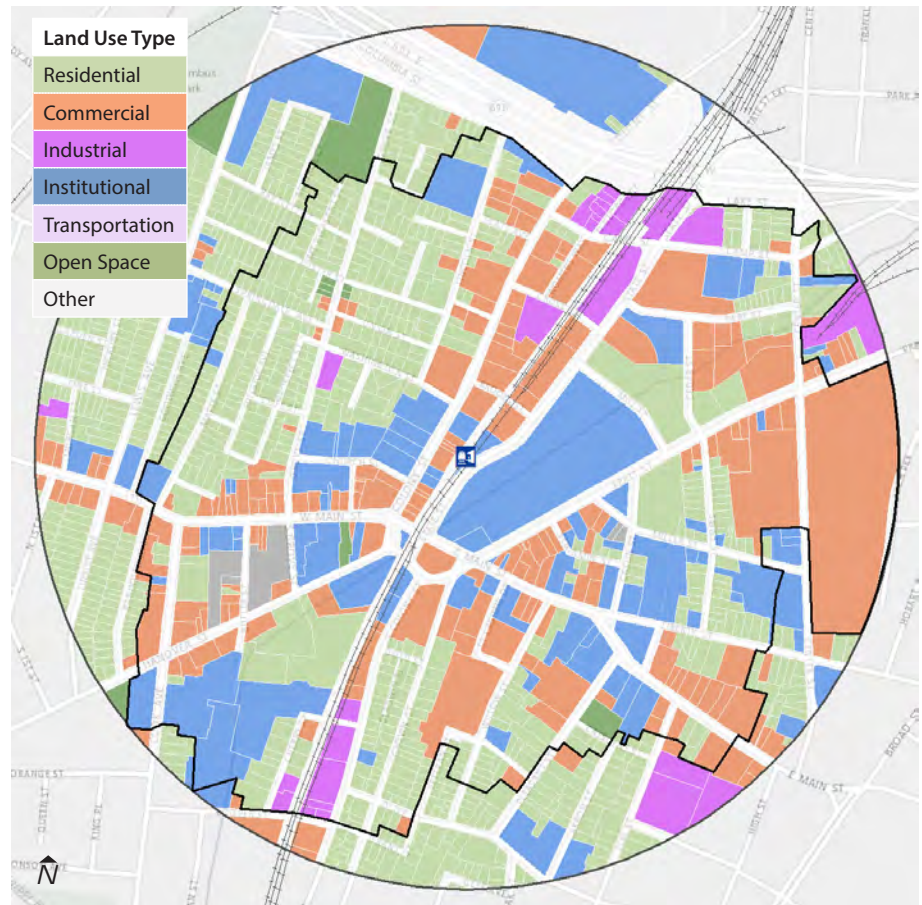
The new Meriden Station will provide 273 parking spaces in one lot and one garage. The Colony Street parking garage, which is west of the station, is under construction and will contain approximately 200 spaces. The State Street lot, immediately east of the station, will contain 79 spaces.

The lots will be owned and managed by the Connecticut Department of Transportation. It has not yet been determined whether free parking will be provided in these facilities or if there will be fee-based parking.

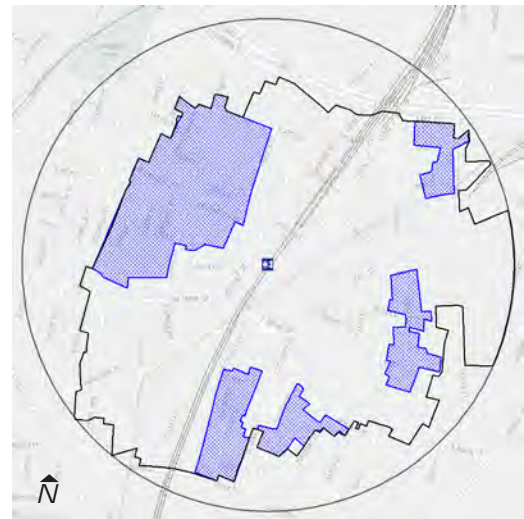
Land Use

Of the 329 parcel acres within the 1/2 mile walkshed, 66 acres (20%) are occupied by transportation infrastructure such as roadways and the rail line and station site. 81 acres (25%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 48 acres (15%), and dedicated open space occupies 16 acres (5%).

The total area of remaining land, being commercial, industrial, vacant or underutilized residential parcels is 118 acres. This area is potentially available for transit oriented development or redevelopment.



Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 25% of the 1/2 mile walkshed.



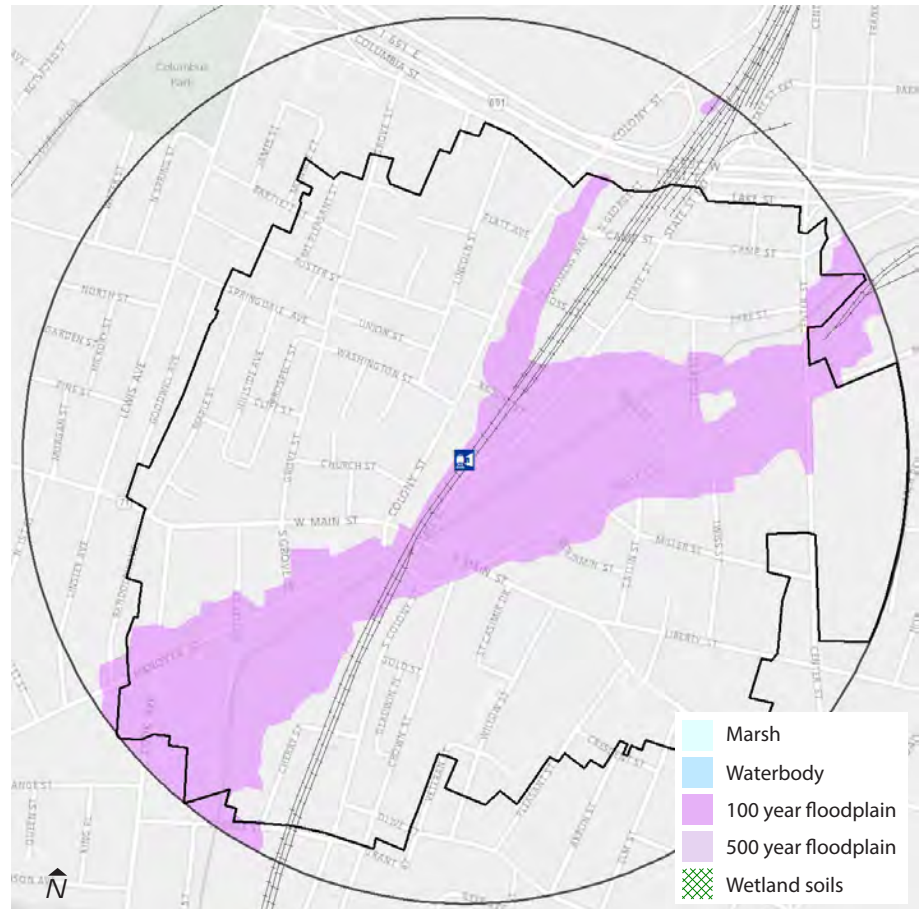
Environmental Features

A significant percentage (26%) of the station area walkshed is within the 100 or 500 year floodplain. There are no significant wetlands or waterbodies within the study area.

While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The City of Meriden is currently engaged in improvements to bridges and drainage systems to reduce the impact of potential flooding. A reevaluation of the flood zone will be conducted once improvements are complete. Improvements are expected to significantly reduce the extent of the floodplain within the downtown area.

26% of dry land within the 1/2 mile walkshed is within a floodplain

On-going flood control work is expected to significantly reduce this area



Zoning

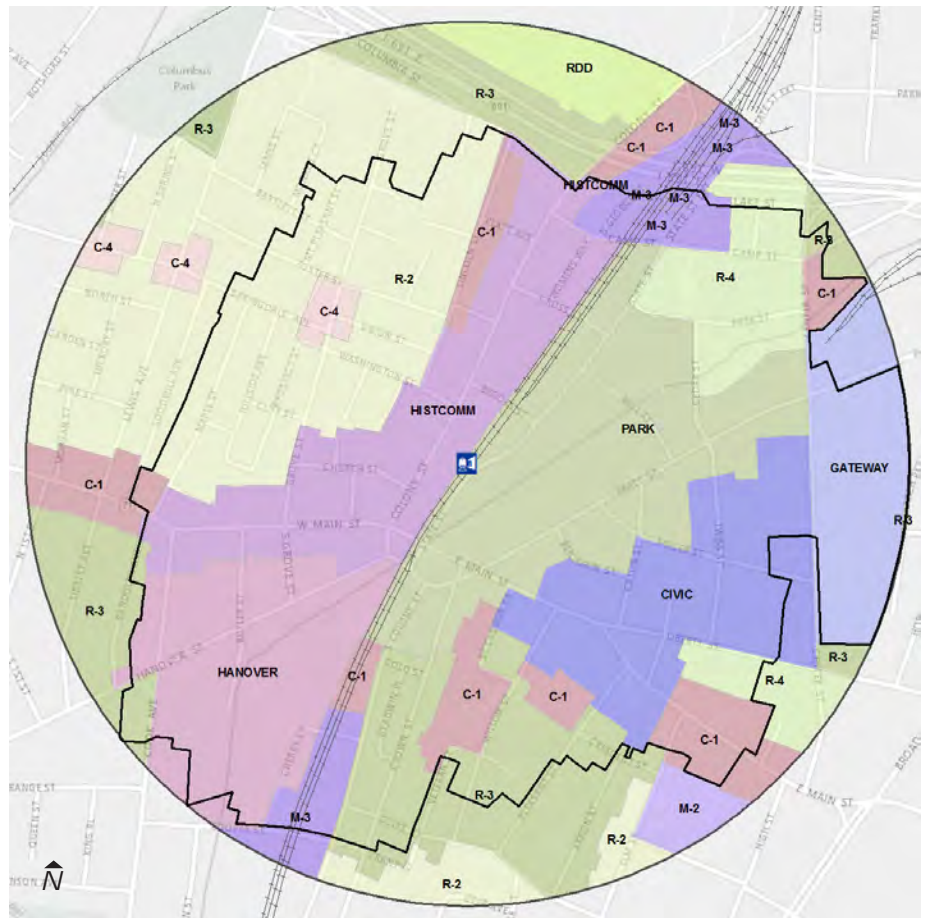
The Meriden station area has twelve zoning districts within the ½ mile station radius. This includes five TOD sub-districts which occur immediately surrounding the station site and stretch roughly 1/2 mile from the station.

The TOD sub-districts all have the language necessary to foster TOD including encouraging mixed-use (including mixed-income residential), permissible densities ranging from 3 to 100 units per site and lot coverage ranging from a minimum of 40% up to 100%, minimum and maximum parking standards, flexible parking standards, sidewalk and bicycle parking standards, and design standards to promote place-making. The TOD sub-districts also encourage adaptive re-use of existing buildings to serve TOD objectives. Auto-oriented businesses are permitted under certain conditions of compatibility with the character of the TOD zoned areas.

Zoning Recommendations

→ Expand the Park or Civic subdistrict to include the C-1 districts in the southwest corner of the study area.

These districts are currently occupied by commercial land uses that would be suitable to transit oriented redevelopment.



Zoning Legend

HISTCOMM:	TOD
HANOVER:	TOD
PARK:	TOD
CIVIC:	TOD
GATEWAY:	TOD
C-1:	Commercial
C-4:	Nbhd Comm.
M-3:	Industrial
R-2:	Residential
R-3:	Residential
R-4:	Residential
RDD:	Regional Development

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

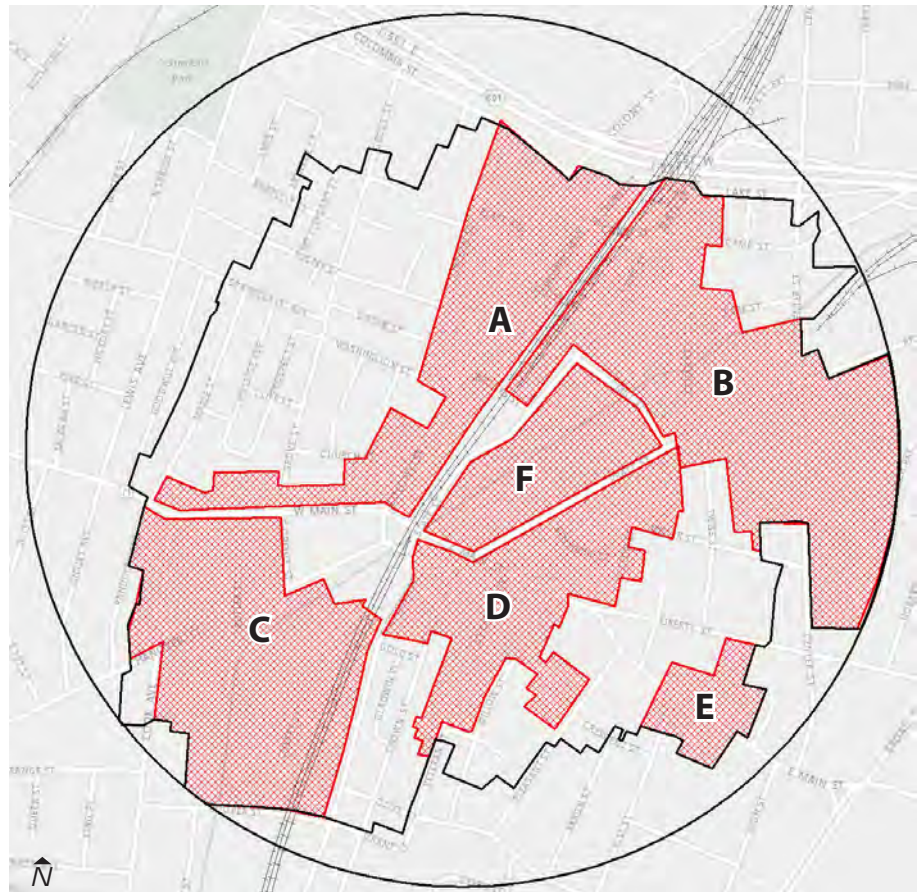
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area "walkshed".
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - c. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - d. Municipal and institutional parcels such as schools and churches
 - e. Protected open space such as public parks, cemeteries, and conservation areas
 - f. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
7. Subtract from the remaining area land that is physically prohibitive to development:
 - h. Wetlands
 - i. Water bodies
 - j. Floodways
11. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station.



Area A: This area, along Colony Street, is located primarily within the TOD Commercial/Historical zoning district and has a mixture of commercial, retail and residential uses. Mixed-use development as been proposed for this site in support of the station redevelopment.

Area B: This area is located within the TOD Park, Civic, and Gateway zoning districts. It includes public housing developments and commercial and industrial properties.

Area C: This area is located within the TOD Commercial/Historical and TOD Hanover zoning districts. The area includes high density public housing, commercial, and industrial properties with significant quantities of surface parking.

Area D: This area, located along East Main and Willow Streets, has good proximity to the new HUB park. The area is comprised of a mixture of medium density commercial and residential land uses.

Area E: This area extends along East Main Street and contains a number of residential and commercial properties that have potential for redevelopment or TOD infill.

Area F: This area is comprised of the HUB site. The site is currently under development and with flood control measures being taking to remove floodplain associated development constraints. Much of the site will remain open space.



1. "Factory H" 116 Cook Avenue, 77 Cooper Street, 104 Butler Street

Combined, these vacant parcels occupy 10 acres and are within walking distance of the train station. The Cook Avenue parcel has a vacant 74,000 sf building. \$7.8 m environmental cleanup has been conducted to date.



2. Mills Block

Currently occupied by a 140-unit Meriden Housing Authority complex that is obsolete by HUD standards. The Meriden Housing Authority has received a \$500,000 Choice Neighborhoods Grant for redevelopment.



3. 24-44 Colony Street
Vacant & surface parking, 1.6 acres total

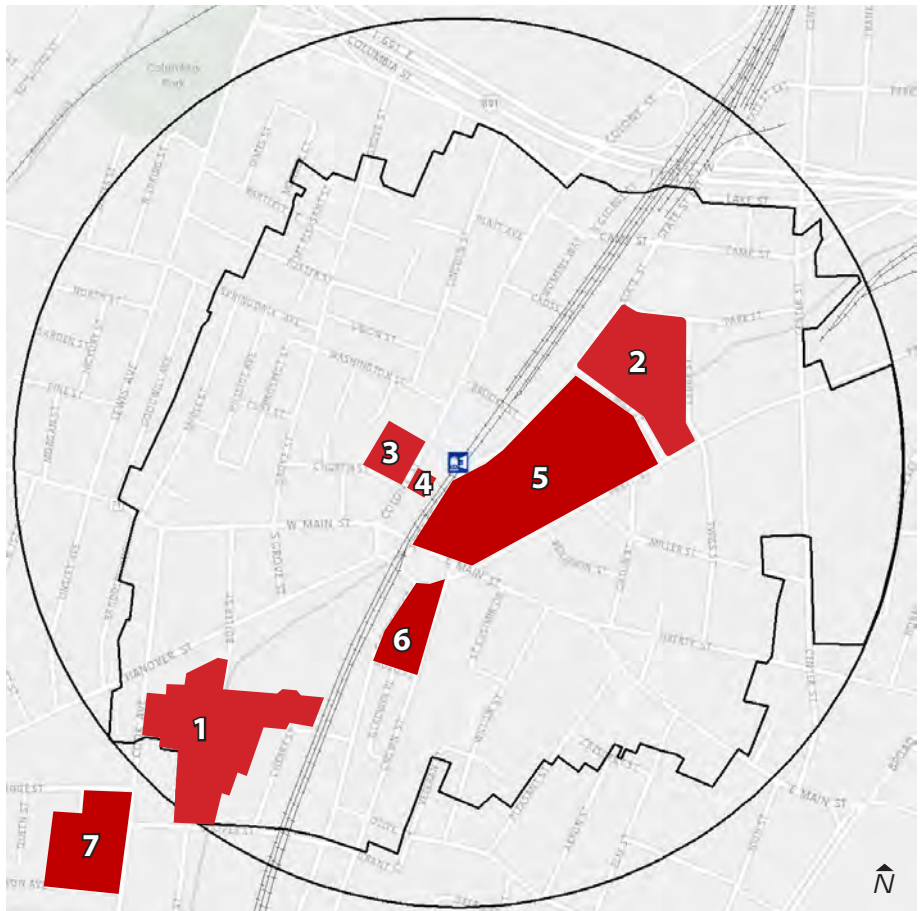
4. 25-33 Colony Street
Vacant parcel, 0.23 acres total

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	36.1	Commercial, retail, residential	TOD Commercial/ Historical	Floodplain
B	57.6	Public housing, commercial, industrial	TOD Park, Civic, Gateway	Floodplain
C	43.8	Public housing, commercial, industrial	TOD Commercial/ Historical, Hanover	Floodplain
D	29.7	Commercial, residential	TOD Park, TOD Civic, Commercial	
E	7.3	Commercial, residential	Commercial	
F	14.0	Open Space	TOD Park	Open Space, Floodplain

*Inclusive of municipal right-of-way within each opportunity area

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Meriden



5. HUB Site

Currently under redevelopment, includes flood control measures and open space. Select areas of parcel are reserved for development. 14 acres total, including open space. 170 units of housing and 15,000 sf of commercial space is planned for three different parcels within the site.



6. 11 Crown Street

81 units of residential and 15,000 sf of commercial space is planned. The site is 1.6 acres in total.



7. Former Meriden-Wallingford Hospital

This 5 acre site includes a 275,000 sf building and a parking garage. While outside of the 1/2 mile station radius, the site is within walking distance of Meriden Station and is located in the TOD Hanover zone.

Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	10.0	Industrial, undeveloped	TOD Hanover	Floodplain	Has a vacant 74,000 sf building. \$7.8 m environmental cleanup has been conducted to date.
2	6.7	Public housing, parking, open space	TOD Park	Floodplain, Active land use	The MHA has a \$500,000 Choice Neighborhoods Grant for redevelopment of the site.
3	1.6	Vacant, parking	TOD Hist/Comm		
4	0.2	Vacant	TOD Hist/Comm		
5	14 (includes park)	Vacant	TOD Park		Includes 3 parcels on the HUB site, 170 units of housing and 15,000 sf of commercial space is planned
6	1.6	Vacant	TOD Park		81 residential units and 15,000 sf of commercial space is planned
7	5.0	Vacant	TOD Hanover		Former Meriden-Wallingford Hospital site, includes a 275,000 sf building and parking garage

Wallingford



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Hartford Line
Population	3,621
Households	1,574
Median household income	\$54,281
Median home value	\$200,311
Housing units	1,725
Autos per household	1.69
Commute via transit within 3 minute drive time	<1%
Drive to work alone within 3 minute drive time	78%
Miles of roadway within 1/2 mile walk of station platform	6.8
Roadway with sidewalk on at least one side of road	81%
Walk Score	71
Departing transit trips from station per week	267
Weekday station ridership (2010)	21
Housing units planned or in development	0
Housing vacancy within 3 minute drive time	11%
Total number of businesses within 3 minute drive time	813
Total number of jobs	1,334

Wallingford

With the launch of Hartford Line commuter rail service, Wallingford Station will have 34 departing trains per weekday with approximately 200 departing trains per week. The station area is primarily comprised of residential land uses with some commercial, industrial, and mixed land uses and open space.

The new station is under construction less than a half mile north of the Town's existing station and will have access from North Cherry Street and North Colony Road. The station will include a platform on the east side of the tracks off of North Colony Road near Holy Trinity Church. There will also be a platform on the west side of the tracks near North Cherry and Parker Streets.

There is potential for infill development and redevelopment on adjacent underutilized land near the train station. Cherry Street has potential for improvement and/or redevelopment. Additionally, a parcel just behind the existing station on North Cherry Street has the potential for development. Given the historical industrial land uses in the area, there are many sites that have potential contamination and this will be a challenge to development on certain sites.

The Town has approved an Incentive Housing Zone (IHZ) in the downtown area to encourage affordable housing and high-density development, particularly in the vicinity of the train station. The IHZ will have a four-story maximum. North Colony Street would need improvements to the roadway to improve connectivity between the Downtown and rail station.

The population within a 1/2 mile radius of the station is 3,621. Automobile dependency is relatively high with 1.69 autos per household and 78% of the local population of workers driving to work alone. The use of the station by commuters within the station area is anticipated to be relatively low, with less than 1% of commuters travelling by transit (train or bus). Despite the automobile dependency, the station is within a ten minute walk of Wallingford Center where a number of goods and services are available. Sidewalk links are available in the area and sidewalks are located on at least one side of the street on 81% of the station area roadways.



Birdseye view of proposed station site. Source: Bing Maps

Wallingford

Transit Service

Hartford Line 200 departures per week (34 per weekday) are anticipated with start of commuter rail service in late 2016

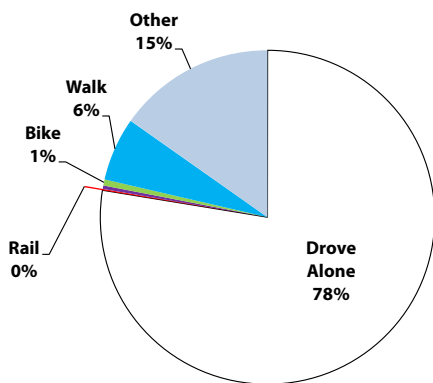
Bus CT Transit C Line, 33 departures per weekday, 12 total departures per weekend

Commuter Patterns

According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 78% driving alone to work, 6% walking to work, and less than 1% using transit.

The latest census based origin-destination employment statistics² show that 1,280 workers commute to the station area (area within 1/2 mile radius of station), with 1,959 workers who live in the station area commuting to work outside of the station area. A small number (54) of workers live and work within the station area.

Transportation to Work ¹
(workers within 3 minute drive of station)

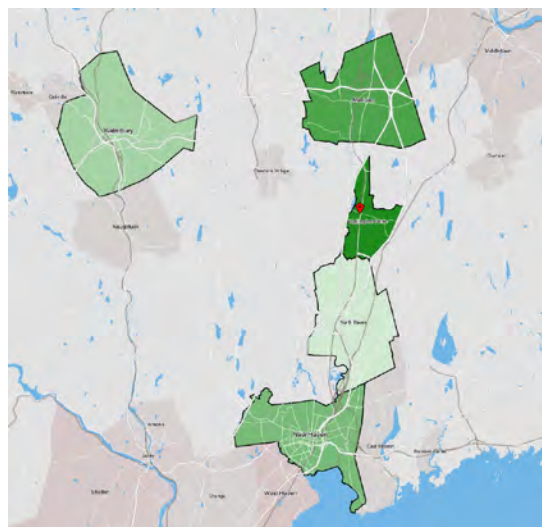


Of workers who commute to the station area, most commute from the Town of Wallingford, with Meriden being the second most common origin. New Haven, Waterbury, and North Haven are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is also the Town of Wallingford. This is followed by New Haven, with Meriden, North Haven, and Hartford being amongst the top five destinations of workers who reside in the station area.

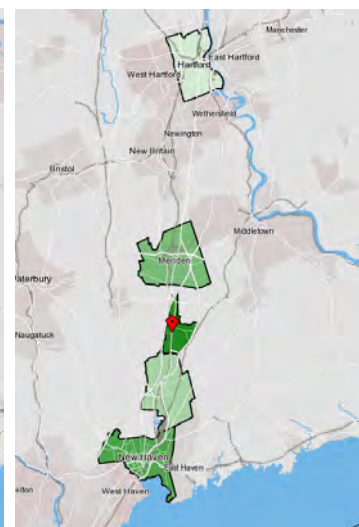
Approximately 25.1% of commuters travelling to work from the station area have destinations in New Haven, Meriden, North Haven, Hartford. Given Hartford Line rail station locations in those communities, these statistics would suggest the potential for expansion of transit use beyond the 21 trips made per day from Wallingford Station. This potential is governed by multiple factors including but not limited to the level of connectivity between place of employment and the local station.

Commuting Patterns of Workers to and from Wallingford Station Area²
(Top 5 origins/destinations)

Inbound Commuters From	#	%
Wallingford	191	14.3
Meriden	183	13.7
New Haven	39	2.9
Waterbury	25	1.9
North Haven	24	1.8
Outbound Commuters To	#	%
Wallingford	321	15.9
New Haven	210	10.4
Meriden	135	6.7
North Haven	90	4.5
Hartford	71	3.5



Top five origins of workers who commute to Wallingford Station area.²

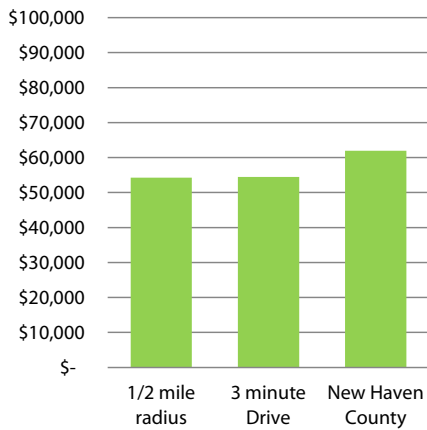


Top five destinations of workers who live in the Wallingford Station area.²

1. 2009-2013 American Community Survey

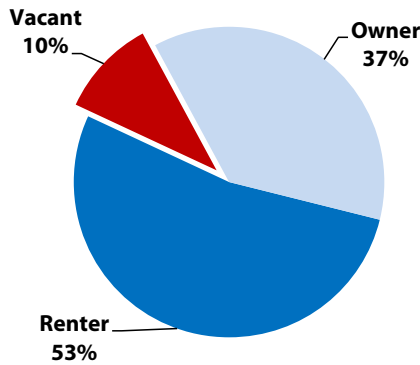
2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OnTheMap.com

Median Household Income ¹



Household income is below the regional average and increases slightly with distance from the station.

Housing Occupancy ¹
(within 3 minute drive of station)



The vacancy rate within a 3 minute drive of the station is 10%, which is well above the state average of 6.8%. Renters occupy a majority of housing units.

Market Assessment

Wallingford has a 2012 median household income (MHHI) over \$75,000, which is significantly above the Connecticut median of nearly \$68,000¹. The Town is home to approximately 45,047 residents and is located in close proximity to New Haven and is 81 miles from New York City and less than 22 miles to Hartford. Like Connecticut overall, Wallingford has a well-educated population, with 33% of residents having a Bachelor's Degree or higher. The predominant form of housing is single family, and approximately 70% owner occupied.

The Wallingford Train Station has potential for Transit Oriented Development, however, when compared to the previous station, location may be an issue. The new station was built on an industrial road, approximately half a mile away from the previous Amtrak Station. This location, while within walking distance of the Downtown is somewhat out of the way. The previous station on the Town Green was within walking distance of downtown as well as several restaurants and small businesses.

The median home value in Wallingford is \$231,900². Wallingford home values have declined 0.9% over the past year and are predicted to remain flat within the next year². Median home values have fluctuated for several years, staying below \$275,000 since 2006². The median single family home sales price is currently \$284,000³. The median condominium sales price is currently \$177,300³.

Median Home Value Trends, Town of Wallingford ²



1. 2009-2013 American Community Survey
 2. Zillow.com, Meriden, CT Home Prices & Values, www.zillow.com/meriden-ct/home-values
 3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Golden Years

Average Household Size: 2.05
 Median Age: 51.0
 Median Household Income: \$61,000

Independent, active seniors nearing the end of their careers or already in retirement. Primarily singles living alone or empty nesters. Actively pursuing a variety of leisure interests—travel, sports, dining out, museums, and concerts. Involved, focused on physical fitness, and enjoying their lives. This market is smaller, but growing, and financially secure.

Exurbanites

Average Household Size: 2.48
 Median Age: 49.6
 Median Household Income: \$98,000

Approaching retirement but showing few signs of slowing down. Active in their communities, generous in their donations, and seasoned travelers. Take advantage of their proximity to large metropolitan centers to support the arts, but prefer a more expansive home style in less crowded neighborhoods. Their lifestyle that is both affluent and urbane.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

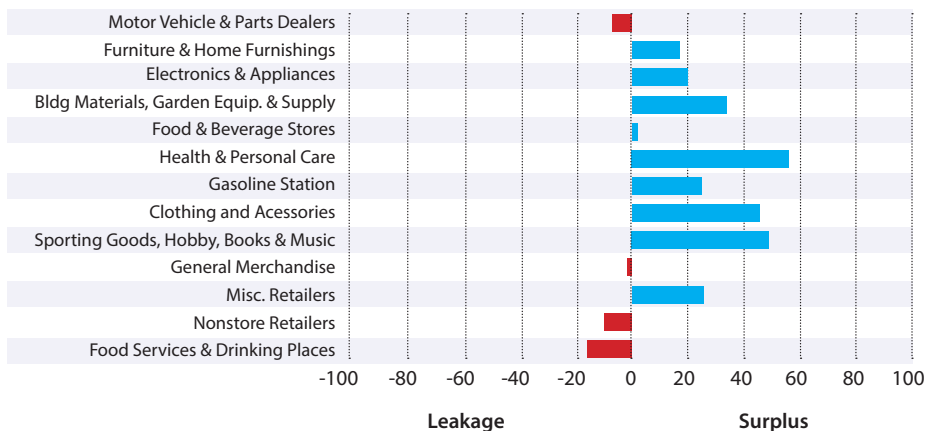
The monthly rental cost index, which is a calculation of listing prices and actual rental costs is \$1,699¹. This is slightly above the New Haven Metro rental cost index which is \$1,651¹. Rents in Wallingford have increased since 2011, reaching a five-year high in mid-2015.

Monthly Rental Cost Index, Town of Wallingford ¹



The planned Wallingford Station is located in proximity to Wallingford's downtown, contributing to a relatively strong retail presence near the station. Retail sectors that are underrepresented include food & beverage stores and clothing & accessories, both of which are generally favorable to transit oriented development.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, Wallingford, CT Home Prices & Values, www.zillow.com/wallingford-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Connectivity

A new station site is currently being constructed north of the existing station between North Cherry Street and North Colony Road approximately 1/2 mile from the previous station on the Town Green. It is accessible by Route 15, and I-91, and Route 15. It is located on a largely industrial road, but is proximate to Wallingford's Downtown. Access to the train station will be provided from those streets with automobile and pedestrian access provided on both sides of the tracks.

Of the 502 acres located within a 1/2 mile radius of the station site, 343 acres are accessible within a 1/2 mile walk of the station platform (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the half-mile walkshed.

There are 6.8 miles of public roadway within the station walkshed, 81% of those roadways have a sidewalk on at least one side of the street. Due to the station's proximity to the Town Center, the area has a high Walk Score of 71 (out of 100) points.

Recommendations for Improving Local Connectivity

→ Enhance North Colony Street between new station area and Downtown
Provide a comparable level of amenities on North Colony Street as those found in the downtown including pedestrian scaled lighting and wide sidewalks.

→ Provide bicycle facilities in the station area.
Downtown Wallingford lacks bicycle lanes, shared lanes, and bicycle warning or route signage. The provision of bicycle facilities leading to the station would expand access to the station.

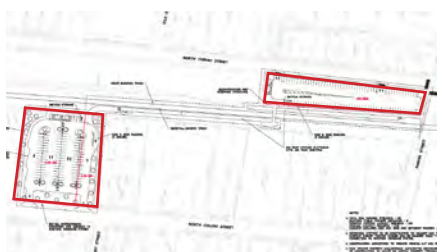
→ Reroute Wallingford Local Bus onto North Cherry Street
Routing of the Wallingford Local Bus onto North Cherry Street would allow for a stop at the new station location.



Parking

The new Wallingford Station will provide 221 parking spaces in two lots. The North Colony Street lot will be located west of the new station with the North Cherry Street lot on the east side of the new station.

The lots will be owned and managed by the Connecticut Department of Transportation. It has not yet been determined whether free parking will be provided in the lots or if there will be fee based parking.

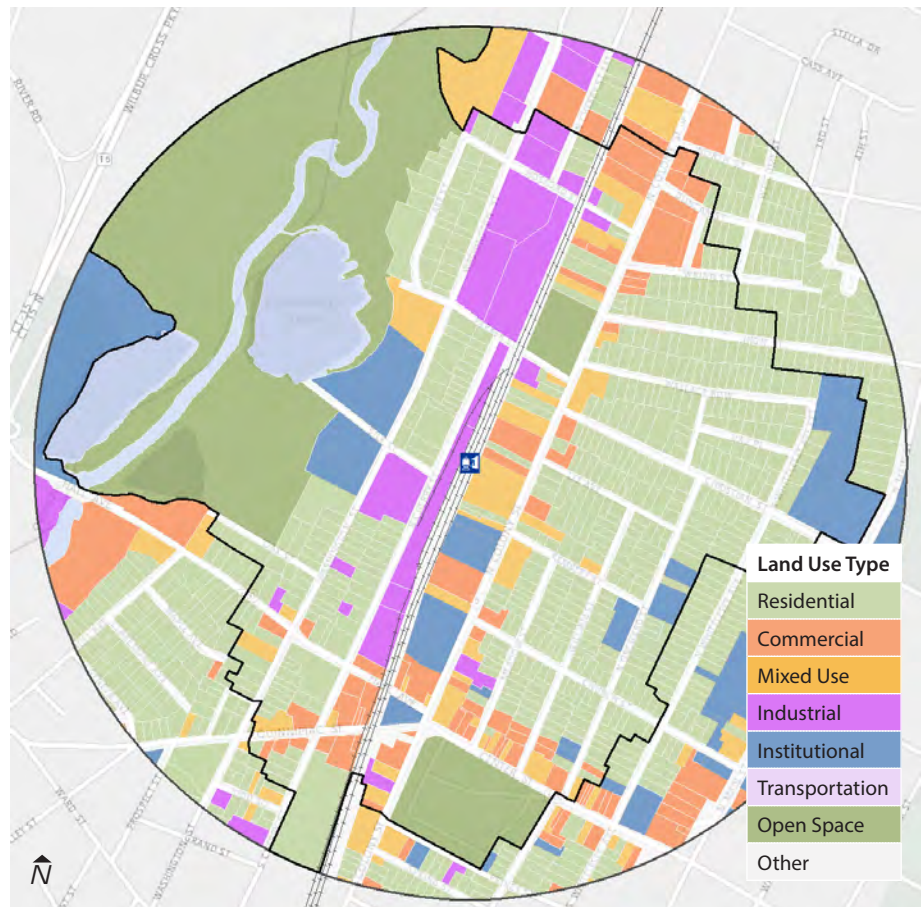


Site plan of new station showing planned parking areas

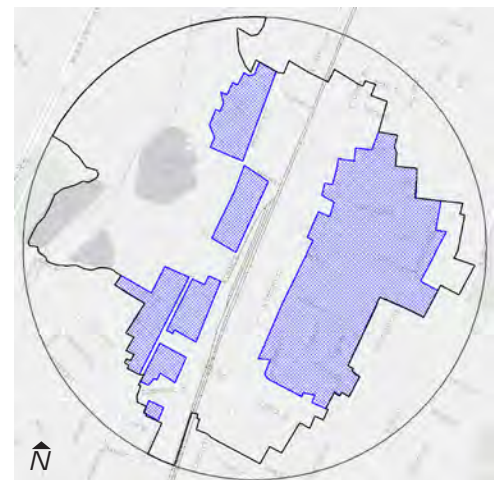
Land Use

Of the 343 parcel acres within the 1/2 mile walkshed, 47 acres (14%) are occupied by transportation infrastructure such as roadways and the rail line and station site. 122 acres (33%) are occupied by built-out residential land uses, municipal and institutional land uses occupy 22 acres (6%), and dedicated open space occupies 84 acres (25%).

The total area of remaining land, being commercial, industrial, vacant or underutilized residential land is 77.6 acres. Of this area, 3.3 acres are occupied by waterbodies or wetlands leaving 74.3 parcel acres that are potentially available for transit oriented development or redevelopment.



Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 33% of the 1/2 mile walkshed.



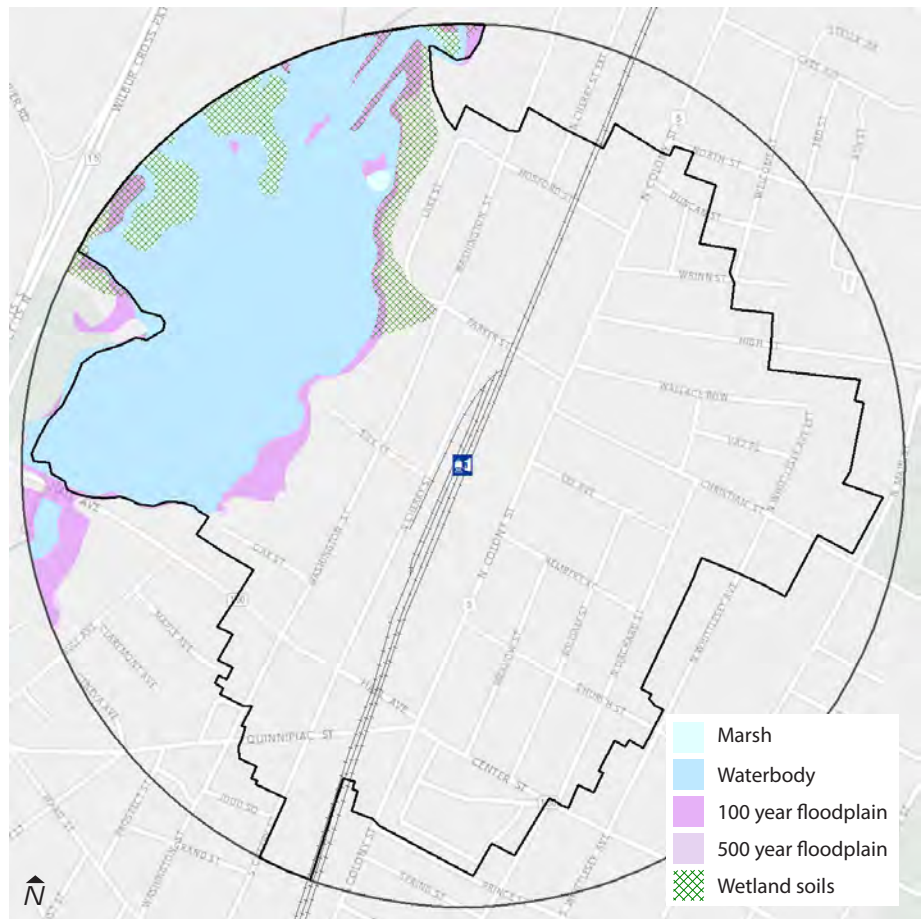
Environmental Features

Twenty-eight percent (95 acres) of the watershed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. Additionally, 93 acres (27%) of the watershed is located within a 100 year or 500 year floodplain. Most of this floodplain coincides with wetland and waterbody areas; consequently, only 1% of dry land, occupying 4 acres is within the floodplain. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

27% of the 1/2 mile watershed is within a floodplain

28% of the 1/2 mile watershed is covered by wetlands and/or waterbodies

1% of dry land within the 1/2 mile watershed is within a floodplain



Zoning

Wallingford has thirteen different zoning districts within the ½ mile station radius. The existing zoning in the immediate vicinity of the new station site is industrial and commercial zoning that prohibits residential uses. Wallingford has recently been approved for an Incentive Housing Zone (IHZ) in the station area which would allow for a high density of residential development in the station area. The zone is shown on the map below.

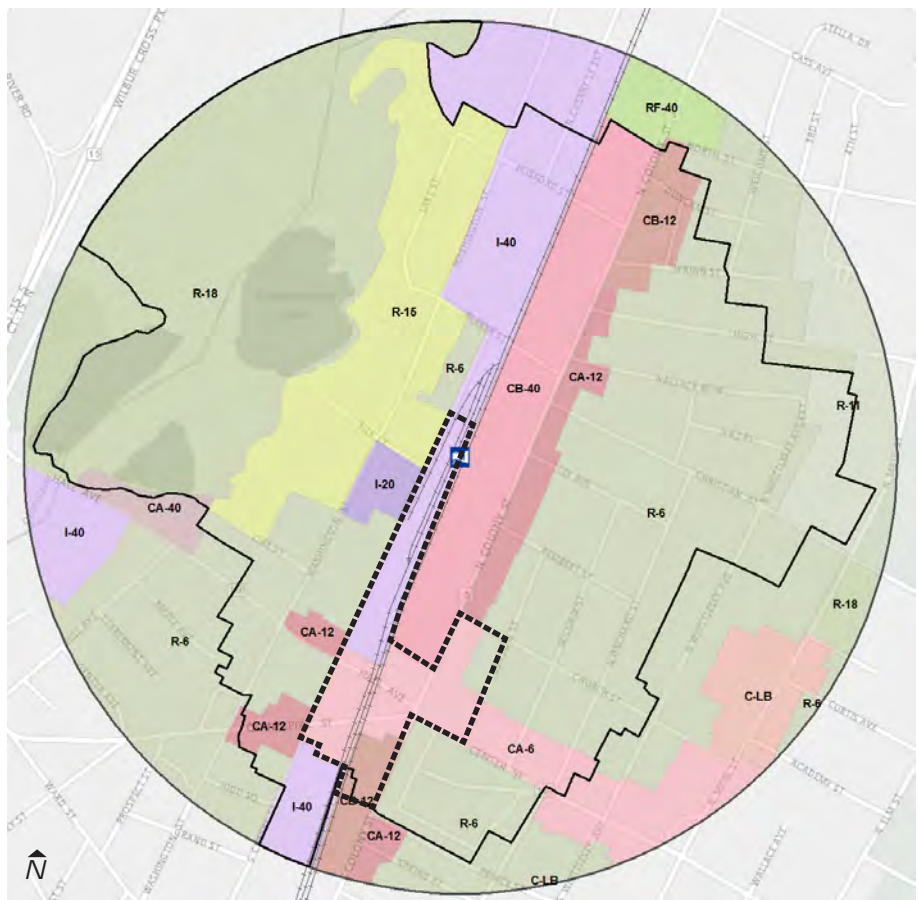
Zoning Recommendations

→ Create a TOD district or overlay district in the station area.

A TOD district in the station area is necessary to support the residential densities and mixture of uses typical of transit oriented development.

Aside from allowing moderately high densities, the existing zoning does not include any transit-supportive language. The largest residential zones within the ½ mile radius of the rail station are limited to single-family residential uses on lots sizes from 6,250 s.f. to 18,000 s.f. (or 1/6 to ½ acre).

The commercial zones which run largely north to south along the east side of the rail tracks, comprise approximately 15% of the zoning coverage within the ½ mile radius area. The largest commercial zone, CB-40, is intended for general commercial uses on lots of one acre or more. It does not have any transit-supportive features.



Zoning Legend

- CA-6 Commercial
- CA-12: Commercial
- CA-40 Commercial
- CB-12: Commercial
- CB-40: Commercial
- C-LB: Central Business
- I-20 Industrial
- I-40: Industrial
- R-6: Residential
- R-11 Residential
- R-15: Residential
- R-18: Residential
- RF-40: Rt 5 Corridor
- IHZ Overlay

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

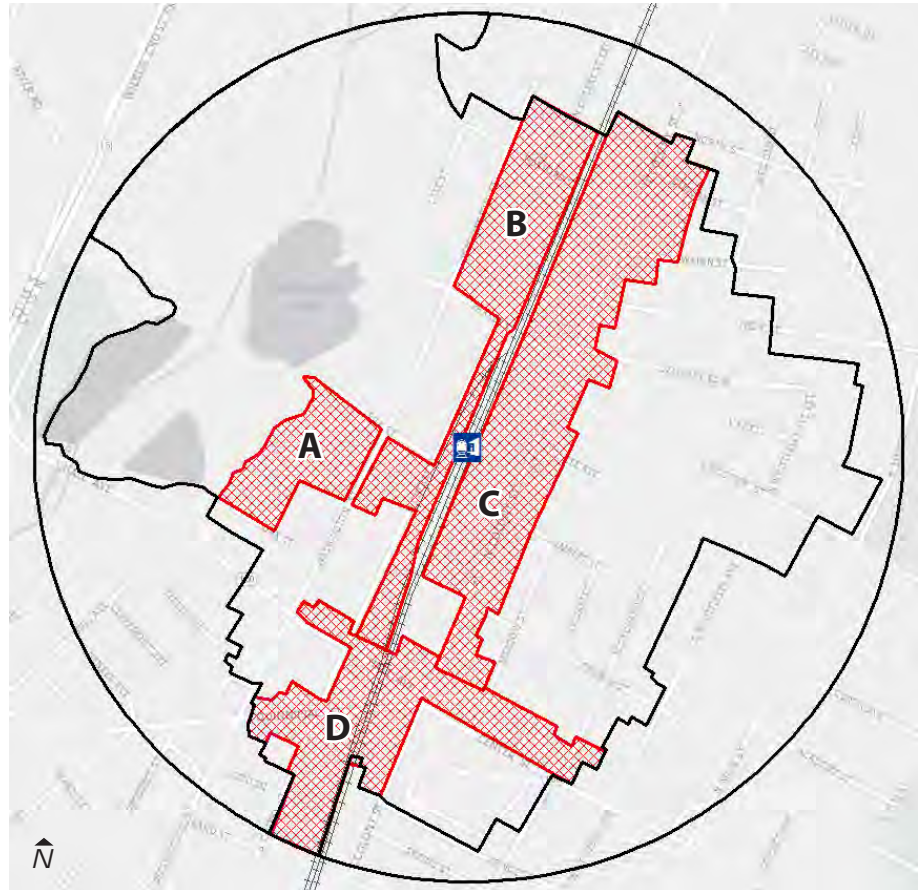
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - c. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - d. Municipal and institutional parcels such as schools and churches
 - e. Protected open space such as public parks, cemeteries, and conservation areas
 - f. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
7. Subtract from the remaining area land that is physically prohibitive to development:
 - h. Wetlands
 - i. Water bodies
 - j. Floodways
11. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: This area is comprised of mostly vacant and wooded land on the west side of Washington Street. One of the three parcels within this area is owned by the Town.

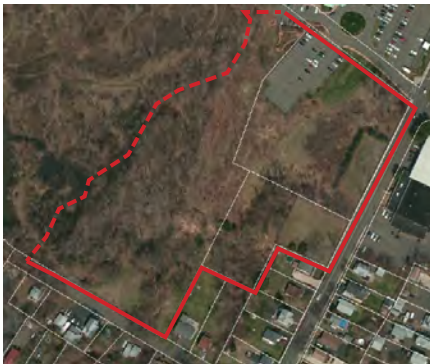
Area B: This area is on the west side of the rail corridor and stretches north/south along North Cherry Street. The area is primarily comprised of commercial, industrial, and vacant parcels. Redevelopment of existing industrial and commercial land uses or infill development of vacant sites would be required for TOD in this area.

Area C: This area is east of the rail corridor and stretches north/south along North Colony Street. Existing land uses include a mixture of low density retail and residential buildings which have potential for redevelopment or infill development.

Area D: This area is along Center Street, Hall Avenue, and Quinnipiac Street occupying the west side of Downtown Wallingford and the existing train station site. Land uses are primarily retail, office, and commercial.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	9.5	Undeveloped	Residential	Marsh, wetlands, floodplain to west of area, potential contamination
B	21.2	Industrial, commercial	Industrial, commercial, IHZ	
C	40.4	Retail, residential	Commercial	
D	23.6	Retail, office, commercial	Commercial, Industrial, IHZ	

**Inclusive of municipal right-of-way within each opportunity area*



1. 287 Hall Ave; 226, 236 Washington Street Combined, these three parcels have a total of 7 acres of dry land. 287 Hall Avenue is a large property owned by the Town, much of which is consumed by wetlands, but has dry land at the eastern edge of the parcel. There is also potential contamination on the site associated with a former use. The Washington Street parcels are privately owned.



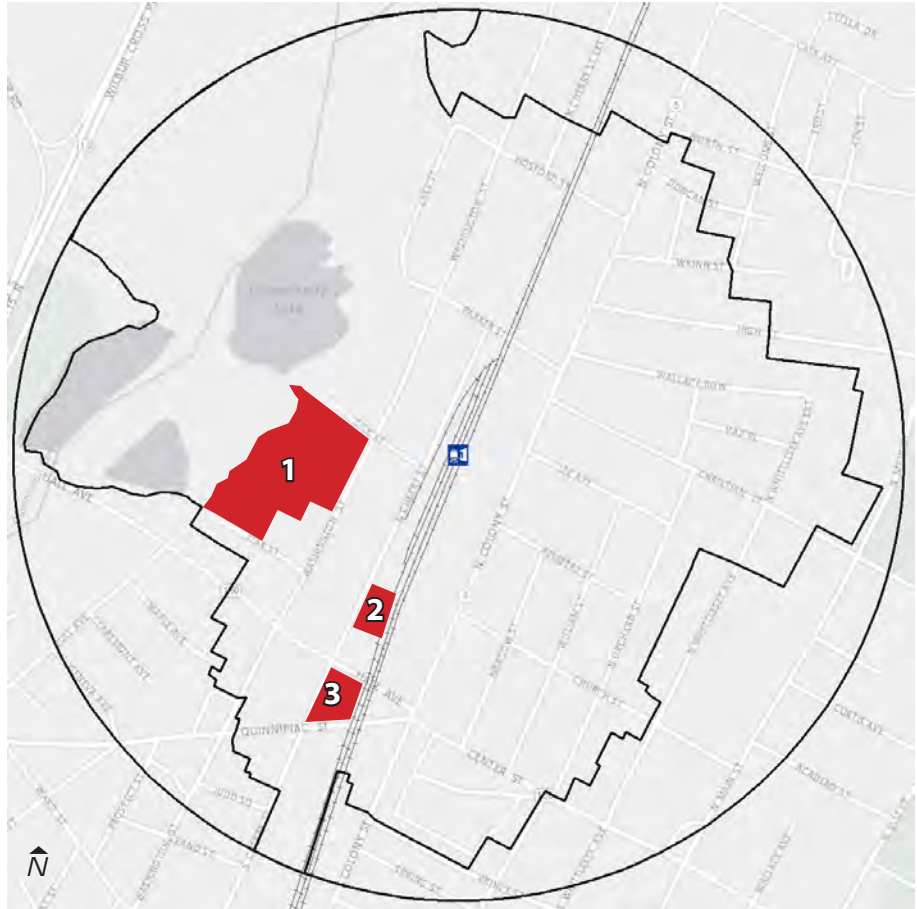
2. 63, 95 North Cherry Street
This potential site is one acre in area and is occupied by small commercial buildings at 95 North Cherry Street and a self storage facility on the northern half of the parcel at 63 North Cherry Street. The site is immediately south of the new station area.



3. 33 North Cherry Street, 120 Hall Avenue, 71-105 Quinnipiac Street
Comprised of seven separate parcels, this potential site is 1.5 acres and is occupied by small commercial buildings and a restaurant. Much of the area is comprised of parking that serves the existing station.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	7.0	Undeveloped, Parking	Residential	Marsh, Wetlands, and Floodplain to west, potential contamination.	Includes Town-owned property
2	1.0	Commercial	Industrial	Active land use	Within IHZ
3	1.5	Commercial	Commercial	Active land use	Within IHZ

North Haven



Summary

(1/2 mile radius of station unless otherwise noted)

Service	Hartford Line
Population	119
Households	41
Median household income	\$60,310
Median home value	\$265,000
Housing units	42
Autos per household	1.83
Commute via transit within 3 minute drive time	10%
Drive to work alone within 3 minute drive time	85%
Miles of roadway within 1/2 mile walk of station platform	2.5
Roadway with sidewalk on at least one side of road	19%
Walk Score	29
Estimated potential departing transit trips from station per week	380
Housing units planned or in development	0
Housing vacancy within 3 minute drive time	5%
Total number of businesses within 3 minute drive time	284
Total number of jobs	1,690

North Haven Station is identified as a new station for enhanced passenger commuter rail service as part of the Hartford Line. It is anticipated that 34 trains will depart per weekday with 380 trains departing per week. The station area is comprised of industrial land uses with smaller amounts of residential and commercial land uses and open space. The station is anticipated to be used primarily by commuters who arrive by car and park at the planned station lot.

The station is currently under design and will be located on Devine Street. It is anticipated to be constructed by 2017. The station will be comprised of two high-level platforms connected by an elevated pedestrian bridge. The existing park-and-ride lot will be utilized for parking and a new parking lot will be constructed on the east side of the tracks to supplement the existing park-and-ride lot.

The Town is actively working on developments near the proposed station area. Though active development projects are not contingent upon the development of the train station, these developments would likely foster ridership at the station. Development projects that the Town is working with developers on include the following:

- Yale/New Haven Hospital/Smilow Cancer Center
- Animal hospital
- Restaurant project
- Sidewalk improvements to State Street
- Housing development, including workforce/affordable housing

The primary constraints to development within the station area are the Quinnipiac River and the at-grade rail crossings, which limit development potential to the east side of the proposed station.

The population within a 1/2 mile radius of the station is low with only 119 residents according to census data. Automobile dependency is relatively high with 1.83 autos per household and 85% of the local population of workers driving to work alone. The use of the station by commuters within the station area is anticipated to be relatively low, although 10% of commuters in the station area are currently travelling by bus and could shift to the commuter rail service.



Birdseye view of proposed station site. Source: Bing Maps

North Haven

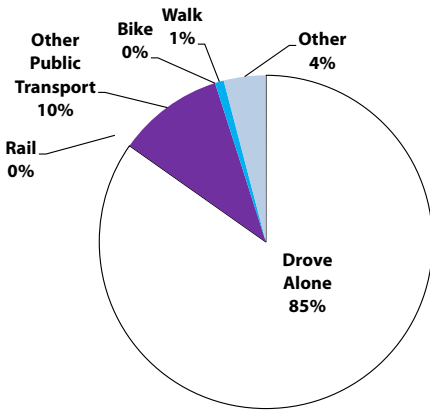
Transit Service

Hartford Line Future potential service of 34 departures per weekday with up to 204 total departures per week.

Bus CT Transit New Haven M Line 33 departures per weekday at nearest stop, 6 departures on Saturday at nearest stop

Transportation to Work ¹

(workers within 3 minute drive of station)



Commuting Patterns of Workers to and from North Haven Station Area² (Top 5 origins/destinations)

Inbound Commuters From	#	%
North Haven	178	10.5
New Haven	148	8.8
West Haven	76	4.5
East Haven	73	4.3
Meriden	53	3.1
Outbound Commuters To	#	%
New Haven	66	38.4
North Haven	20	11.6
Cheshire	4	2.3
Meriden	4	2.3
Middletown	4	2.3

Commuter Patterns

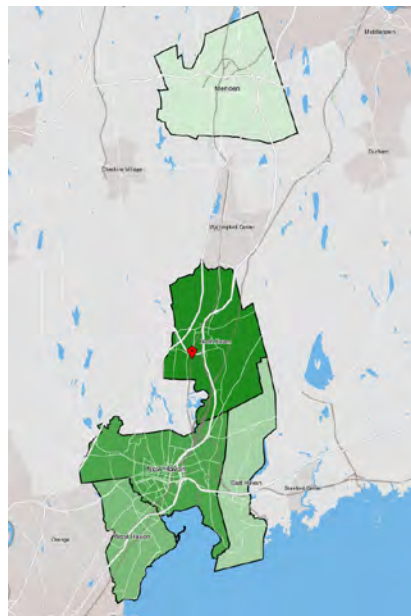
According to census data¹, local commuters within a three-mile drive time of the station make most trips to work by automobile, with 78% driving alone to work, 6% walking to work, and less than 1% using transit.

The latest census based origin-destination employment statistics² show that 1,685 workers commute to the station area (area within 1/2 mile radius of station), with 167 workers who live in the station area commuting to work outside of the station area. Only five workers both live and work within the station area.

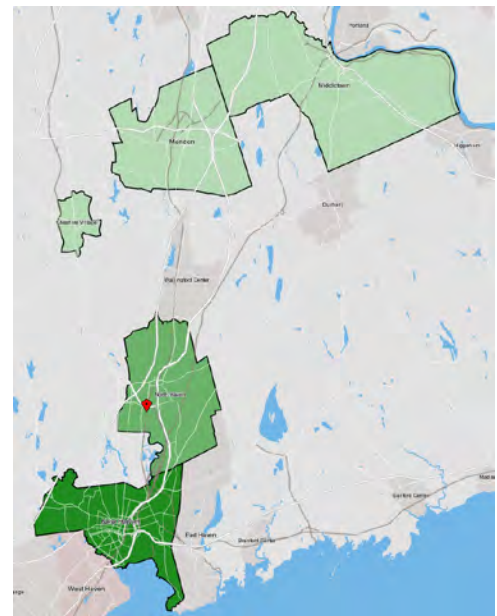


Of workers who commute to the station area, most commute from the Town of North Haven, with New Haven being the second most common origin. West Haven, East Haven, and Meriden are also the most common origin of workers in the station area. The top destination of workers who reside in the station area is the Town of New Haven. This is followed by North Haven, Cheshire, Meriden and Middletown being amongst the top five destinations of workers who reside in the station area.

Approximately 40.7% of commuters travelling to work from the station area have destinations in New Haven or Meriden. Given Hartford Line rail station locations in those communities, these statistics would suggest the potential for ridership from North Haven Station. This potential is governed by multiple factors including but not limited to the level of connectivity between place of employment and the local station.



Top five origins of workers who commute to the North Haven Station area.²

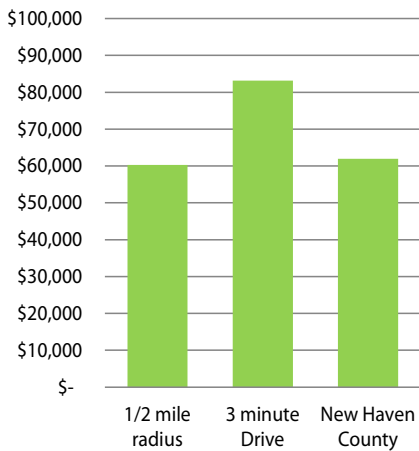


Top five destinations of workers who live in the North Haven Station area.²

1. 2009-2013 American Community Survey

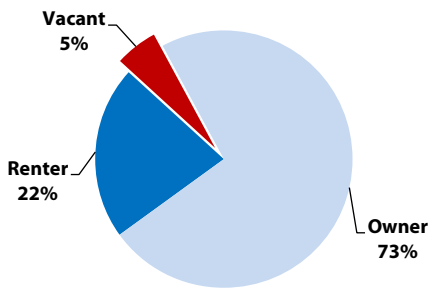
2. 2013 Census Longitudinal Origin-Destination Employment Statistics, OnTheMap.com

Median Household Income ¹



Household income in the immediately station area is only slightly lower than the region. Household income increases with distance from the station site.

Housing Occupancy ¹
(within 3 minute drive of station)



The vacancy rate within a 3 minute drive of the station is 5%, which is slightly less than the state average of 6.8%. Most housing units are owner occupied..

Market Assessment

North Haven is a prosperous community with a 2012 median household income (MHHI) over \$83,000, which itself is significantly above the Connecticut median of nearly \$68,000¹. The Town is home to approximately 24,037 residents and it enjoys quick access to New Haven and is 76 miles from New York City and less than 27 miles to Hartford. Like Connecticut overall, North Haven has a well-educated population. The predominant form of housing is single family, with a significantly higher percentage than the state average.

The planned North Haven Station has a moderate level of transit oriented development potential. The station is accessible by both I-91 and Route 15 and there are a number of large employers in the immediate area of the North Haven Station, with Quinnipiac University, the North Haven Medical Center, and numerous industrial sites in the vicinity.

Potential for shuttles between the station and Quinnipiac and the Medical Center allows the station to serve as a hub into the surrounding area. However, due to this concentration of employers, there is a lack of residential and pedestrian friendly uses near the station. In addition, the Route 40 interchange and Quinnipiac River create strong boundaries that limit potential development to only the north of the station.

The median home value in North Haven is \$262,300². North Haven home values have declined 2.9% over the past year and are predicted to fall an additional 0.2% within the next year². Median sales price of homes have fluctuated for several years, staying below \$320,000 since 2007². The median single family home sales price is currently \$270,000³. The median condominium sales price is currently \$230,000³.

Median Home Value Trends, Town of North Haven ²



1. 2009-2013 American Community Survey
 2. Zillow.com, Meriden, CT Home Prices & Values, www.zillow.com/meriden-ct/home-values
 3. Berkshire Hathaway 2015 Q2 Connecticut Market Report

Dominant Socioeconomic Profiles ³

Savvy Suburbanites

Average Household Size: 2.83
 Median Age: 44.1
 Median Household Income: \$104,000

Well educated, well read, and well capitalized. Include empty nesters and empty nester wannabes, who still have adult children at home. Live in older neighborhoods outside the urban core, are into home remodeling and gardening plus the active pursuit of sports and exercise. Enjoy good food and wine, plus the amenities of the city's cultural events.

Old and Newcomers

Average Household Size: 2.11
 Median Age: 38.5
 Median Household Income: \$39,000

Singles on a budget. Prefer convenience to consumerism. Neighborhoods in transition, populated by renters who are just beginning their careers or retiring. Some are still in college; some are taking adult education classes. Support environmental causes and Starbucks. Age is not always obvious from their choices.

Tapestry data is used to interpret consumers' lifestyle choices, what they buy, and how they spend their free time. Tapestry classifies US residential neighborhoods into 67 unique segments based on demographic and socioeconomic characteristics.

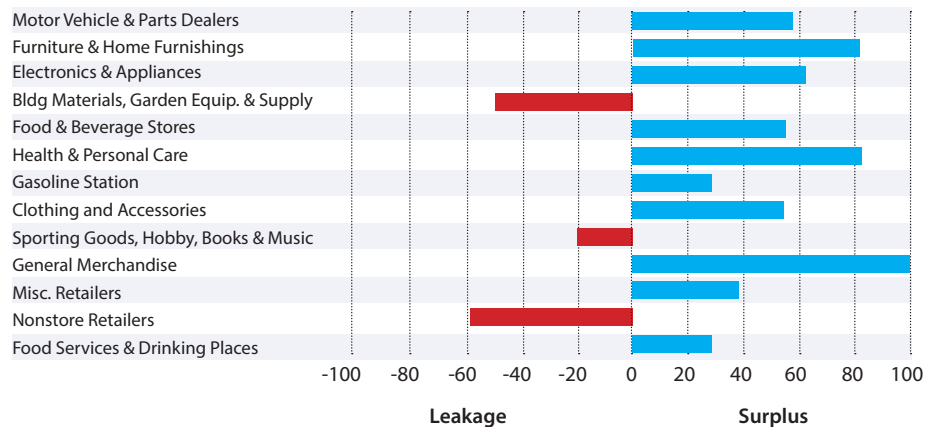
The monthly rental cost index, which is a calculation of listing prices and actual rental costs is \$1,844¹. This is moderately above the New Haven Metro rental cost index which is \$1,651¹. Rents in North Haven have increased since 2011, reaching a five-year high in mid-2015.

Monthly Rental Cost Index, Town of North Haven ¹



The North Haven Station area, despite being distant from North Haven's retail areas, has a strong retail presence to its accessibility from multiple highways. Many of the retail sectors that are supportive of TOD are in surplus within a three minute drive of the station site. However, few goods and services are available within walking distance of the station site.

Leakage/Surplus by Industry Sector ²
 (area within 3 minute drive of station)



The Leakage/Surplus Factor presents a snapshot of retail opportunity. This is a measure of the relationship between supply and demand that ranges from +100 (total leakage) to -100 (total surplus). A positive value represents 'leakage' of retail opportunity outside the trade area. A negative value represents a surplus of retail sales, a market where customers are drawn in from outside the trade area.

1. Zillow.com, North Haven, CT Home Prices & Values, www.zillow.com/north-haven-ct/home-values
 2. ESRI, Dun & Bradstreet
 3. ESRI Tapestry data

Recommendations for Improving Local Connectivity

- Provide sidewalks on State Street, Devine Street, Dixwell Avenue and Hartford Turnpike

The provision of sidewalk infrastructure in the station area would make the station accessible to existing residential and commercial development.

- Provide bicycle and pedestrian connection along rail corridor between Devine Street and Stiles Lane.

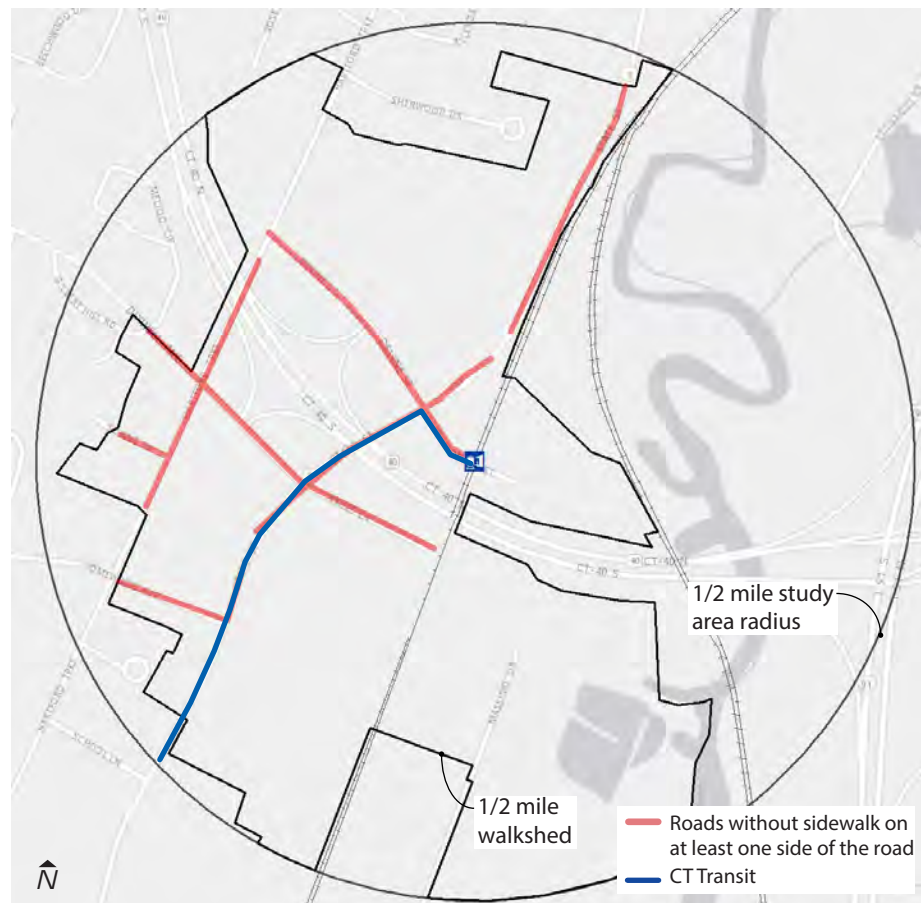
A bicycle and pedestrian connection between the station and Stiles Lane, via the Route 40 rail underpass would bring properties in the Stiles Lane area within walking distance of the station site.

Connectivity

The proposed station will be located on Devine Street. This location is accessible by Route 40, I-91, and Route 15 and right next to the Quinnipiac River. It is located in an largely industrial area, but is proximate to Quinnipiac University and the North Haven Medical Center.

Of the 502 acres located within a 1/2 mile radius of the station site, 343 acres are accessible within a 1/2 mile walk of the station platform (includes all parcels with frontage along public roadway within 1/2 mile of station platform). The map below highlights the half-mile walkshed.

There are 2.5 miles of public roadways within the walkshed. Nineteen percent of those roadways have sidewalks on at least one side of the street. Due to the lack of sidewalks and the station’s distance from goods and services, the area has a Walk Score of only 29 (out of 100) points.



Parking

The station in North Haven will provide 288 parking spaces in two lots. The lots will be located on the east and west sides of the rail corridor with the west side parking lot to be located at the site of the existing park and ride facility

The lots will be owned and managed by the Connecticut Department of Transportation. It has not yet been determined whether free parking will be provided in the lots or if there will be fee based parking.

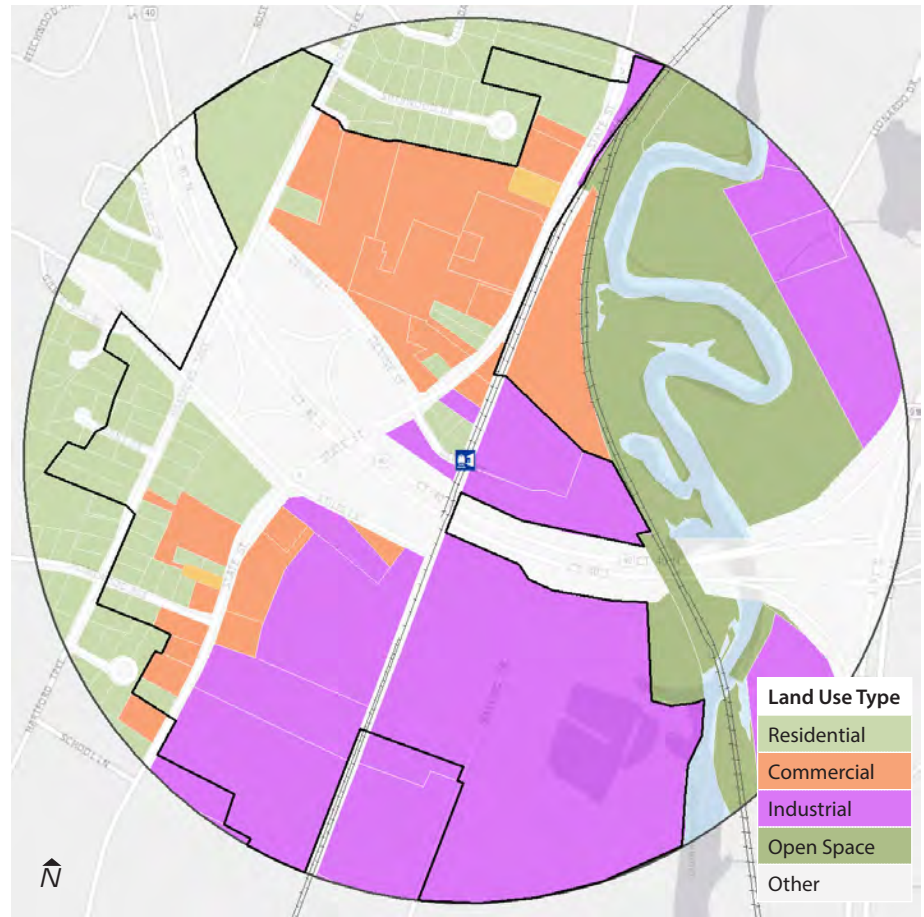


Site plan of new station showing planned parking areas

Land Use

Of the 343 parcel acres within the 1/2 mile walkshed, 94 acres (36%) are occupied by transportation infrastructure such as roadways and the rail line and station site. 33 acres (13%) are occupied by built-out residential land uses, there are no municipal, institutional, or dedicated open space land uses within the walkshed.

The total remaining parcel area, being commercial, industrial, vacant or underutilized residential land is 136 acres. Of this area, 36 acres are occupied by waterbodies or wetlands leaving 100 parcel acres that are potentially available for transit oriented development or redevelopment.



Built-out areas of low density residential development are shown in the map at right. These areas are generally not supportive of the residential densities and mixture of uses associated with transit oriented development. These areas occupy 13% of the 1/2 mile walkshed.



Environmental Features

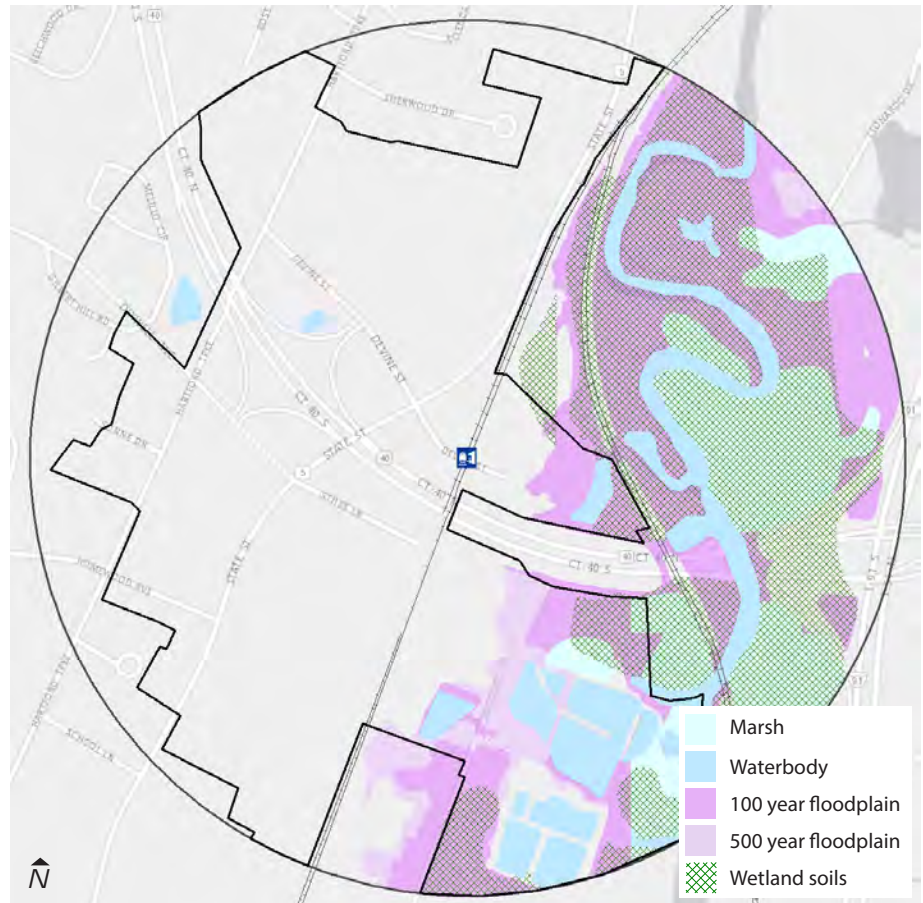
Fourteen percent (36 acres) of the watershed area is covered by wetlands and/or waterbodies. These areas are highly restrictive of development. Additionally, 44 acres (17%) of the watershed is located within a 100 year or 500 year floodplain. Most of this floodplain coincides with wetland and waterbody areas; consequently, only 7% of dry land, occupying 19 acres is within the floodplain. While floodplain areas do not exclude new development or redevelopment, additional cost and regulation can reduce the feasibility of development within those areas. The map below shows the distribution of wetlands, waterbodies, and floodplains within the study area.

In addition to these natural features, the southeast corner of the study area is occupied by the Pharmacia & Upjohn site which has undergone extensive remediation over the past decade. Much of that area is now placed in conservation.

17% of the 1/2 mile watershed is within a floodplain

14% of the 1/2 mile watershed is covered by wetlands and/or waterbodies

7% of dry land within the 1/2 mile watershed is within a floodplain



Zoning Recommendations

→ Create a TOD district or overlay district in the station area.

A TOD district in the station area is necessary to support the residential densities and mixture of uses typical of transit oriented development.

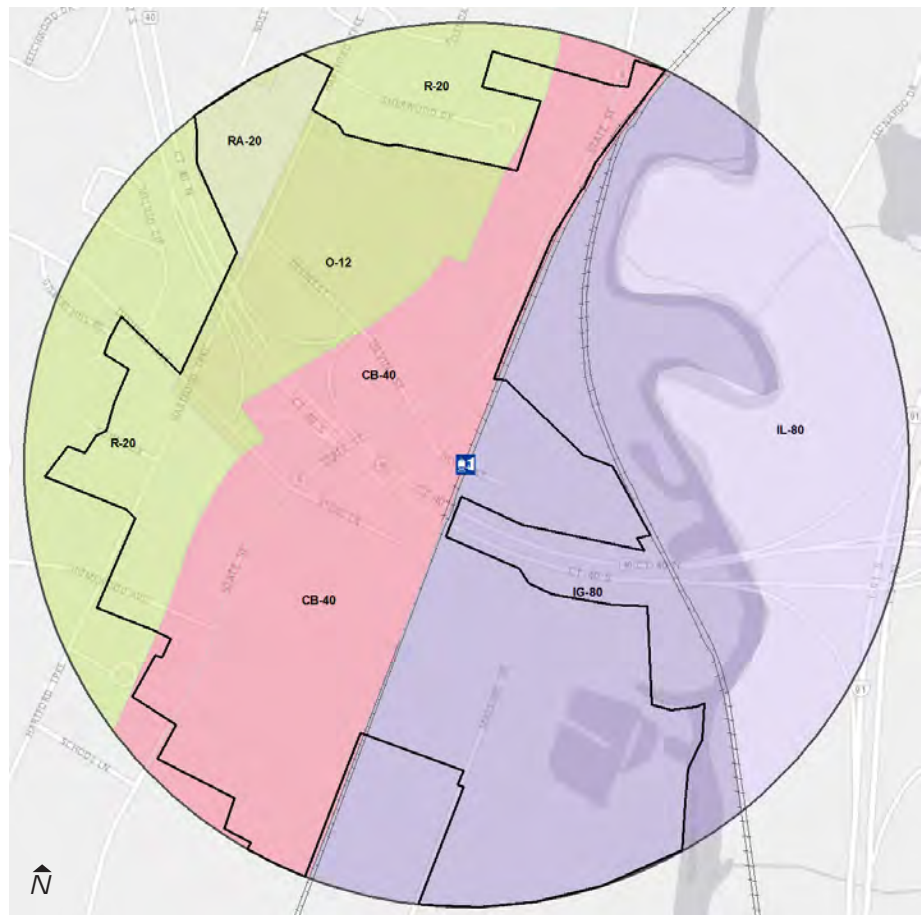
Zoning

North Haven has six different zoning districts within the ½ mile station radius. The existing zoning in the immediate vicinity of the station site is commercial and industrial zoning.

The existing zoning districts are generally not conducive to TOD; they are primarily single use zones with traditional lot and setback/bulk dimensions, do not accommodate high densities for residences or intensities for business uses; have traditional parking requirements, no incentives for sidewalks or bicycle accommodations, and limited landscaping requirements. Mixed-use is not generally permitted.

The Residential/Apartment zone limits densities relative to ½ acre minimum lot size, limitation to 35 foot height of buildings, and 20% maximum building coverage on a lot; no building shall contain more than 12 dwelling units. Residences are permitted in Office zone and Commercial/Business zone – but not mixed in the same building.

North Haven also has a Medical Epicenter Elderly Residential Zone (MEERZ) that has been used to foster development in the station area. The MEERZ is a floating zone that is designed to encourage elderly housing in proximity to medical office space. The MEERZ regulations allow residential developments as high as 35 units per acre.



Zoning Legend

CB-40:	Commercial
O-12:	Office
IG-80:	General Industrial
IL-80:	Light Industrial
RA-20:	Residence-Apart.
R-20:	Residential

Methodology used in Establishing the TOD Opportunity Area

The area potentially available for development or redevelopment within the station area is a primary factor in considering the feasibility of TOD. Variables such as the quantity of vacant land, redevelopable properties, and environmental constraints (such as wetlands and floodplains) are key factors. Additionally, only parcels located within a half mile walk of the station platform are considered.

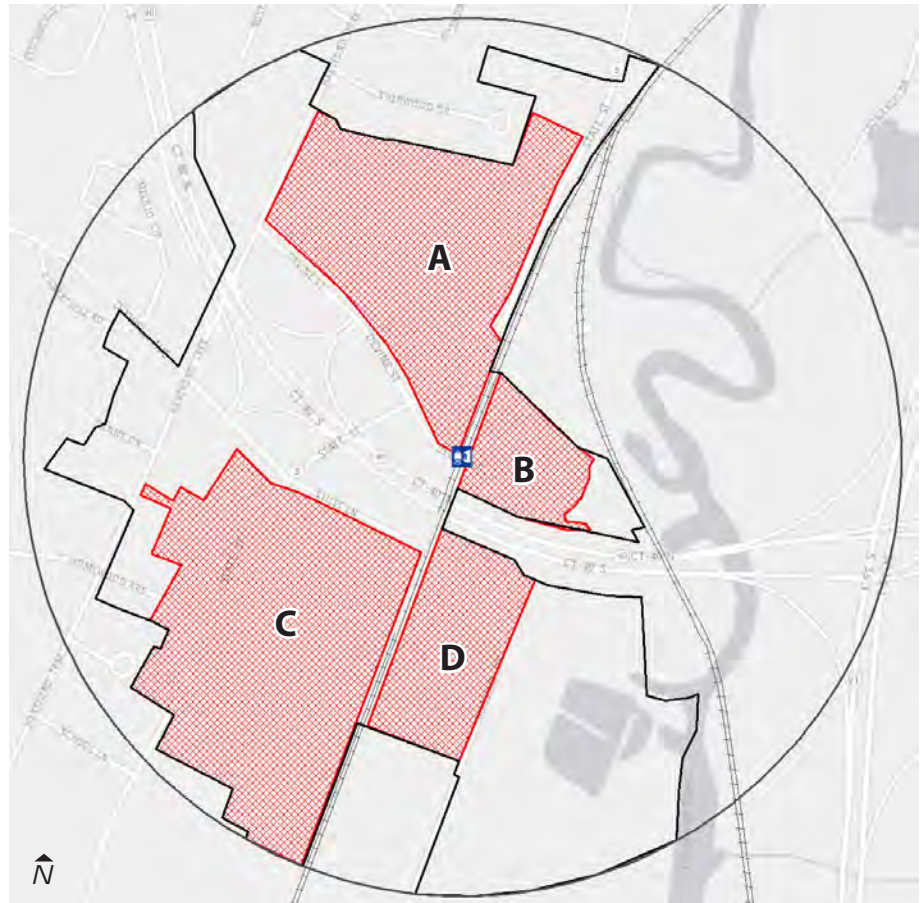
Areas comprised of single-family homes are generally not suitable for the development densities associated with TOD. Small areas of single-family land use surrounded by more intensive land uses may be suitable for conversion, but TOD could be disruptive within cohesive neighborhoods of single-family homes. By contrast, industrial land and commercial areas are generally suitable for conversion to TOD. Dedicated open space such as parks and conservation areas and institutional uses such as schools, municipal buildings, and hospitals are generally not feasible for conversion to TOD. Also excluded from TOD opportunity areas are wetlands, water bodies, and floodways. Floodplains are developable, but greater costs and more complex regulatory requirements are associated with development in floodplains.

Process:

1. Identify parcels with frontage on a roadway within a 1/2 mile distance, measured along public roadways, of the station platform. This establishes the station area “walkshed”.
2. Subtract parcels and areas that are generally not feasible for development or redevelopment:
 - c. Built-out low density residential parcels such as single family residential streets or neighborhoods
 - d. Municipal and institutional parcels such as schools and churches
 - e. Protected open space such as public parks, cemeteries, and conservation areas
 - f. Land occupied by transportation infrastructure such as roadways, highways, rail corridors, and station sites
7. Subtract from the remaining area land that is physically prohibitive to development:
 - h. Wetlands
 - i. Water bodies
 - j. Floodways
11. The remaining area is the TOD opportunity area which may be composed of occupied land that has potential for development or conversion to TOD. This area does not represent the amount of land that is immediately available for development, but rather properties that have potential for new development or redevelopment.

TOD Opportunity Areas

The map below shows areas that have potential for development or redevelopment under supporting conditions for acquisition, zoning, permitting, or planning, as appropriate. These areas have been identified based upon the preceding assessment of land use, environmental features, and transportation infrastructure as well as site visits. The opportunity areas are comprised of vacant, underutilized, and/or commercial and industrial land in proximity to the train station. The limits of each area are parcel-based and have been modified to exclude significant waterbodies and wetland areas.



Area A: This area includes a number of commercial office properties and a new residential development of 165 units of retirement age apartments. Redevelopment of existing sites or infill development within this area would be within walking distance of the proposed station.

Area B: This area, on the east side of the rail corridor, includes the proposed station area and adjacent industrial land. Development on the east side of the rail corridor could be constrained by the at-grade rail crossing on Devine Street.

Area C: This area is comprised of large distribution warehouses on the east side of State Street and small scale commercial buildings on the west side of State Street. The large parcel sizes on the east side of State Street would allow for significant development projects should a site be redeveloped.

Area D: This area is comprised of the Pharmacia & Upjohn site. While much of the parcel has been placed in conservation, approximately 17 acres of land on the western side (shown as Area D above) is available for development. Development potential could be limited by the at-grade crossing at Stiles Lane. Direct pedestrian access to the station could potentially be provided along the rail corridor, crossing beneath Route 40.

Opportunity Area	Area* (acres)	Primary Land Use	Zoning	Constraints
A	43.1	Office, residential	Commercial, office	
B	9.9	Industrial	Industrial	
C	57.2	Warehouse and distribution centers, commercial	Commercial, residential	
D	17.5	Vacant	Industrial	Floodplain

**Inclusive of municipal right-of-way within each opportunity area*



1. 198-202 State Street

Combined, these three parcels have a total area of 4 acres. The existing uses include a medical office, residential property and indoor skate park.



2. 249, 269 State Street; 17, 25 Stiles Lane

Comprised of four separate parcels, this area totals 4 acres. Existing land uses include a restaurant and automotive and mechanical service.

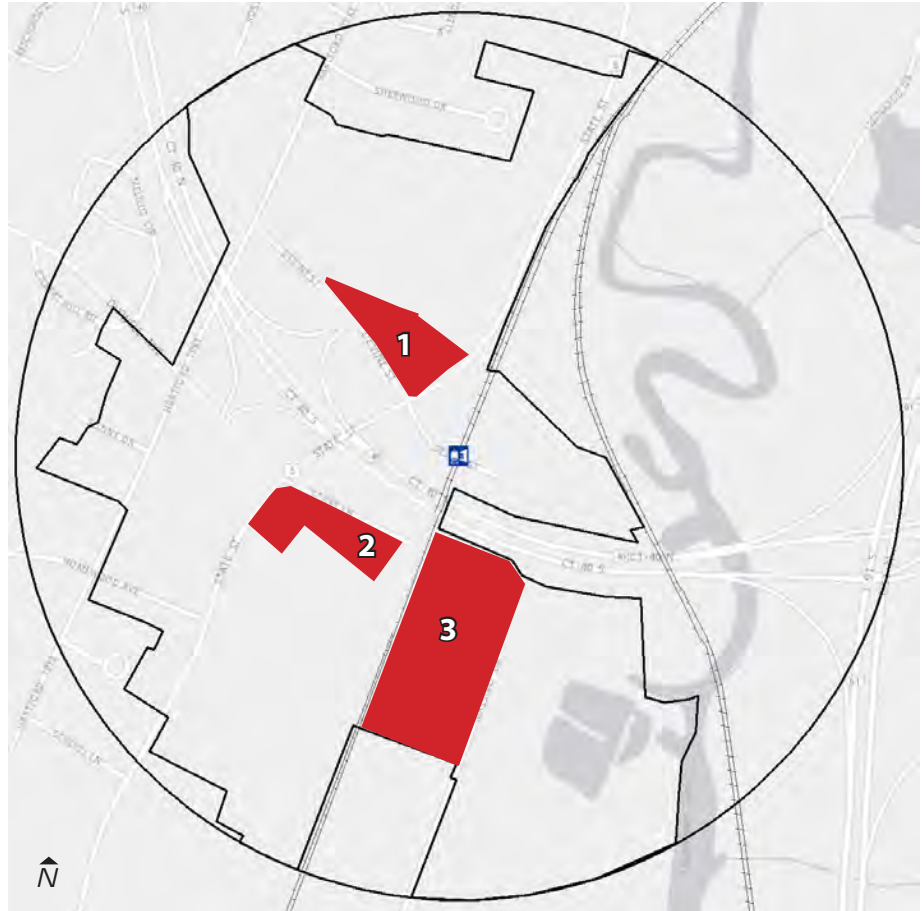


3. Pharmacia and Upjohn Site

The Pharmacia & Upjohn site is located at the eastern terminus of Stiles Lane and is immediately south of the proposed station site. While much of the site has been placed in conservation, 17 acres of the site at the northwest corner have been reserved for development.

Potential Development Sites

Based upon the preceding analysis of connectivity, land use, zoning, and environmental constraints, the following sites have been identified as promising locations for transit oriented development or redevelopment. While there are a number of properties within the study area that could be suitable for redevelopment to transit supportive uses, these sites have good connectivity to the station and are large enough to accommodate substantive development. The identification of these sites only suggests future potential for redevelopment and does not imply that the sites are available for development or redevelopment.



Development Site	Area (acres)	Existing Land Use	Zoning	Constraints	Notes
1	4.0	Office, commercial, residential	Commercial, office		Comprised of three parcels
2	4.0	Restaurant, auto service, mechanical service	Commercial		Comprised of four parcels
3	17.0	Vacant	Industrial	Floodplain and marsh at eastern edge of site	Pharmacia & Upjohn site

Conclusion



The region's population is concentrated along its rail corridors and is projected to grow by approximately twenty thousand residents by 2025. This population growth, combined with an expanding population of those over the age of 55, will create a demand for a greater diversity of housing choice and transportation options. A projected growth in the region's labor force is also likely to contribute to a demand for housing. A shift towards employment sectors such as health care and social assistance, educational services, and accommodation and food services is likely to drive demand for development in station areas as these employment sectors are supportive of the mixture of land uses and transportation options associated with TOD.

Due to relatively high commercial vacancy rates and decreasing asking rents for commercial space, commercial development is not expected to be a driving force of TOD development within the region in the near future. Likewise, a weak housing market and decreasing home ownership rates suggests that the development of owner-occupied housing will not be a strong segment of the development market in the region's station areas. An increasing demand for rental units combined with rising rental costs in the region suggests that the market will favor rental housing development in TOD areas.

With the exception of Meriden and New Haven, station area median incomes are relatively high suggesting disposable income capable of supporting local retail development. However, many of the station areas, given their proximity to downtowns and town centers, have saturated retail markets. Consequently, the feasibility of retail development within the station areas may be limited.

Auto ownership is relatively high in the region, as is commuting to work via automobile. TOD in the region is therefore unlikely to substantially reduce the autos owned per household, even within the station areas. However, parking requirements in most of the region's towns and cities exceed the demand for parking and consequently parking requirements could be reduced in station areas.

The Metro North New Haven Line corridor holds the most promise for transit oriented development based upon its level of transit service and ridership which are significantly higher than the Shore Line East or Hartford Line corridors. Station areas are mostly built-out with little vacant land that is suitable for development. Consequently, most TOD opportunities will take the form of redevelopment and infill development. Guilford and Madison will be challenged to accommodate the development densities typically associated with TOD given the lack of sewer infrastructure in those station areas.

Overall, the South Central Region is well positioned to facilitate TOD by: coordinating with large employers in the region to direct future expansions to station areas; working with transit providers to provide better connectivity between different modes of transit or transportation at station areas; directing discretionary funds to station areas; and providing ongoing technical assistance to municipalities along the region's transit corridors. Towns and cities in the region can encourage TOD by: leveraging state and regional resources; adopting TOD supportive zoning and design standards; directing economic development towards and within station areas; enhancing station area connectivity; and providing needed infrastructure in station areas.