MAKING IT HAPPEN:

Opportunities and Strategies for Transit-Oriented Development in the Knowledge Corridor

September 2013

Acknowledgements

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The report was prepared for the Capitol Region Council of Governments, the Pioneer Valley Planning Commission, and the Sustainable Knowledge Corridor Consortium by Jonathan Rose Companies and the Center for Transit Oriented Development.

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MAKING IT HAPPEN:

Opportunities and Strategies for Transit-Oriented Development in the Knowledge Corridor

A Market Analysis for Transit-Oriented Development in the Region's Bus Rapid Transit and Rail Corridors

September 2013

prepared for
Capitol Region Council of Governments
Pioneer Valley Planning Commission

by
Jonathan Rose Companies
Center for Transit-Oriented Development

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Downtown, New Britain, CT

Executive Summary

Executive Summary

INTRODUCTION

The Knowledge Corridor is experiencing more than $1.5 billion in construction that is underway in three new transit and transportation investments:

In 2015—CT*fastrak*, a 9.4 mile new bus rapid transit (BRT) system, will provide frequent, fast, and reliable connections between important destinations in central Connecticut. **CT*fastrak*** will have 11 landscaped stations and will serve major employment destinations on a dedicated corridor and nearby destinations served by feeder routes extending from Hartford to New Britain.

In 2016—the NHHS rail service will provide 25 daily train trips each in north and south directions to connect major destinations in the Knowledge Corridor from downtown Springfield to downtown Hartford to New Haven. Much faster connections will be provided to the New York region and to the Northeast Corridor from Washington to Boston. A frequent bus shuttle will link the rail service with Bradley International Airport from the Windsor Locks rail station.

In 2014—the Vermonter Amtrak rail corridor connecting Washington D.C. to St. Albans, Vermont will have one to two trains per day. Service will be restored to its original alignment along the Connecticut River, and will add rail service to Northampton and Holyoke.

Figure 1: Summary of Knowledge Corridor Transit Investments

	CT*fastrak*	NHHS	Vermonter
Transit type	Bus Rapid Transit (BRT)	Rail	Rail
Frequency of service	High	Medium	Low
Projected ridership	High	Medium	Low
Corridor role	Connects destinations within the Central Connecticut region; reduces travel time	Connects employment centers within the region and outside the region; reduces travel time	Connects smaller towns in Massachusetts to the larger employment centers within the region; reduces travel time on Vermonter line
Estimated opening date	2015	2016	2014

KEY FINDINGS

The six key findings of the full report are:

- **Demographics are Promising for Transit Oriented Development (TOD).** A rising tide of aging Baby Boomers and young urban professionals in the Knowledge Corridor are promising for TOD. The report estimates that the region has the opportunity to build 9,000 to 12,000 more housing units near transit representing 15 to 20 percent of all new households to meet the growing demand for those attracted to a "walkable" urban lifestyle.

- **Corridor-Centered Growth is Needed**. To capitalize on the modest regional demand for TOD-supportive commercial space some growth can be directed into the NHHS Rail and CT***fastrak*** corridors. The region has existing strengths in TOD-supportive industries, including knowledge-based, health care services, educational services, and public administration, and a significant share of jobs in these sectors are already located in the transit corridors. Assuming modest job growth in the region, it is estimated that there will be demand to accommodate approximately 50,000 new TOD-supportive jobs during the next 25-year period. This corresponds to an increase of eleven percent in TOD-supportive jobs, and about seven percent in jobs overall.

- **TOD Supportive Industries Are Growing.** Health care, social assistance and educational services jobs are growing in the corridor, while the traditional bases such as finance, insurance and manufacturing are shedding jobs. The growing industries are also TOD-supportive and many of them are already located along the transit corridors. The growth of these industries is largely occurring within and relating to the region's anchor institutions, which include its universities, colleges and hospitals. It is expected that future expansion of commercial real estate will be connected to the growth of these institutions.

- **TOD Needs More than Transit.** Transit alone does not make a market for new development. In many station areas, current real estate values are insufficient to make new development feasible. The recent economic downturn has exacerbated negative impacts on real estate market dynamics, resulting in high office and retail commercial vacancy rates, minimum rental housing growth, and very low levels of new construction activity and development financing availability. However, there are promising signs that real estate market conditions are improving. Multifamily vacancy is down and rents are up, single-family values appear to be stabilizing and transaction volume is increasing, and commercial transaction volume is significantly up from 2011. If these trends continue as the national and statewide economies recover, market conditions may improve in the next few years to the point where new construction becomes more broadly financially feasible throughout the region.

- **Realizing the Potential for TOD in the Region will Require Proactive Efforts.** Municipal leaders, local planners, state governments, the metropolitan planning organizations, community members, institutional partners, and other stakeholders all have a part to play in making TOD happen. Regionally, new residential and commercial development has been occurring in suburban areas, while the urban areas on the transit corridors have experienced employment declines and, in some cases, population loss. Cooperation among various partners will be needed to help redirect regional growth to the transit corridors, and to plan for and implement TOD.

- **Active Leadership is Crucial for Success.** Connecticut and Massachusetts state governments can facilitate TOD in the Knowledge Corridor in a number of ways beyond the construction of the transit itself. The report identified two key strategies to support development near the new transit corridors:

  1. ***Leverage State Resources:*** Leverage existing state resources by directing them comprehensively to the station areas as priority locations.

  2. ***Partner with Anchor Institutions.*** Develop partnerships with regional anchor institutions to direct their future growth towards the station areas.

Within these two over-arching strategies, the following are specific strategies that the consultant team identified as most likely to lead to new TOD:

STATE INVESTMENT STRATEGIES

- **Direct state economic development resources to station area locations.** The New York Times estimates that governments spend nearly $80 billion each year in economic development incentives to private companies, ranging from tax credits to grants. But for nearly all of the states, the economic development incentives are "place-neutral," that is, the states do not necessarily target these investments in specific locations like existing job centers or locations near transit. Existing business incentive programs in Connecticut and Massachusetts have not reversed the trends towards government job dispersal. Many of the existing economic development grant and loan programs have been directed to companies in suburban locations disconnected to the new transit infrastructure. An alternative approach would be to award assistance to firms that locate in the new station areas. One such model exists in Illinois with the Business Location Efficiency Incentive Act, which considers location near mass transit and affordable workforce housing as a factor in awarding economic development awards.

- **Reinforce state government presence in new and existing buildings on the transit corridors.** The states have the most leverage and control over their own available resources. By prioritizing the station areas when making decisions related to these resources—such as leasing office space or building facilities near the station areas—the effects of the investment

Figure 2: Subsidized Businesses by Municipality in Massachusetts

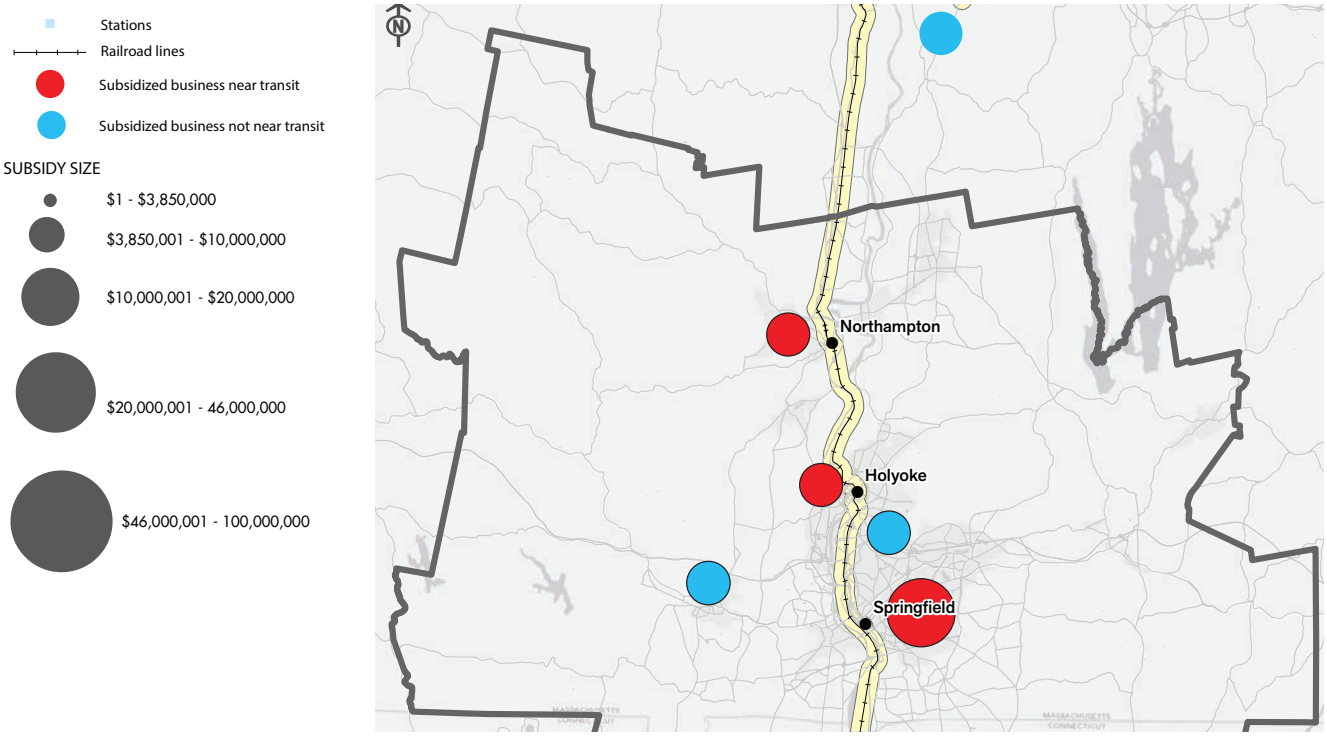
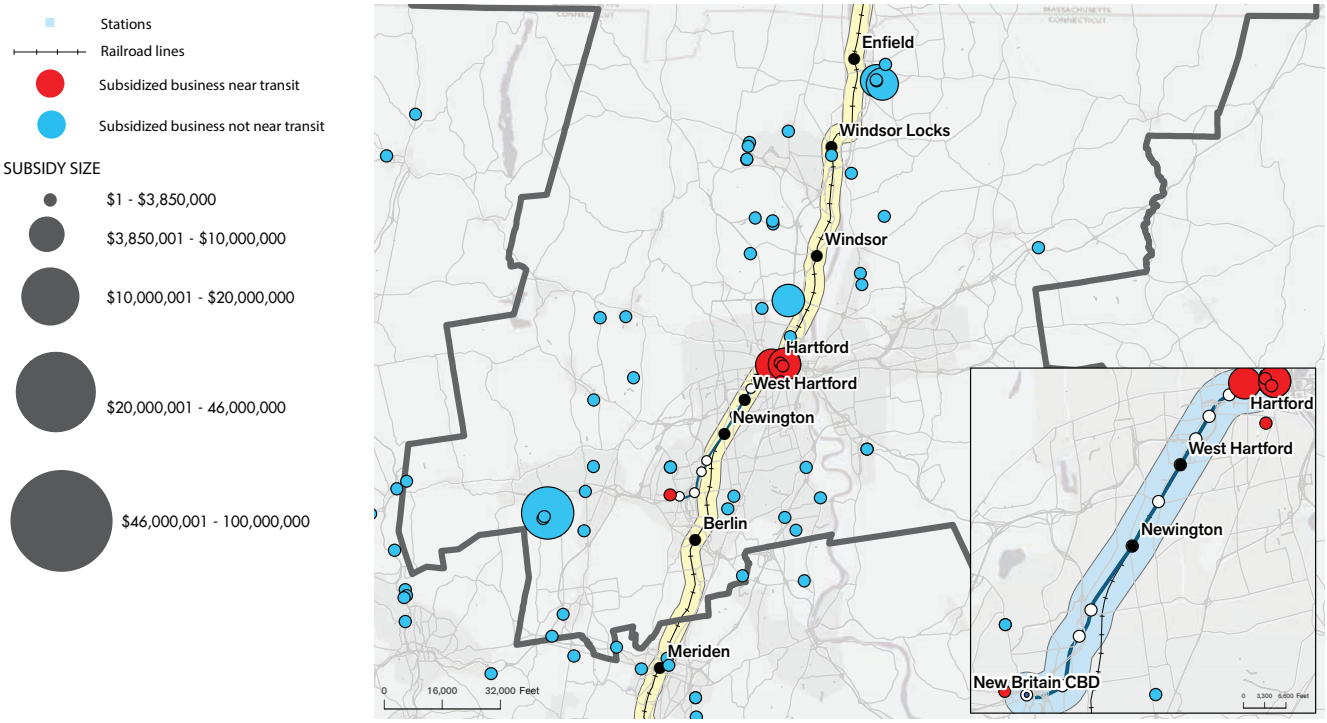


Figure 3: Subsidized Businesses by Address in Connecticut



in the transit by the states will be magnified. As the prospect for residential and commercial development is limited in terms of the private market, states can take the lead and begin to change the character of the station areas–making future, complementary development more likely. As new space and facilities are needed, the choice to locate just a small fraction of these employees in station areas would have a significant impact on these places, boosting the office market and spurring demand for ancillary services. Over time, the

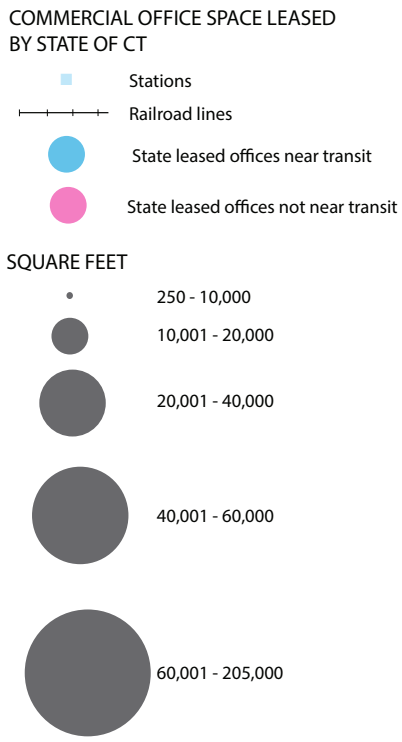
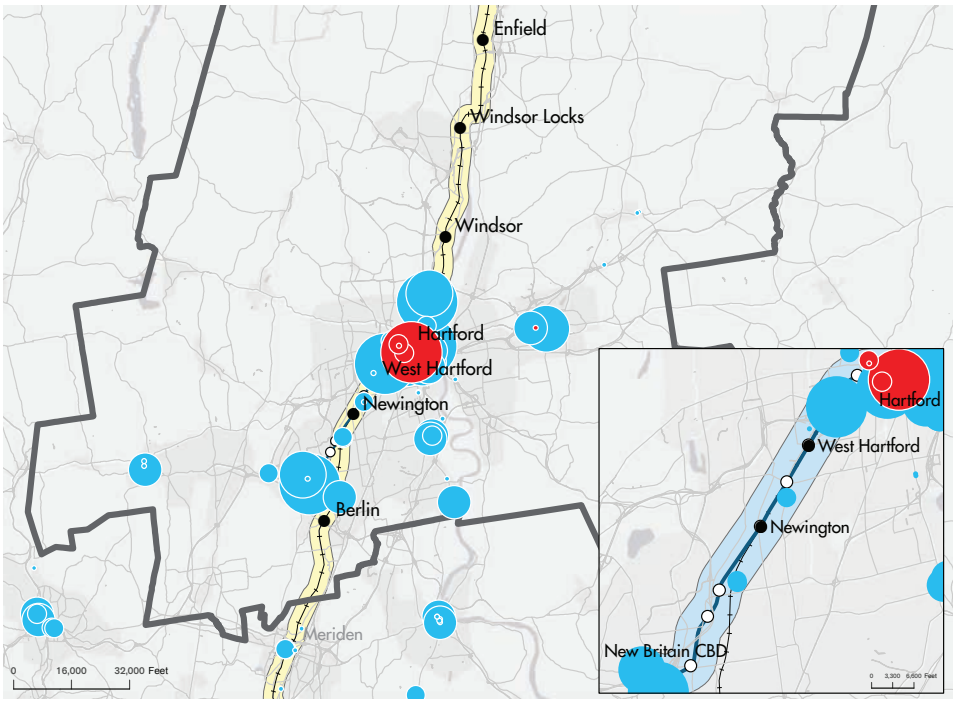


Figure 4: Commercial Office Space Leased by State of CT & Transit



presence of major employers in the station areas, including government offices, can also help to improve the potential for new housing and commercial development nearby. Some of these efforts are already underway in Connecticut, with the state consolidating state agency offices in the vacant buildings in downtown Hartford.

- **Prioritize station areas for other forms of state financial assistance.** Connecticut and Massachusetts are already supporting development through a variety of state financing mechanisms, including funds directed towards affordable housing, infrastructure, environmental clean-up, public magnet schools, and expansion of the states' university systems. Both states are already directing many of these funds to TOD locations, such as Massachusetts' Housing Development Incentive Program and Connecticut's CHAMP program, which could serve as models for aligning other forms of state financial assistance to TOD locations.

- **Provide technical assistance to municipalities along the transit corridors.** A key challenge in some station areas is zoning for higher density development and/or site assemblage and disposition for redevelopment. In many of the municipalities there is limited capacity within the municipal government for the more complex and intensive public processes required to accomplish these objectives. State governments can assist municipalities by providing direct technical assistance from its agencies' staffs, as is currently occurring in Meriden, Connecticut.

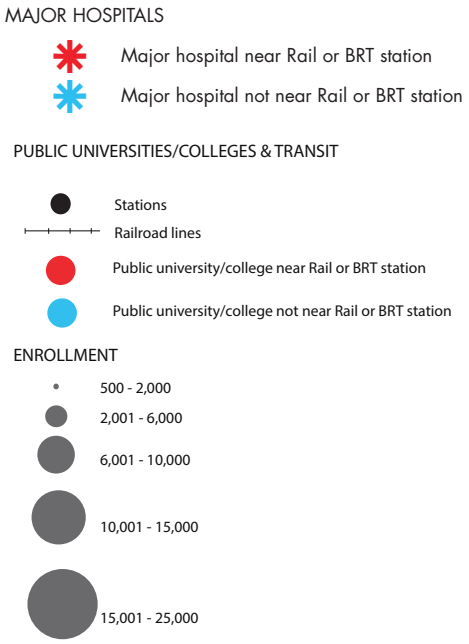
- **Direct Metropolitan Planning Organization (MPO) discretionary funds to station areas.** MPOs can also direct their discretionary infrastructure funds to station areas to prepare them for redevelopment, or to better connect them to the new transit corridors through enhanced pedestrian and bike infrastructure. Higher density development in infill locations often requires substantial investments in infrastructure—sidewalks, expanded roadways, upgraded utilities—that can impede development, especially when there are other sites in greenfield locations that do not pose this challenge. In many regions, regional planning organizations are directing their more flexible funding sources to making infrastructure improvements in transit locations. For example, the Atlanta Regional Commission's Livable Centers Initiative distributes federal transportation dollars as grants to local governments and neighborhood districts for planning activities, as well as for capital investments that support higher intensity housing, mixed-use development, and enhanced connectivity. Similar programs exist in the Minneapolis-St. Paul Twin Cities, San Francisco Bay Area, Portland, and other regions.

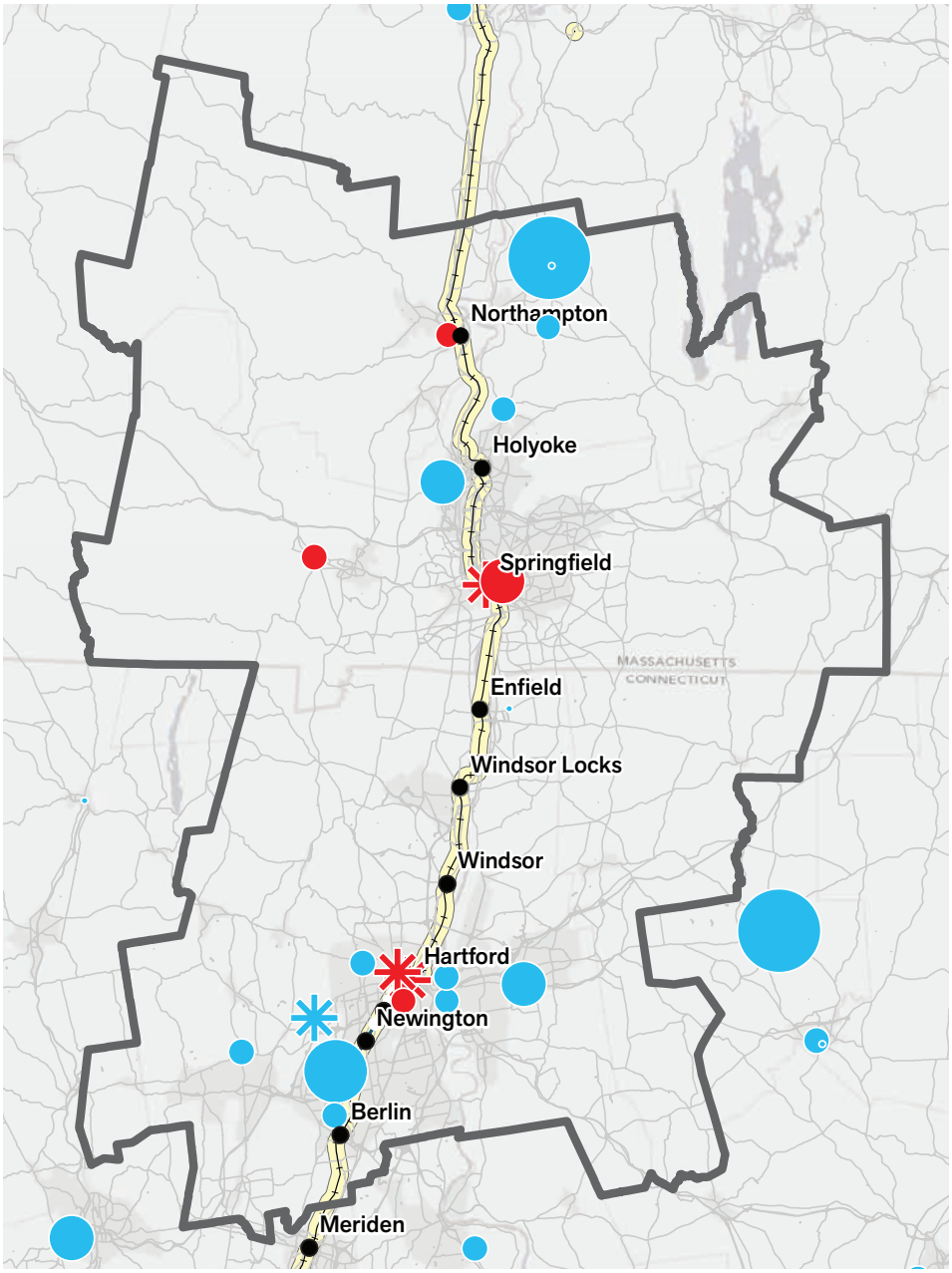
ANCHOR INSTITUTION STRATEGIES

- **Engage regional anchor institutions in a dialogue about how their future expansion can be transit-oriented.** Anchor institutions (hospitals, universities/colleges, and large employers) represent a significant source of employment and real estate activity in the region and are, in many cases, closely linked to the new transit service. Several of these institutions are located within walking distance of the planned transit stations and have a long legacy in the region. Opportunities exist in the Knowledge Corridor to leverage its anchor institutions by encouraging private development of student or employee housing in and around universities and hospitals, improving transit service to and from anchor institutions, or spurring development of research facilities linked to universities, as discussed in more detail in this report. The regional planning organizations can serve as leaders in this effort by setting up an outreach initiative with regional anchor institutions to discuss their expansion plans and investigate opportunities for alignment with the transit expansion.

- **Encourage and explore opportunities to relocate or expand components of state university systems to station areas.** As they expand out from their historic central campuses, the state university systems in Connecticut and Massachusetts offer a tremendous opportunity for supporting TOD in the Knowledge Corridor. Connecticut has already taken a step in this direction by announcing the relocation of UConn Hartford from its West Hartford campus to downtown Hartford. UMass Amherst is establishing a Springfield campus. In addition, there are other opportunities within the Knowledge Corridor, such as the planned East Campus of Central Connecticut State University between the East Street and Cedar Street CT***fastrak*** stations in Newington.

Figure 5: Anchor Institutions in the Knowledge Corridor



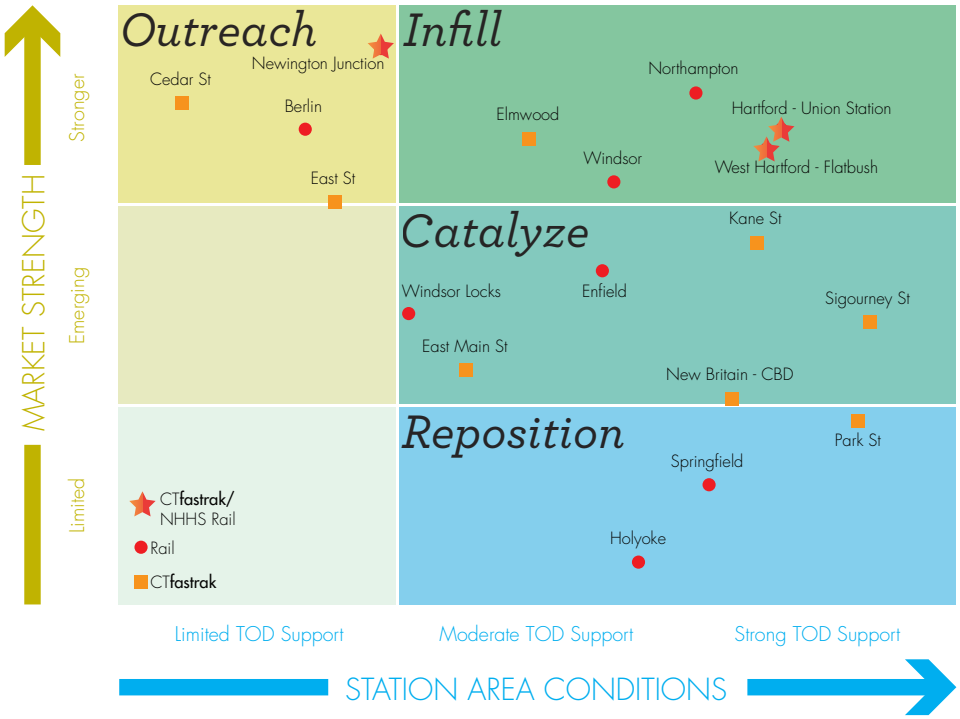


- **Convene a partnership between the region's research hospitals and its universities.** The region already contains excellent research hospitals and both states are supporting expansion of the biosciences industry from their university systems. The transit systems and station areas offer a great opportunity to support the creation of an innovation economy in the biosciences by connecting its research institutions. One example of such a partnership is Bay State Health's partnership with Tufts University in Boston. The state and regional planning organizations can play a role in bringing together the research institutions and supporting the creation of incubator and business start-up space at the station areas closest to these institutions.

TRANSIT-ORIENTED DEVELOPMENT TYPOLOGY AND OPPORTUNITIES AND STRATEGIES FOR MAKING TRANSIT-ORIENTED DEVELOPMENT HAPPEN

The market potential for TOD varies depending on the role of the station area within the corridors and greater region. The report studied existing urban form conditions and market characteristics of each station area to create a typology that describes the context for new development at each location. The typology serves two primary functions: 1) to quantitatively describe each station area in the region; and 2) to categorize similar station areas into "place types" that can inform recommendations on next steps to implement TOD. Using this framework, the consultant team classified the stations into four place types:

Figure 6: Station Area Typologies



Infill—These station areas have the strongest likelihood of new TOD in the near-term, due to their stronger market conditions and very supportive urban form. These station areas are generally built-up and are not likely to offer large tracts of land for redevelopment; rather, new TOD will largely consist of infill development building on the historical development patterns and filling out underutilized sites. The infill stations include Northampton, and station areas in and around Hartford, underscoring the fact that the near term TOD opportunities will likely be in places that have an existing base of residents and employees on which to build.

Outreach—These station areas also have relatively strong market demand for new development, but the station area urban form is less supportive of TOD. In these station areas, the prevailing existing development is suburban and automobile-oriented, which will inhibit pedestrian and bicycle connections to the stations from surrounding TODs. In many cases, changes to zoning regulations may be required to permit mixed-use and higher-density TOD, which the market is likely to support. Due to the existing character of these places, TOD in outreach stations is likely be lower in intensity, including products like attached townhouses, small-lot single-family houses, and potentially small scale apartment projects if regulations allow.

Catalyze—These station areas occupy a middle ground, where market conditions are not strong enough to support TOD in the near term but the urban environment is conducive to TOD. In these types of places, the implementation of TOD-supportive zoning regulations alone is not likely to be enough to spur private-sector development due to soft demand. The participation of public and/or anchor institutions can help to unlock the private market in these locations. Some examples include working with hospitals, universities, or government agencies to either expand or create a new presence in the area, thereby generating more activity, or creation of a tax-incentive zone to encourage larger businesses to locate in the station area.

Reposition—These station areas have a common legacy of historical buildings in an urban context, ranging from industrial mills in Holyoke and Park Street to downtown centers in Springfield and New Britain, which have experienced decades of slow decline. While existing development patterns are somewhat supportive of TOD, these locations will generally require significant repositioning to attract new development and regain vibrancy. A combination of policies will be necessary, including introducing new "demand drivers", offering significant incentives to developers, and making strategic infrastructure and "place-making" investments to attract private capital.

The results of the typology analysis are summarized in the report to assist planners, advocates, and community members better understand the types of development that are most likely to occur near a new rail or BRT station (residential, retail, office, etc.)–as well as the probable scale or density of future development–within the next three to five years. The recommendations are organized into six broad categories:

1. **Planning and Visioning**
2. **Zoning and Land Use Regulations**
3. **New Development**
4. **Neighborhood Revitalization**
5. **Local Transportation and Infrastructure**
6. **Economic Development**

The report details major strategies and tools, and identifies the lead implementers, existing programs and potential funding sources. It describes the applicability of each tool and strategy to the individual station area place types based on the typology framework. The recommendations are intended to provide a framework for decision-makers to craft implementation policies that are appropriate for the station area's context, rather than applying "one-size-fits-all" solutions for implementing TOD throughout the region.

Implementation of these strategies will require coordination between government and non-profit sector entities at multiple geographic scales, from municipal planning commissions to the state economic development departments. The strategies may require a phased approach over time, as economic conditions change and different needs arise.

Union Station, Hartford, CT

Introduction

Introduction

Cities and regions from coast to coast are pursuing transit-oriented development (TOD) strategies as a way to achieve many goals, including increased economic competitiveness through improved quality of life, reduced traffic congestion, lower transportation costs for households, improved air quality, reduced costs for providing city services, and growth management. The concept of TOD is becoming more popular as the number of regions planning light rail, bus rapid transit (BRT), and other fixed-guideway transit investments expands. Today, more than 40 regions across the country have a light rail or BRT line (compared to 28 in 2000) and there are 721 planned new transit corridors in 109 regions across the United States. At current federal funding levels, it would take 78 years to meet the full demand for new transit systems today.[1]

The central portion of the New England Knowledge Corridor—the focus of this study—is one of the areas that will soon benefit from over $1.5 billion in new bus rapid transit and rail investment. This bi-state region is comprised of the Hartford, Connecticut and Springfield Massachusetts metropolitan areas, which are linked by a shared economy, history and culture, and by economic and natural assets including Bradley International Airport, rail lines, Interstate 91, many colleges and universities, and the Connecticut River. Planning is underway throughout the region to help municipalities and a range of public and private stakeholders capitalize on these major transportation investments. This Market Analysis for Transit Oriented Development will inform that work, and identify opportunities and strategies to make transit-oriented development happen.

WHAT IS TRANSIT-ORIENTED DEVELOPMENT?

TOD, by definition, is the integration of transportation with surrounding land uses. This is accomplished through urban design, zoning, community development, and supportive infrastructure investments, which results in neighborhoods where residents and workers can often get around without a car. There is no one-size-fits-all TOD in terms of mix of land uses, density, or building types. TOD can include compact, single-family residential neighborhoods or major downtown areas with multi-story office buildings. Further, TOD does not necessarily require substantial new development. TOD can also include investments such as sidewalk and bike improvements, parks, affordable housing preservation, and commercial revitalization. Successful TOD is defined by shared traits like neighborhoods that foster transportation choices of all kinds and healthy communities with vibrant commercial districts serving the daily needs of the residents.

FIXED-GUIDEWAY TRANSIT

The entire non-automotive transportation network, including rail, busways, fixed-route buses, special services for the elderly and disability communities, sidewalks and bike lanes, is critical to providing transportation

1 Center for Transit-Oriented Development. *Transit-Oriented Development Typology Strategy for Alleghany County*. February, 2013. www.ctod.org/pittsburgh/.

choices and achieving vitality found in TOD. But TOD planning commonly focuses on the walkable areas surrounding rail or busway stations operating in their own dedicated right-of-way, referred to as a fixed guideway. Traditional TOD definitions focus on fixed-guideway stations because these major transit infrastructure investments are visible and permanent; they provide a greater level of certainty to investors, developers, and prospective families and businesses that the transit will always stay in one place, will always operate, and will always move people to destinations along the line. This sense of certainty reduces the level of risk for investors and attracts residents who want to live near transit but who otherwise may not have considered living in the surrounding neighborhood. Developers and businesses can also build fewer parking spaces, knowing that the transit provides permanent quality access to and from key destinations.

The TOD typology strategy contained in this report provides a framework for understanding what these transit-oriented investments might be, where they can leverage the greatest economic potential, and how they can be funded and implemented. It focuses on the region's fixed guideway network now under construction: the Hartford to New Britain bus rapid transit system known as CT***fastrak***, the New Haven-Hartford-Springfield (NHHS) Rail Project, and the Vermonter Realignment, which will extend Amtrak passenger rail service to Holyoke, Northampton and Greenfield Massachusetts. These investments are explained in greater detail at the end of this section.

STUDY PURPOSE, GOALS AND PRINCIPLES

The ***Market Analysis for Transit-Oriented Development in the Knowledge Corridor's Bus Rapid Transit and Rail Corridors*** is intended to help public and private parties capitalize on major federal and state infrastructure investment through identifying market-based TOD opportunities that exist around the planned NHHS and Vermonter Rail, and CT***fastrak*** BRT systems. The study will present these opportunities within a corridor context, while incorporating national, regional and local analysis of demographic, economic and real estate market conditions.

The goals of the project are to:

- Understand existing market conditions and how they may shape potential transit-oriented development.
- Create a development typologies framework defined by station area characteristics and market strength that can be used to inform redevelopment potential and strategies.
- Identify opportunities for catalytic sites that can change the economic dynamics of the region.

This project was funded by a U.S. Department of Housing and Urban Development (HUD) Sustainable Communities Regional Planning Grant awarded to the Capitol Region Council of Governments, the Pioneer Valley Planning Commission, and a partnership of public and private

organizations known as the Sustainable Knowledge Corridor Consortium. All of the tasks being carried out under this project, including the ***Market Analysis for Transit-Oriented Development in the Knowledge Corridor's Bus Rapid Transit and Rail Corridors***, address in a comprehensive way the six livability principles of the Partnership for Sustainable Communities, an interagency partnership of HUD, the U.S. Department of Transportation, and the U.S. Environmental Protection Agency. These principles are:

- Provide more transportation choices.
- Promote equitable, affordable housing.
- Enhance economic competitiveness.
- Support existing communities.
- Coordinate policies and leverage investment.
- Value communities and neighborhoods.

In addition to the overall project goals and the livability principles discussed above, several additional principles have guided this analysis:

- **The market for TOD is regional**, and therefore competitive advantages and disadvantages of the station areas along corridor should be considered in light of their position in the regional market. This market analysis takes into consideration demand for office, housing and employment in the region and at the various station areas.

- **Not all station areas are alike**, and each varies in what are achievable land uses and development densities. The appropriate kind of development varies according to the station context and its role within the corridor, and the overall regional transportation system. This analysis evaluates the potential for phased development along the BRT and rail corridors, and provides insight as to what is possible now, what might be possible in the future, and how key public sector investments and policies can help to unlock the potential for development.

- **A framework for both private and public investment is desirable**. Delivering high-quality TOD will require coordinated efforts by the public sector, the private sector, community groups, and other parties. The implementation section of the plan provides a matrix of potential funding sources, and outlines a set of priorities, action steps and responsible parties that are directly related to specific outcomes.

- **Economic and market analyses are place-based** and guided by actual development, implementation, and finance experience to ensure that sound real estate principles drive proposed strategies and actions.

CIVIC ENGAGEMENT PROCESS

The primary objective of the civic engagement process was to provide insight, perspectives and information to support data driven analysis. The information gathered from the civic engagement process has helped to directly inform the ***Market Analysis for Transit-Oriented Development in the Knowledge Corridor's Bus Rapid Transit and Rail Corridors***. Another objective of the civic engagement process was to build awareness and consensus on the goals for the region, and for transit-oriented development in particular, as well as on the assets, opportunities, challenges, and strategies for achieving the goals.

The participants in the civic engagement process were organized into three categories. Because of the technical content of the ***Market Analysis for Transit-Oriented Development in the Knowledge Corridor's Bus Rapid Transit and Rail Corridors***, civic engagement focused on facilitating input from two primary sources: an Advisory Committee that met at benchmarks in the development of the final study, and interviews with industry experts to directly inform the study. The participants in civic engagement are described further below.

- **Advisory Committee:** A committee consisting of approximately 15 individuals in the Hartford-Springfield region recognized for their knowledge of economic conditions, real estate markets, public policy and government programs, for- and non- profit industries, and/or trends in higher education and industry growth.

- **Stakeholder Experts:** Individuals and/or institutions with specific expertise in market analysis and economic conditions in the region.

- **Community Members:** Those interested in providing input into and furthering a vision and set of goals for the future of the region as a livable, affordable, and economically sustainable region. Invited participants included, but were not necessarily limited to, residents, business owners, workers, non-profit organizations, anchor educational institutions, policy makers, public and elected officials.

Appendix B contains listings of Advisory Committee members, stakeholder interviews, and public meetings.

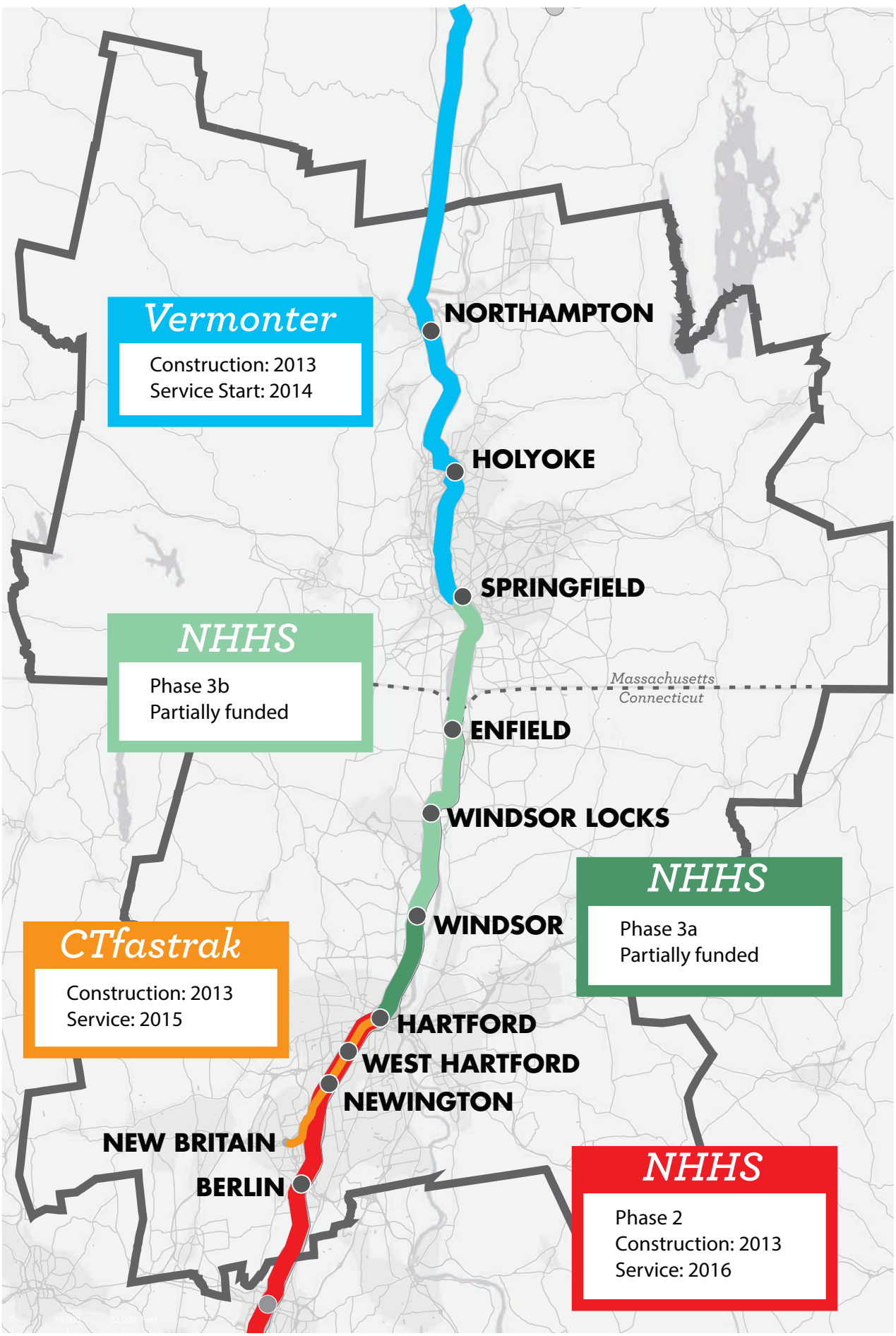
RAPID TRANSIT AND RAIL IMPROVEMENTS

This bi-state planning effort is timely, as the Knowledge Corridor has begun to receive more than $1.5 billion in new transit and rail investment that will extend over the next ten years for three projects: the CT***fastrak*** Bus Rapid Transit Project, the NHHS Rail Project, and the Vermonter Rail Realignment Project. These significant transportation investments offer a rare opportunity for the Knowledge Corridor to leverage other regional assets and further expand opportunity to all residents and workers of the region. A brief summary of these projects is provided below, and in Figure 7, Status of BRT and Rail Improvements.

CT*fastrak*

CT***fastrak*** is a new 9.4 mile bus rapid transit (BRT) system that will provide frequent, fast and reliable connections between important destinations in Central Connecticut. The dedicated bus-only roadway will run from Union

Figure 7: Status of BRT and Rail Improvments



Station in downtown Hartford to downtown New Britain, and is scheduled to begin operations in 2015. BRT and rail connections will be provided at three locations: Union Station in Hartford, Flatbush Avenue in West Hartford, and Newington Junction in Newington. CT***fastrak*** will have eleven landscaped stations and will serve major employment destinations on the dedicated corridor. Importantly, the transit network extends beyond the CT***fastrak*** roadway to cover many nearby destinations through feeder routes extending from Hartford to New Britain. Express buses and some local service will also have access to CT***fastrak***, further expanding the reach of the system and allowing these services to benefit from greater reliability and improved travel times. Projected ridership is an estimated 16,000 rides per day. Buses will run every 3 to 6 minutes during the peak morning and afternoon commutes.

A Hartford to New Britain busway was originally recommended in the Interstate 84 Hartford West Major Investment Study as the most cost-effective solution to congestion in the corridor. When built and operational, it will represent the first investment in rapid transit in the region, and will create the foundation for a sustainable transportation system. The Connecticut Department of Transportation will build and own CT***fastrak***.

NEW HAVEN-HARTFORD-SPRINGFIELD (NHHS) RAIL PROGRAM

The New Haven-Hartford-Springfield (NHHS) Rail Program will provide significant new regional passenger rail service options as a key component of a robust and vibrant multi-modal regional transportation system. When expanded service comes on line in 2016, the NHHS rail program will provide up to 25 daily train trips each in north and south directions to connect major destinations in the Knowledge Corridor from downtown Springfield to downtown Hartford and New Haven. Much faster connections will be provided to the New York region and to the Northeast Corridor from Washington to Boston. A frequent bus shuttle will link the rail service with Bradley International Airport from the Windsor Locks rail station.

The State of Connecticut, Amtrak, and the Federal Railroad Administration are presently working along the 62-mile route from New Haven to Springfield, to improve track, signaling, and station facilities. This will expand passenger rail operating capacity and increase connecting service to New York City. The NHHS project includes new stations in North Haven (outside of the study area for this report), Newington, West Hartford and Enfield. The project is proceeding in four stages, with funding currently in place for Phases 1 and 2. This will result in complete double tracking between Hartford and New Haven.

VERMONTER REALIGNMENT

The Vermonter Amtrak rail corridor connects Washington D.C. to St. Albans, Vermont. The plan is to restore Amtrak passenger rail service along a 61-mile segment between Springfield and Northfield, Massachusetts to its original alignment along the Connecticut River. This will reduce travel times and increase the number of passenger stations in Massachusetts from two to four, with service returning to Holyoke, Northampton, and Greenfield. It will also improve freight capacity along the corridor. Passenger service to these stations is set to begin in 2014.

1. Regional and Corridor Market Analysis

Regional and Corridor Analysis Summary of Findings

Overview of TOD Demand and Real Estate Economics

Demographics and Housing

Residential Real Estate Feasibility Analysis

Regional Economic and Commercial Real Estate Analysis

Regional and Corridor Analysis Summary of Findings

DEMOGRAPHIC TRENDS AND TOD HOUSING DEMAND

Young adults and Baby Boomers are likely to drive future demand for TOD housing in the transit corridors. Nationally, these demographic segments have a higher propensity to prefer a walkable, urban lifestyle in compact, transit-oriented communities. Baby Boomers and Echo Boomers together comprise over 50 percent of the region's population. In the Knowledge Corridor, these two cohorts have the potential to shift the demand away from single-family suburban homes towards compact housing types in transit districts, as many Baby Boomers downsize from single-family houses to condominiums and apartments and Echo Boomers enter the housing market, seeking rental apartments and starter homes.

The region's core cities have already successfully attracted the Echo Boomer population. The cities of Hartford and Springfield have a larger share of young adults than the region as a whole, showing that Echo Boomers are concentrated in the region's urban centers. The addition of transit and other TOD amenities will make the urban core even more attractive to young professionals and students.

There is a latent demand for smaller, compact housing units in the core of the region. Between 1990 and 2010, the number of single-person households increased by 45,000. However, the housing supply increases have primarily been in single-family developments which grew by 75,000 units, while the number of multifamily apartments only increased by 15,000 during the same period. New multifamily units built in the last decade were overwhelmingly in urban centers like Hartford and Manchester. The pattern is largely driven by zoning restrictions in other jurisdictions that prohibit the development of multifamily apartments, constraining the supply of these types of housing units in the region.

The housing market is recovering, indicating that there is potential for expansion in multifamily construction in the coming years. Rental market fundamentals are improving, with vacancy rates in decline and rents increasing throughout the region, which indicates increased demand for multifamily housing. The single-family housing market fundamentals are also improving, though the single-family housing market remains soft, and many of the new units are being developed in suburban areas away from the transit corridors.

There is potential demand for 9,000 to 12,000 new TOD housing units by 2035. Based on regional population and household projections developed by CRCOG and PVPC, it is estimated that the region has the opportunity to build 9,000 to 12,000 more housing units in transit locations. This corresponds to approximately 15 to 20 percent of future household growth.

In the short term, market-rate housing development is likely to be limited to a few station areas, though there is long-term potential capacity for new housing in many other station areas. A feasibility analysis comparing the costs of new construction to the sales and rental revenues achievable in the station areas found that in the short-term (0 to 5 years), owner-occupied housing development is feasible in downtown Hartford, Newington, Berlin, and Northampton. Rental housing development was found to be economically feasible in downtown Hartford, Windsor, Newington, and Berlin. However, over time, many more station areas in the region have the potential to attract TOD households as real estate market conditions improve.

REGIONAL ECONOMIC ANALYSIS AND COMMERCIAL REAL ESTATE DEMAND

Most of the region's existing jobs are in TOD supportive sectors, with a large share of them located along the transit corridors. 60 percent of the region's employment is in TOD supportive industries, including Finance/ Insurance, Health Services, and Educational Services. These industries already have a significant presence in the transit corridors, and could play an important role in fostering TOD in the Knowledge Corridor – just as they have in similar transit regions in the United States.

The region's future employment growth is likely to be driven by the Health and Educational Services sectors. Other traditional industries like Manufacturing and Insurance, while continuing to play an important role in the Knowledge Corridor's economy, are not forecast to grow. 28 percent of the region's employment in Health and Educational Services is already located on the transit corridors. The transit corridor contains many of the region's Anchor Institutions - major universities, colleges, hospitals, and large employers.

Although the current office market is weak, there are signs that it has stabilized and is starting to improve. Office vacancy rates in the region are high and rents have remained stable for several years, but there are promising signs that transactions are increasing, indicating increased investor interest in the region's office space. However, much of the new commercial development is likely to occur in outlying suburban areas as regional job growth continues to decentralize.

The region's anchor institutions and state governments offer the greatest opportunities for new commercial development and job growth in the transit corridor. The region's anchor institutions - its hospitals, colleges and universities - are expanding and driving job growth in the Health and Educational Services sectors. Many are located within station areas or will be connected via local spurs from the main transit corridors, which could lead to development of new institutional facilities or office space in the station areas. The state governments also have a large presence in the region, leasing hundreds of thousands of square feet of office space.

Overview of TOD Demand and Real Estate Economics

NATIONAL TOD DEMAND

In order to determine the TOD market potential in the Knowledge Corridor, it is important to first understand the national demand for development near transit. Since 2005, the Center for Transit-Oriented Development (CTOD) has conducted extensive research on TOD demand, reviewing national literature on housing preferences and analyzing the types of residents and businesses that are currently located near transit. This research has shed light on the types of households and industries that show a preference for TOD, which are highlighted below.

Housing

Trends in demographics, family types, and lifestyle preferences indicate an increasing demand for housing in compact, walkable neighborhoods near transit. Studies show that many households will consider living in a more compact housing unit if it is located in a pedestrian-oriented neighborhood with easy access to amenities, multiple transportation options, and faster commute times. A recent national survey found that 60 percent of respondents would choose a smaller home if it meant a commute time of 20 minutes or less, and two-thirds said that being within an easy walk of shops and services was an important factor in deciding where to live.[2]

There are two primary drivers of TOD demand in the coming decades: the 79 million Baby Boomers approaching retirement and the 85 million Echo Boomers entering the housing markets for the first time.

According to these studies, there are two primary drivers of TOD demand in the coming decades: the 79 million Baby Boomers approaching retirement and the 85 million Echo Boomers entering the housing markets for the first time. A recent report from Harvard University found that the aging Baby Boomer generation (born between 1946 and 1965) prioritizes public transportation, "walkability," and access to amenities. Baby Boomers are also more receptive to living in townhouses and condominiums with smaller yards than other households.[3] Indeed, households with a householder over age 65 already exhibit high demand for housing in a transit-oriented development relative to their share of all households. [4]

Meanwhile, the even larger Echo Boomer generation (born between 1981

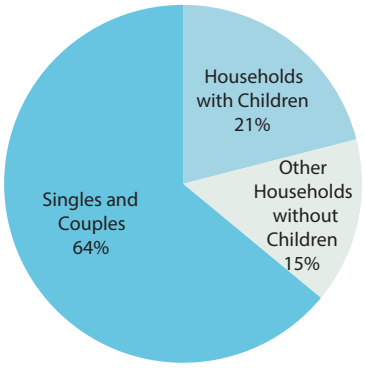
2 Belden Russonello & Stewart LLC. (2011). The 2011 Community Preference Survey. Realtor, publication of the National Association of Realtors, March.

3 Belden, Russonello & Stewart LLC. (2011). The 2011 Community Preference Survey. Realtor, publication of the National Association of Realtors, March. Joint Center for Housing Studies. (2011). The state of the nation's housing. (Report.) Boston: Harvard Graduate School of Design and the Harvard Kennedy School.

4 Center for Transit-Oriented Development. (2004). Hidden in Plain Sight: Capturing the Demand for Housing near Transit. (Report.) Oakland, CA.

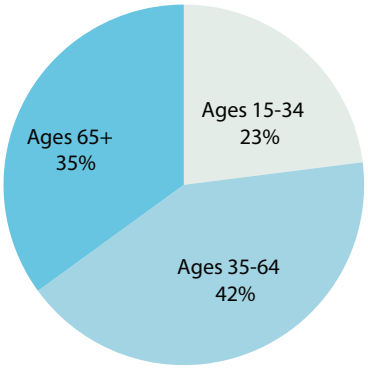
and 2000) has also exhibited a preference for living in walkable mixed-use neighborhoods with short commutes.[5] This generation may be more likely to prefer neighborhoods that offer alternative transportation options as a lifestyle choice. According to the Department of Transportation, the share of automobile miles driven by young people between 21 to 30 years old dropped by seven points from 1995 to 2009[6]; the share of young people 19 and under with a driver's license decreased from 64 percent to 46 percent in the same period.[7]

Figure 8: Distribution of National Demand for TOD by Household Type, 2030



SOURCE: Center for Transit-Oriented Development, 2006

Figure 9: Distribution of National Demand for TOD by Age, 2030



SOURCE: Center for Transit-Oriented Development, 2006

These findings are supported by CTOD's own forecasts of national demand for TOD.[8] The methodology uses information about the current households living near transit, including household type and age, to project future demand. According to the analysis, smaller households without children and households over the age of 65 have a greater propensity to live near transit. Figures 8 and 9 show the breakdown of national TOD demand by age and household type. As shown in Figure 8, smaller households without children account for the largest share of future TOD demand. Figure 9 illustrates TOD demand by age group; it is important to note that while householders over the age of 65 are projected to comprise 28 percent of households nationally, they make up 35 percent of demand for TOD. Older households, therefore, also have a greater propensity to live near transit. An analysis of the demographic and household trends in the PVPC, CRCOG and CCRPA regions is presented in Appendix E of the report.

Industries

Just as households have different propensities to live near transit depending on demographic factors, the types of jobs that are likely to be in a TOD can also vary by industry. In 2010, CTOD studied the number and composition of existing jobs near transit for every transit region[9] in the country, and found that there are specific industries that are more likely to locate near transit (within a half mile of station areas) than other types of jobs.[10] These "TOD-supportive" industry groups include Knowledge-based, Educational and Health Services, and Government (see Figure 10).

Knowledge-based industries - include Information; Finance and Insurance; Real Estate; Professional, Scientific and Technical Services; and

5 Belden Russonello & Stewart LLC. (2011). The 2011 Community Preference Survey. Realtor, publication of the National Association of Realtors, March.

6 Federal Highway Administration, Department of Transportation. (2010). National Household Travel Survey. Washington, D.C.

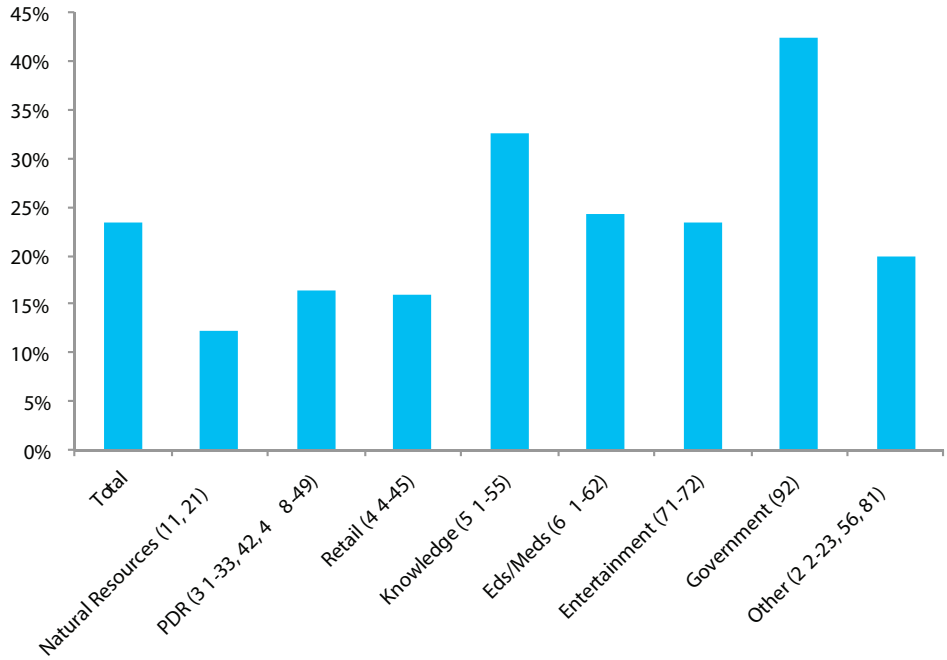
7 Federal Highway Administration, Department of Transportation. (2006 and 2009). Office of Highway Policy Information, Highway Statistics Series. Retrieved from http://www.fhwa.dot.gov/policyinformation/statistics.cfm.

8 For more about this methodology, please see: Center for Transit-Oriented Development (2004). Hidden in Plain Sight: Capturing the Demand for Housing near Transit. (Report.) Oakland, CA.

9 To conduct this analysis, CTOD used employment data from 2008 US Census Longitudinal Employment-Housing Dynamics (LEHD) for 34 regions with existing fixed-guideway transit (including commuter rail, light rail, trolley, streetcar, and bus rapid transit (BRT) corridors with dedicated lanes). The LEHD employment data excludes Massachusetts, Connecticut, and Washington, D.C., which did not participate in the Census survey.

10 Center for Transit-Oriented Development. (2011). Transit and regional economic development. (Report.) Oakland, CA.

Figure 10: Share of Jobs in Transit Areas by Sector, 2008



SOURCE: US Census LEHD 2008; Center for Transit-Oriented Development, 2010

Management of Companies and Enterprises.[11] In 2008, one third of Knowledge-based jobs were located in transit station areas compared to 23 percent for all jobs.[12] These industries benefit from agglomeration in many ways. First, they often draw from a shared pool of highly-skilled workers, and agglomeration allows them to have access to labor force while reducing the individual firm's recruitment and training costs.[13] In addition, agglomeration also allows industries to benefit from the "knowledge spillover" effects that occur when similar or complementary firms are geographically clustered.[14] Thus, agglomerations can generate increased innovation, especially in higher density urban contexts.[15]

Public Administration - Public Administration[16] jobs were shown to have the greatest concentration in transit areas nationally; in 2008, 42 percent of government jobs were located in transit areas. These jobs often are clustered in central business districts or downtowns, which are typically connected to transit.

Education and Health Services - In 2008, about 24 percent of jobs in Education and Health Services[17] were in transit areas. Universities and colleges can serve as institutional anchors in transit locations, and students can contribute significantly to ridership during off-peak hours.

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11 Includes NAICS codes 51, 52, 53, 54, and 55.

12 Ibid.

13 Marshall, A. (1920). Principles of Economics. London, UK: MacMillan & Co.

14 Romer, P. (1986). Increasing Returns and Long-Run Growth. Journal of Political Economy, 103.

15 Carlino, G., Chatterjee, S. & Hunt, R. (2006). Urban Density and the Rate of Invention. (Working paper.) Federal Reserve Bank of Philadelphia.

16 Includes NAICS code 92

17 Includes NAICS codes 61 and 62

Blue Back Square, West Hartford, CT

REAL ESTATE ECONOMICS

Transit has been shown to have a positive impact on real estate economics, as the value increases for properties located near stations. Multiple studies have confirmed that properties located in proximity to a transit station obtained higher values than comparable properties without transit access,[18] although the range of the premium varied widely from place to place.[19] From a developer's perspective, transit can enhance development opportunities in the following ways:

- Attract households and businesses – The availability of transit can be an amenity to households and employers, thereby helping to attract potential buyers or tenants into a new project.

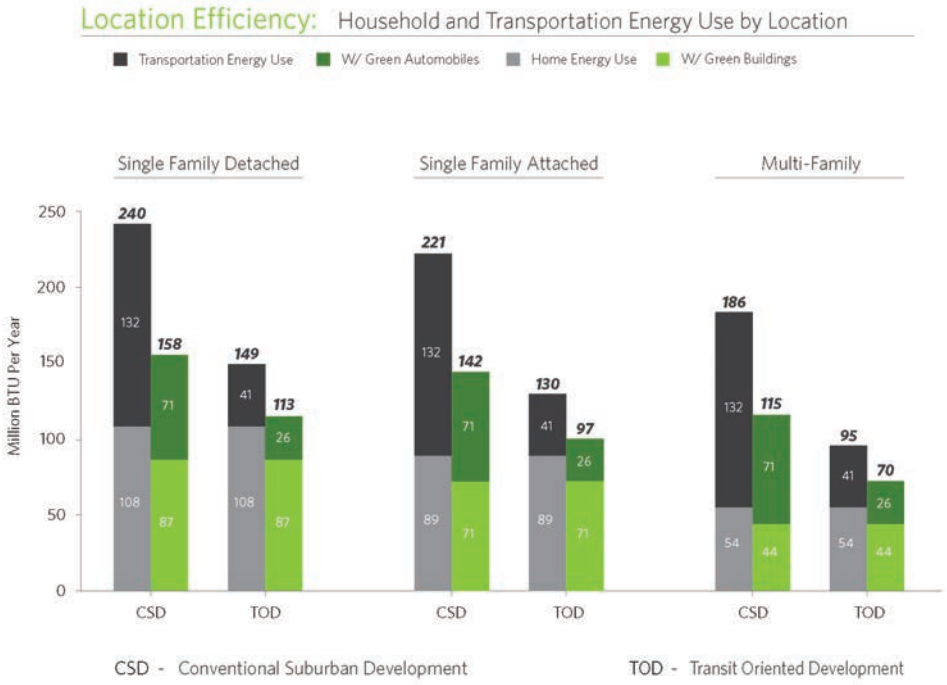
- Improve project performance – Often, local regulations have lower parking requirements and allow for higher density development in transit areas, thereby improving the economics of the project.

Although transit brings the potential to increase real estate values in the long term, in the short term the first developments around transit often require government support, either through financing or infrastructure, to create a market for higher density development.

18 Fogarty, N. (2008). Capturing the Value of Transit. (White paper.) Oakland, CA: Center for Transit-Oriented Development.

19 Fogarty, N. (2008). Capturing the Value of Transit. (White paper.) Oakland, CA: Center for Transit-Oriented Development.

Figure 11: Location Efficiency by Housing Type



SOURCE: Jonathan Rose Companies (2010). Location efficiency and housing type - boiling it down to BTUs. (White paper.) New York, NY: Jonathan Rose Companies

Transit also greatly benefits low- and moderate-income households, particularly those that live close enough to use the transit as their primary means of transportation. A Jonathan Rose Companies study on Location Efficiency found that a home's location relative to transportation choices as well as its housing type has a large impact on energy consumption. People who live in a more compact, transit-accessible area have more housing and transportation choices compared to those who live in spread-out developments where few or no transportation options exist besides driving. Choosing to live in an area with transportation options not only reduces energy consumption, it also can result in significant savings on home energy and transportation costs. For lower-income families, these savings can allow for more spending on other everyday necessities. As Figure 11 indicates, living in a TOD offers even more energy savings than would be experience in a high performing, green, conventional suburban development.

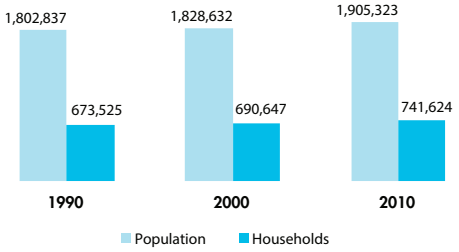
Demographics and Housing

Similar to national trends, the Knowledge Corridor exhibits changing demographics favorable to increasing demand for TOD. The study team analyzed long-term historical trends, particularly for household types and age cohorts that have demonstrated a higher propensity to live near transit—Echo Boomer (also known as Generation Y) and Baby Boomer households—as well as smaller households. The demographic data is supplemented with housing market information to shed light on the future development potential in station areas.

DEMOGRAPHIC TRENDS

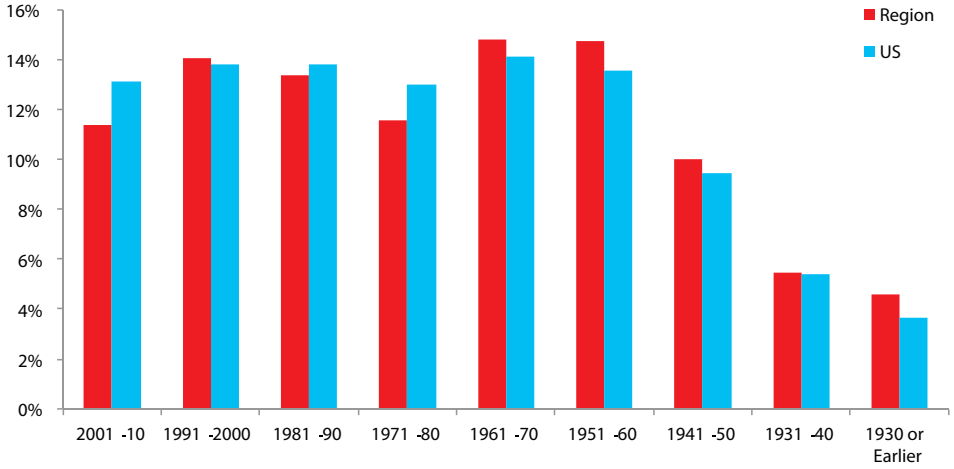
For the past two decades, the region experienced slow population growth. The region's population has grown by slightly more than 100,000 in the past twenty years, at an average annual rate of 0.3 percent, well below the United States growth rate. Household growth has been slightly faster, increasing at a rate of 0.5 percent annually, indicating that many of the new households in the region are small.

Figure 12: Population and Households in Region



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 1990, 2000, 2010.

Figure 13: Population by Year of Birth in Region and U.S., 2010



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 2010.

The region has a relatively lower share of young working-age adults compared to the U.S. The region's share of young people aged 25 to 39 is lower than the United States. The high ratio of "dependents" (seniors and children) to working age adults could be a concern for the region's future economic development if it leads to workforce shortages.[20]

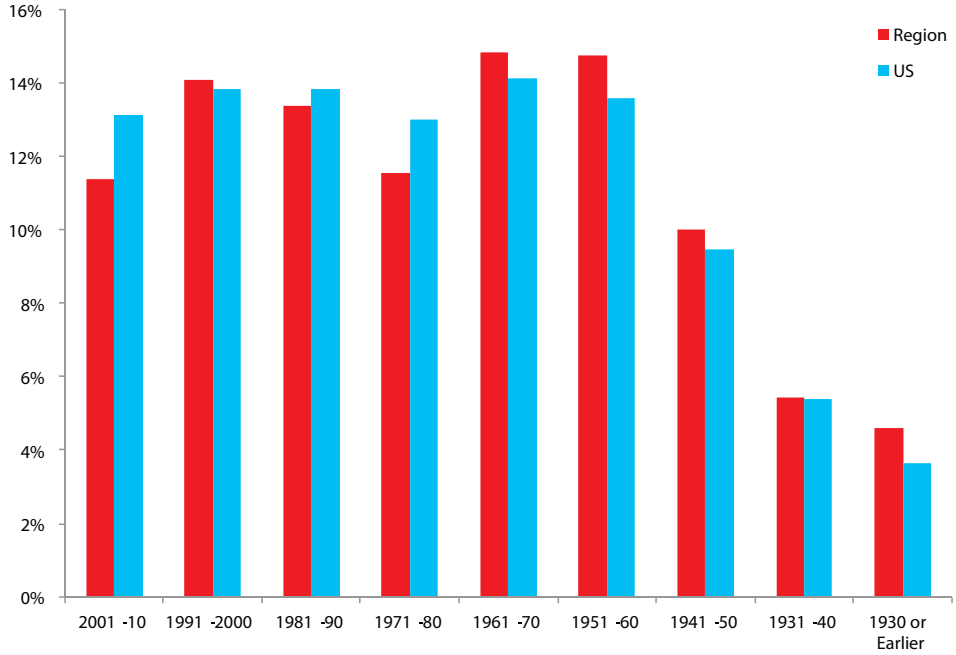
20 Connecticut Center of Economic Analysis. (2012). Recovery Stirring? But will Connecticut be too Old to Compete? The Connecticut Economic Outlook, May.

The region has a significant aging population. Compared to the nation, the region has a larger share of the senior[21] and Baby Boomer[22] population. Given the higher likelihood of Baby Boomers choosing a compact, walkable lifestyle, the large number of households in this demographic could help to support TOD demand in the region in future years.

The young adult population has not moved away from the region in the last decade. The concern about a decline in the young population in the region is mostly a function of the demographic composition of the population, which

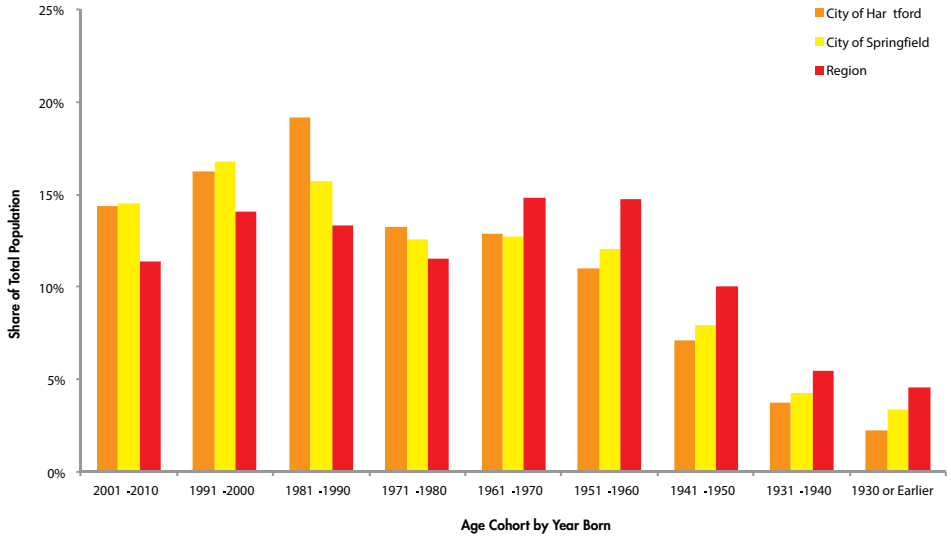
21 Born prior to 1946.
22 Born roughly between 1946 and 1965.

Figure 14: Population Change by Year of Birth, 2000-2010



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 2010.

Figure 15: Population by Age in Core Cities.



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 2010.

contains fewer people born between 1971 and 1990 (Generations X and Echo Boomers) than the United States as a whole. Still there is no strong evidence that there has been a significant net out-migration of young professionals away from the region. From 2000 to 2010, the population of people born between 1981 and 1990 remained stable, with a slight decline in the population of people born between 1971 and 1980. Most of the population declines were in fact in older demographic groups, likely a combination of deaths and out-migration.

The large cities are attracting a significant share of the region's young adults. When examined at the city scale, the cities of Hartford and Springfield have a significantly larger share of young adults and children than the region as a whole. This indicates that the young workforce aged between 20 and 39 (adults born between 1971 and 1990) is much more concentrated in the region's job centers.

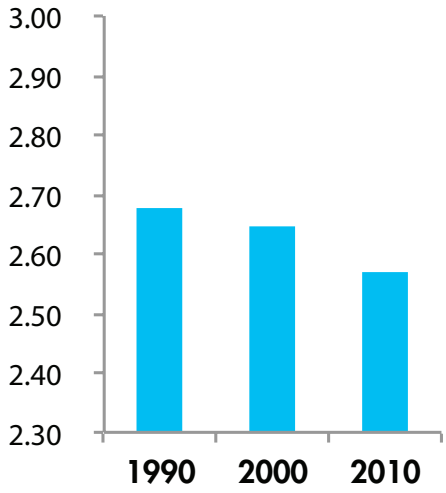
The number of young adults in Hartford has increased in the last 10 years, fueling much of the growth in that city. Over the past ten years – for the first time in four decades – the population of the city of Hartford experienced growth. Most of that growth was driven by students and working adults between the ages of 20 and 34.[23]

HOUSING DYNAMICS

Overall, housing has lagged behind the demographic shifts in household size, formation, and composition. Household size in the region is shrinking, consistent with national trends. The average number of persons per household has dropped from almost 2.68 in 1990 to 2.56 in 2010.

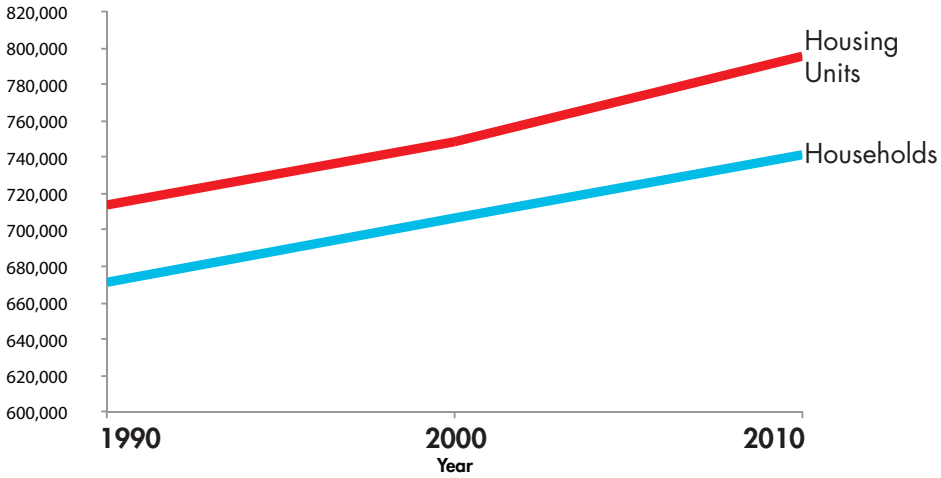
Housing unit development has outpaced household formation. From 1990 to 2010, the number of housing units in the region generally exceeded the number of households.

Figure 16: Trends in Average Household Size



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 1990, 2000, 2010.

Figure 17: Trends in Housing Units and Households in Region, 1990-2010

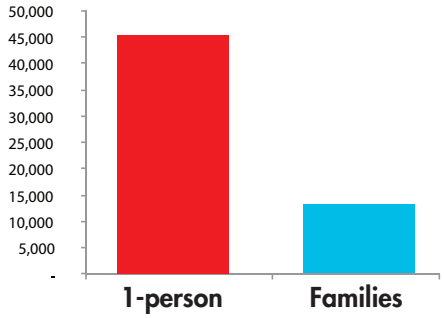


NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 1990, 2000, 2010.

23 Flaherty, P. (2011). Young People Aren't Fleeing and the Cities Aren't Dying. The Connecticut Economic Digest, Vol. 16, No. 10.

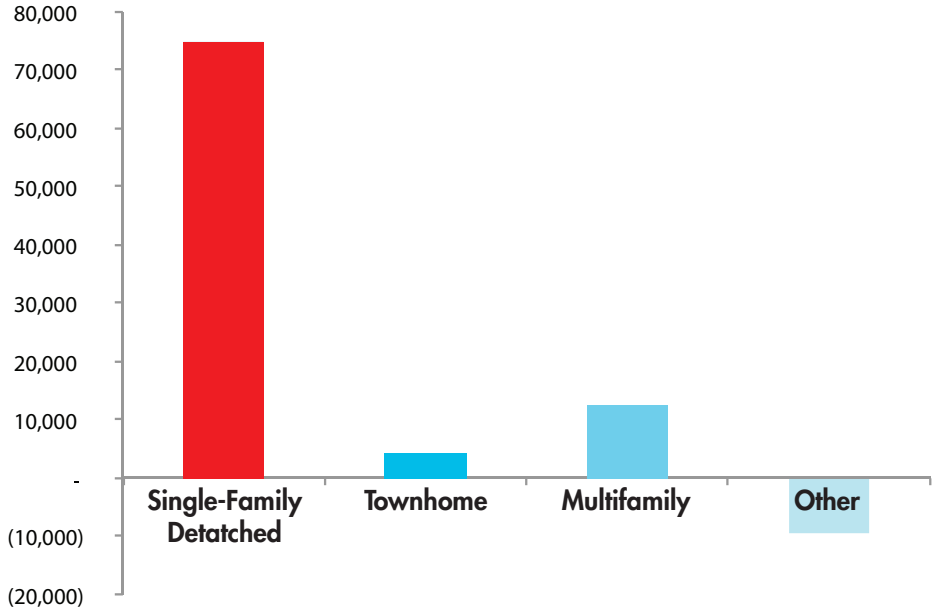
Most of the new household growth in the region has been driven by one-person households. From 1990 to 2010, two thirds of the net household growth in the region was from one-person households. The number of new one-person households grew by 45,000, more than three times the growth in family households during that same period.

Figure 18: Net New Households in Region by Type, 1990-2010



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 1990, 2000, 2010.

Figure 19: Net New Housing Units by Type in the Region, 1990-2010



NOTE: Region is defined as the US Census Metropolitan Statistical Areas encompassing Hartford and Springfield.
SOURCE: US Census, 1990, 2000, 2010

The demographic shifts that have occurred in the region are not reflected in the new construction of housing units, which are still predominantly single-family units in suburban locations. From 1990 to 2010, the increase in housing stock in the region was almost entirely driven by the addition of new single-family detached units, with only slight increases in multi-family and townhouse units.

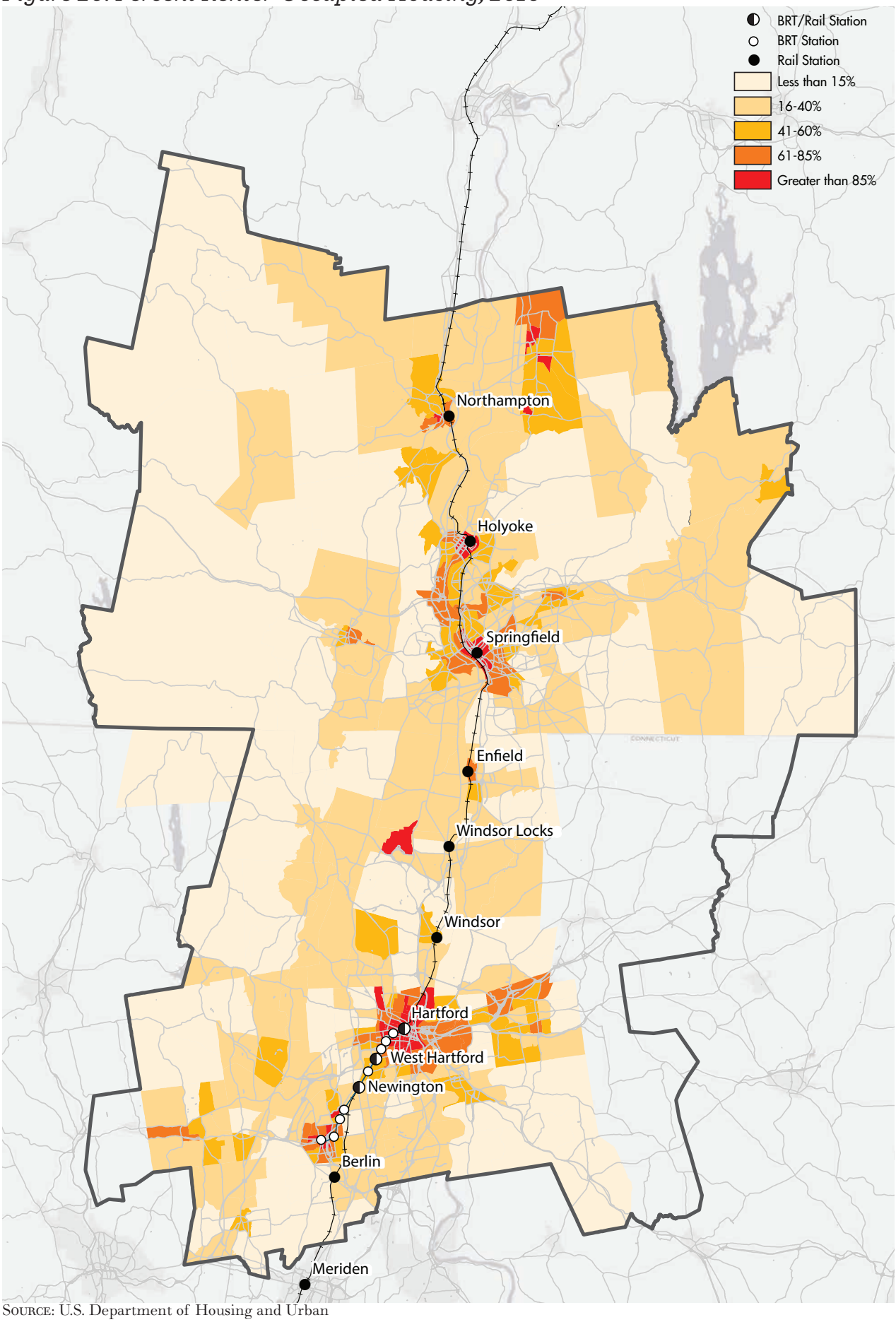
REAL ESTATE MARKET CONDITIONS

These trends in demographic change impact the type of housing in demand and the amount and location of new construction that can be expected in the region. The study team analyzed the existing conditions of the two key residential real estate market segments - multi-family rental and single-family owner-occupied - based on standard real estate metrics, including rent/value levels, vacancy, days on the market, and number of transactions to understand the existing state of these markets and to analyze the impacts these demographic shifts may have on these market segments.

MULTIFAMILY (RENTAL)

The multifamily rental market encompasses any building in which the primary occupants are renters and where there are more than one housing unit in one building. Traditionally, this encompasses a range of building types, from two-family homes up to 100+ unit apartment complexes.

Figure 20: Percent Renter-Occupied Housing, 2010



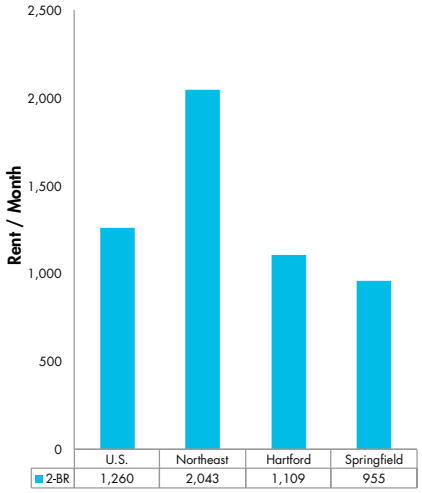
Source: U.S. Department of Housing and Urban Development. State of the Cities Data Systems Building Permits Database. 2000 - 2011.

In the Hartford/Springfield region, multifamily housing is concentrated around areas of high population density, especially in the urban centers. Large concentrations of renter-occupied housing are found in Hartford, Springfield, Manchester, New Britain, Holyoke, and Northampton.

The percentage of renter-occupied housing is particularly high relative to regional averages in the *CTfastraks* and NHHS Rail station areas. In these areas, an average of 78 percent and 75 percent of units are renter-occupied, respectively, compared to 41 percent for the region as a whole. Many of the station areas almost entirely consist of renter-occupied households, including stations in Enfield, Hartford, New Britain, Springfield, Holyoke and Northampton.

Multifamily housing in the region is also generally more than 30 years old and little new product has been added in the past decade. In both regions, less than 20 percent of multifamily housing was built since 1990. Older multifamily units are often functionally obsolescent and not appealing to modern consumer tastes, which limits their appeal to consumers deciding between renting and owning.

Figure 21: Hartford/Springfield Asking Rents to National/Regional Average



Source: U.S. REIS Service, LLC. Hartford Market Report. First Quarter, 2012; REIS Service, LLC. Springfield Market Report. First Quarter, 2012.

Figure 22: Year Built and Unit Size

Year Built	Hartford	Springfield
Before 1970	36%	32%
1970-1979	31%	56%
1980-1989	16%	10%
1990-1999	7%	2%
2000-2009	9%	0%
After 2009	1%	0%

Unit Size	Hartford
Studio	4%
1 BR	43%
2 BR	51%
3 BR +	3%

The rental market is geared primarily to single-person households, couples, and/or families with one child. The vast majority of multifamily units are either 1- or 2-bedroom, which indicates that larger families look to the homeownership market for housing options.

Multifamily rents in the Hartford/Springfield regions are relatively affordable and below Northeast region and U.S. averages. The average rents in the Hartford and Springfield regions for all unit types were below the national average and well below the Northeast region average.

The rental market in both regions appears to be unable to appeal to higher-income households. There exists a significant mismatch between the regions' average rents and average incomes when compared to national averages. Of 280 Metropolitan Statistical Areas (MSAs) nationally, the Hartford MSA ranks 6th and Springfield 98th in median income, but both regions have average rents substantially below the U.S. national average. This mismatch indicates that, while both regions rank highly in terms of income compared to other regions, higher income is not translating into high rent levels, either because the renting population is relatively lower income or because the regional population has lower demand for renting as compared to homeownership. The large supply of older rental housing may

also discourage households with sufficient income to afford homeownership from renting, due to the relative obsolescence of the regional rental unit supply.

Rent amounts in the region vary considerably by location and by age of structure, with the highest rents in newer buildings in downtown Hartford and suburban locations. The following map shows contract rents mapped by census tract and highlights a trend of higher rent amounts in the urban fringe and lower rent amounts in the urban core, with the exception of downtown Hartford, where some of the region's highest rents are located. Lower rent amounts are present at many of the CT***fastrak*** station areas, particularly in Hartford locations outside of downtown and in New Britain, as well as in the Windsor Locks, Springfield and Holyoke station areas. Downtown Hartford, Windsor, Newington, and Enfield contained relatively higher rent levels. Additionally, rent levels are highest in newer structures and lowest in older structures, with complexes built within the past 20 years having the highest rent levels.

Figure 23: Year Built and Average Rent

Year Built	Hartford	Springfield
Before 1970	$905	$838
1970-1979	$948	$962
1980-1989	$1,039	$844
1990-1999	$1,146	$1,289
2000-2009	$1,490	N/A
After 2009	$1,514	N/A

Source: U.S. REIS Service, LLC. Hartford Market Report. First Quarter, 2012; REIS Service, LLC. Springfield Market Report. First Quarter, 2012.

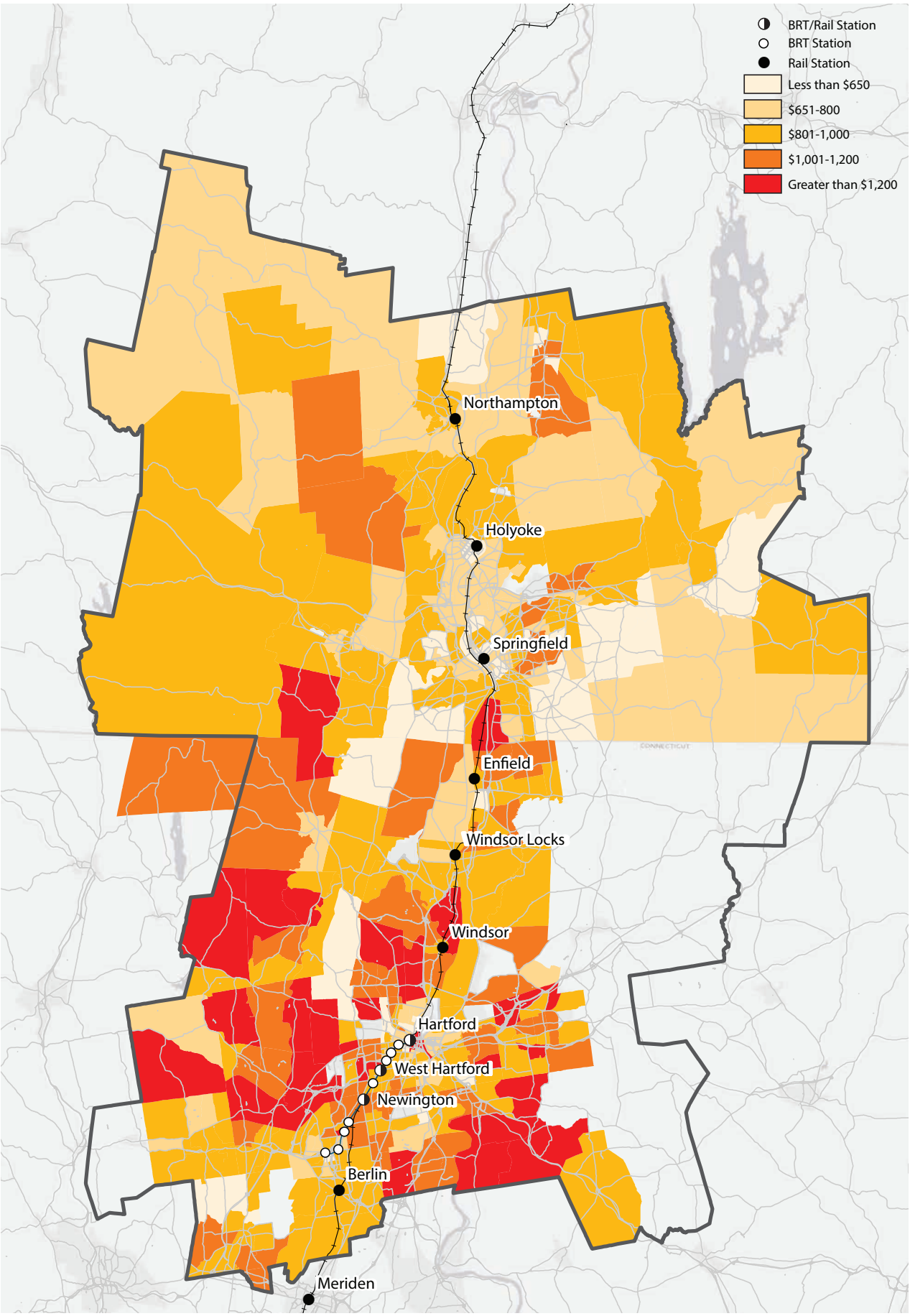
However, the multifamily rental market conditions are improving and appear poised for stronger performance in coming years. The multifamily rental sector in the Hartford and Springfield regions appears to be reaching a transition point where vacancy is reaching historical lows and rents are starting to increase. Compared to the region and the nation, the one year vacancy and rent growth rates are among the highest.

Multifamily housing is becoming a larger part of the region's new housing construction. While permit activity is down in the region in all sectors due to the impact of the Great Recession (the economic downturn that began in 2008) on the national real estate market, the multifamily sector constitutes a growing percentage of the total number of new units produced in the region. From 2000 to 2010, multifamily buildings with more than 5 units constituted 14 percent of all units constructed in the Hartford and Springfield regions, but constituted only an average of 11 percent of all units in 2000-2006 and 18 percent from 2007-2011.[24]

Multifamily housing construction is occurring in many locations not connected to transit. Over the past 10 years, new multifamily housing construction has been highly concentrated in just a few municipalities, most

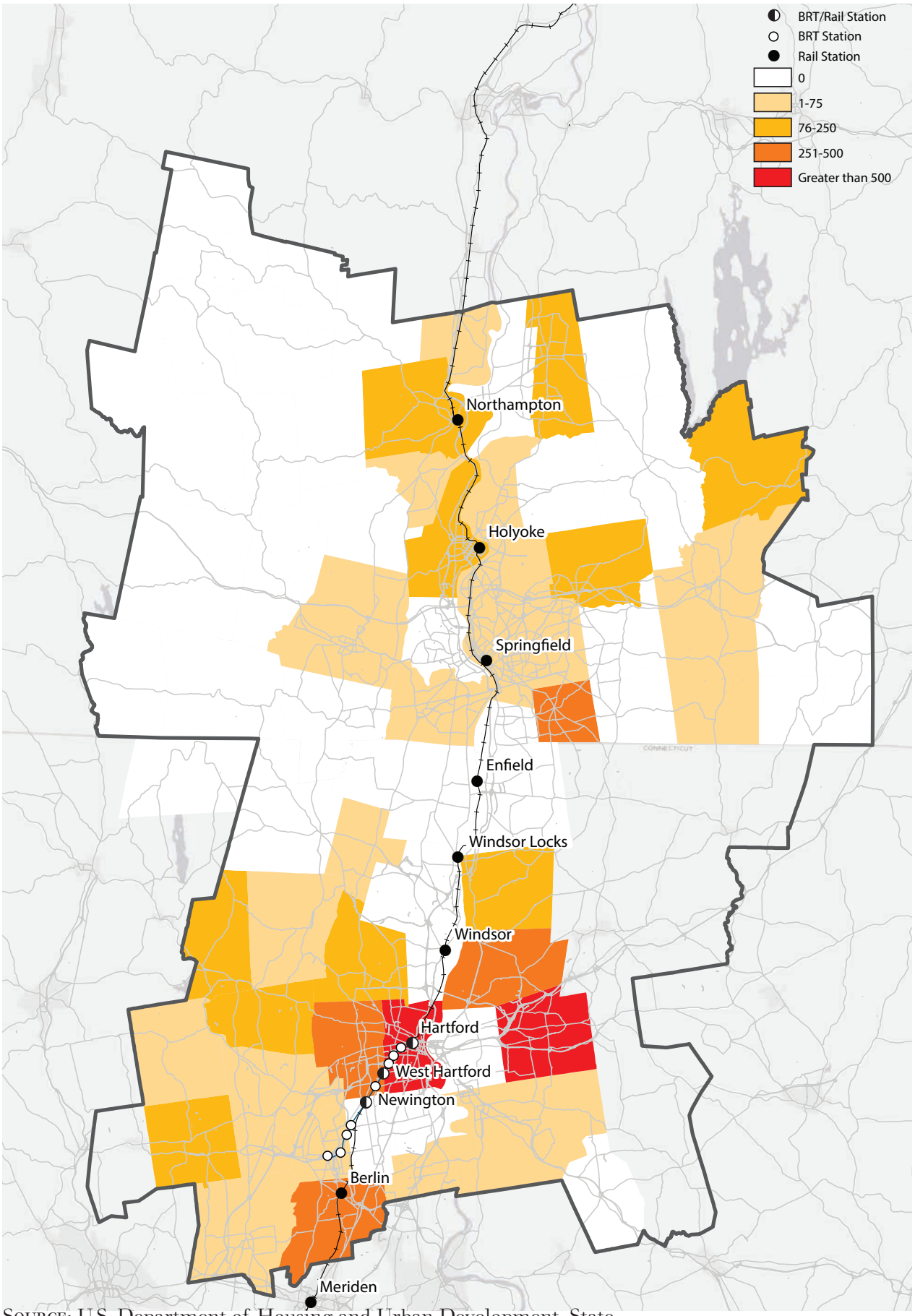
24 U.S. Department of Housing and Urban Development. (2000-2011). State of the cities data systems building permits database. Retrieved from http://www.huduser.org/portal/datasets/socds.html.

Figure 24: Median Gross Rent, 2010



Source: U.S. Census 2010

Figure 25: Multifamily Building Permits, 2000-2010



Source: U.S. Department of Housing and Urban Development. State of the Cities Data Systems Building Permits Database. 2000 - 2011.

notably Manchester, centered around the connection to I-84 and nearby shopping and amenities. Hartford is the only transit-corridor community to have a significant amount of new multifamily housing construction.

The regional data on multifamily housing indicate the beginning of an upward cycle. Appendix E demonstrates that the rate of rental increase is growing, reaching 2.20 percent in 2012 for the Hartford region and 2.70 percent for the Springfield region, which rank high among peer regions. As rents are increased in response to tight supply conditions, they will eventually reach the point where new construction will become financially feasible. If demand continues to increase for multifamily rental housing, which may occur due to the growth of Baby Boomers and Echo Boomers, rents in the existing supply will eventually be bid up to the point where new construction is feasible.

SINGLE-FAMILY (OWNER)

The owner-occupied market makes up the majority of housing units in the Hartford/Springfield regions. Approximately 60 percent of all housing is owner occupied, which includes detached houses, attached town-houses, and/or condominiums. This market varies considerably in building type, including small, large, old, and new.

Owner-occupied housing is most heavily concentrated in suburban areas. Like most U.S. regions, owner-occupied homes dominate the marketplace in suburban areas of the region. High concentrations of owner-occupied housing exist in the Farmington Valley, the towns south and east of Hartford, and the towns surrounding Springfield. Owner-occupied housing predominates in areas of higher median household income, which are generally not located in the NHHS rail and CT***fastraks*** corridors.

New owner-occupied housing construction is primarily located in communities at the regional fringes. Communities to the far south of the region and along the western periphery had the most growth in owner-occupied housing, because greenfield land continues to be available for development and housing prices are generally higher.

The owner-occupied market has been severely impacted by the Great Recession. According to an analysis by UConn, median sales prices of single-family houses in the Hartford Labor Market Area (LMA) are down 15 percent from the peak in 2006 to $266,111 and in the Enfield LMA they are down 13 percent from the peak in 2006 to $182,069.[25] Prudential Connecticut Realty estimates the Hartford County median sales price at $215,000 in the second quarter of 2012.[26]

Owner-occupied condominium units are down even further in pricing, according to Connecticut state-wide data from UConn, which indicates that

25 University of Connecticut Center for Real Estate and Urban Economic Studies (2012). Single Family Indices by Town: Second Quarter, 2012. (Report.) June, 2012.

26 Prudential Connecticut Realty. (2012). The Connecticut Real Estate Market Report: Second Quarter, 2012. (Report.) Wallingford, CT: Prudential Connecticut Realty.

prices have dropped 32 percent from their peak in the third quarter of 2007.[27] Prudential Connecticut Realty estimates the Hartford County median condominium sales price at $147,500 in the second quarter of 2012.[28] The general trend in single-family house sales has been downward for the past 5-6 years since the peak in 2006. Housing prices throughout the region have declined approximately 15 percent from the peak for single-family houses and 32 percent for condominiums, although there are indications that the owner-occupied housing market is stabilizing and beginning to recover.

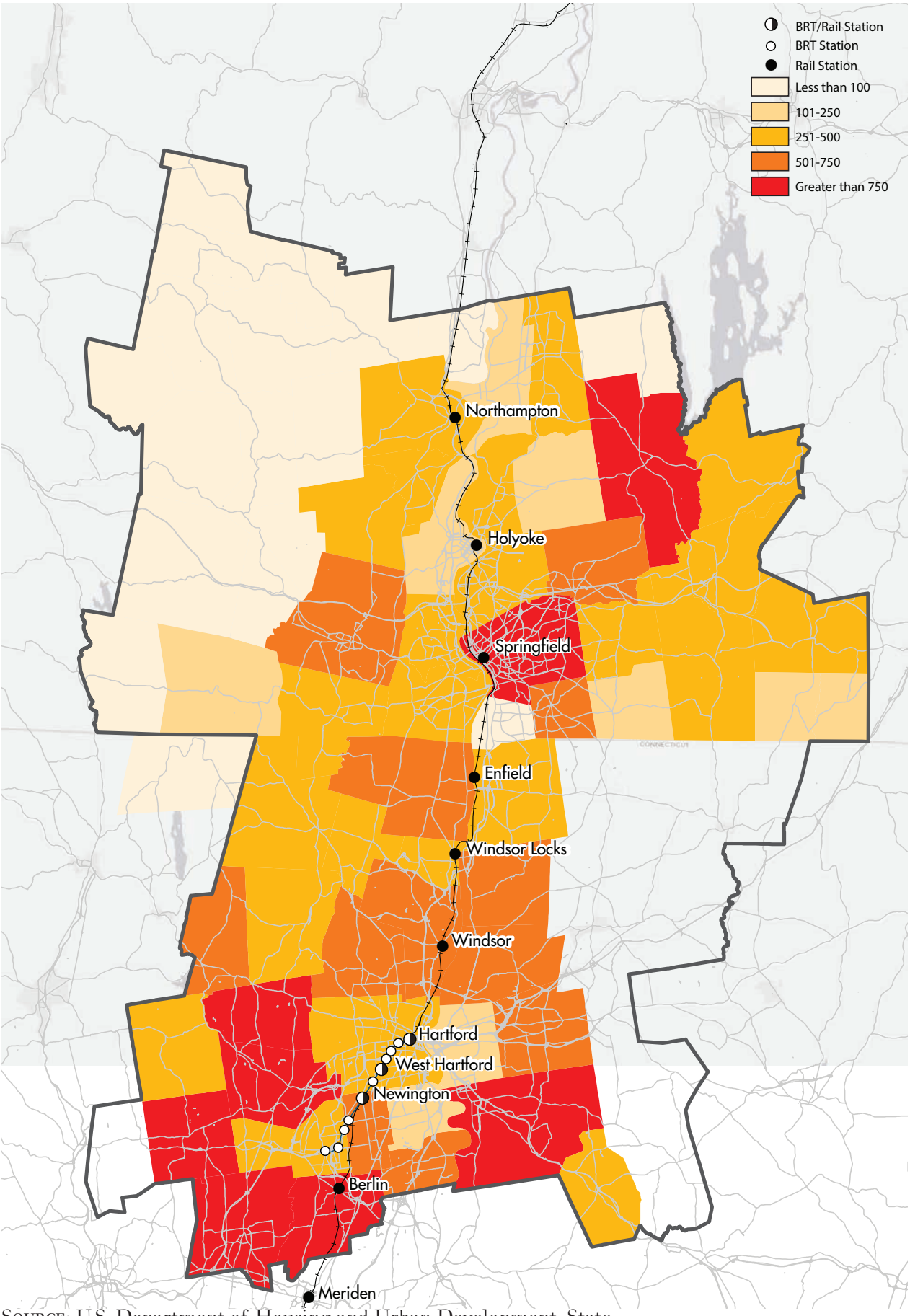
HOUSING PROJECTION

There is potential demand for approximately 9,000 to 12,000 new housing units in the transit corridors. While the corridors currently contain about four percent of the region' households, with careful planning and strategic investments, there is potential to capture future household growth in transit locations. During the next three decades, PVPC, CRCOG and CCRPA project that the region will increase by 154,000 residents, at an average annual rate of 0.33 percent annually. Using conservative assumptions, this corresponds to an increase of 60,000 households. Nationally, the demand for TOD housing is estimated at about 25 percent of all households. In the Knowledge Corridor, the study team employed a more conservative "capture rate" of TOD demand based on the existing market conditions in the region as well as the size of the planned transit system. The consultant team estimates that the region will have sufficient demand for 9,000 to 12,000 more TOD housing units (15 to 20 percent of all new households) to meet the growing demand from household types attracted to a "walkable" urban lifestyle. Realizing this potential demand will depend on creating the conditions that will accommodate new, higher-density housing development near stations, including supportive public policies like TOD-supportive zoning, as well as strategic investments in "place-making" and infrastructure to make TOD housing competitive with other available housing options.

27 University of Connecticut Center for Real Estate and Urban Economic Studies. (2012). Condominium Indices by Town: Second Quarter, 2012. (Report.) Storrs, CT: University of Connecticut.

28 Prudential Connecticut Realty

Figure 26: Single-Family Permits Issued, 2000-2011



SOURCE: U.S. Department of Housing and Urban Development. State of the Cities Data Systems Building Permits Database. 2000 - 2011.

Residential Real Estate Feasibility Analysis

TOD occurs when developers recognize the demand for housing or commercial space in a market and when the amount prospective tenants or homeowners are willing to pay exceeds the costs that developers incur to build new structures or adaptively reuse existing structures. In the previous sections, the existing demographic and real estate market conditions were presented to describe the opportunities and constraints to TOD. In this section, a more detailed analysis of the current residential rental and homeownership markets is presented in comparison to the costs developers would incur to construct new rental or homeownership units at each station area. The resulting analysis provides a snapshot of the feasibility of TOD at each station area, given current rents/sales prices and construction costs. This data is then analyzed further to provide an estimate of how much rent or sales prices would need to increase at each station area to make TOD feasible and how many households exist in the area surrounding the station area that would be able to afford those rent or sales prices.

KEY FINDINGS

The Consulting Team found the following key observations from the real estate feasibility analysis:

- **For-sale housing is most feasible in the towns south and west of Hartford, Connecticut and in Northampton, Massachusetts**. These towns demonstrated strong for-sale housing market conditions and comparable sales approached or exceeded the costs to construct new housing. Additionally, these locations, in particular West Hartford and Newington, Connecticut had a high number of households earning enough income to afford new housing units within a three-mile trade area around the station.

- **Multifamily rental housing is most feasible in downtown Hartford.** Downtown Hartford has the highest rents in the region and a large population of households earning enough income to afford new multifamily rental housing. However, latent demand for new multifamily rental housing may also exist in the towns south and west of Hartford, as well as in Springfield, Massachusetts.

FOR-SALE HOUSING FEASIBILITY ANALYSIS

The previous section described that, within the Hartford - Springfield region, the single-family for-sale and condominium for-sale markets are stable and beginning to recover from the effects of the Great Recession, during which home sales prices plummeted across the region. New home construction hit an all-time low in Connecticut in 2011, although 2012 has shown a modest recovery. The Consulting Team also found that new housing construction

and the highest home values occur generally in the urban fringes where greenfield land is available for development, rather than the transit corridors, which are generally developed areas. Thus, many locations within the NHHS Rail and *CTfastrak* corridors did not demonstrate strong for-sale housing feasibility in the present market.

The Consulting Team used two approaches to determining for-sale TOD feasibility:

- **The Comparable Sales Approach**: The Consulting Team compared local home sales data against the cost to construct new for-sale housing.

- **The Income Approach**: The Consulting Team investigated the household income necessary to afford a new unit of for-sale housing by calculating the number of households living within a reasonable trade area that earn more than this amount of income. This approach represents the potential demand for for-sale TOD in the location, rather than the existing market conditions without transit service.

Figure 27: Estimated Costs of New Owner-Occupied and Rental Housing

Cost Category	Total Cost	Cost / Square Foot
Land Acquisition	$35,000	$29.17
Construction (Hard) Costs	$150,000	$125.00
Soft Costs	$12,500	$10.42
Period Costs	$25,500	$21.25
Builder Margin	$50,500	$42.08
Total Costs	**$273,500**	**$227.92**

Cost Category	Total Cost	Cost / Square Foot
Land Acquisition	$35,000	$31.82
Construction (Hard) Costs	$132,000	$120.00
Design & Approvals (Soft) Costs	$12,750	$11.59
Period Costs	$25,000	$21.36
Builder Margin	$30,000	$27.27
Total Costs	**$234,750**	**$212.05**

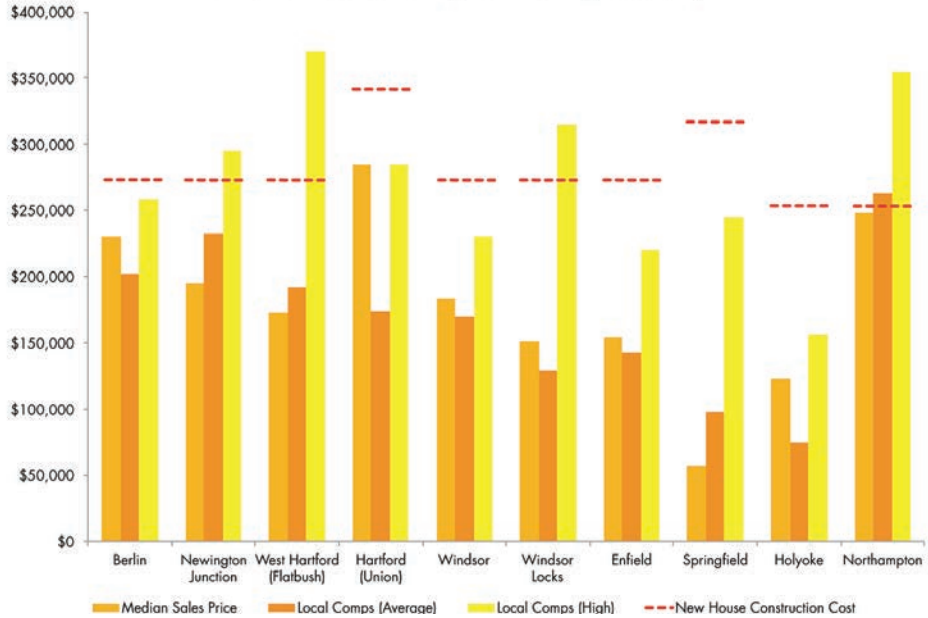
SOURCE: CT Homebuilders and Remodelers, Jonathan Rose Companies

Comparable Sales Approach

The Consulting Team investigated the Median Sales Price, Average of Comparable Sales, and High Comparable Sale of each station area and compared against the estimated cost to construct a new unit of attached for-sale housing. For urban locations, the comparable sales are generally high-rise condominiums and a premium was added to the cost of construction to account for the higher cost of constructing such units in an urban area. The resulting graphs (Figures 28 and 29) demonstrate which station areas may have immediate for-sale TOD feasibility.

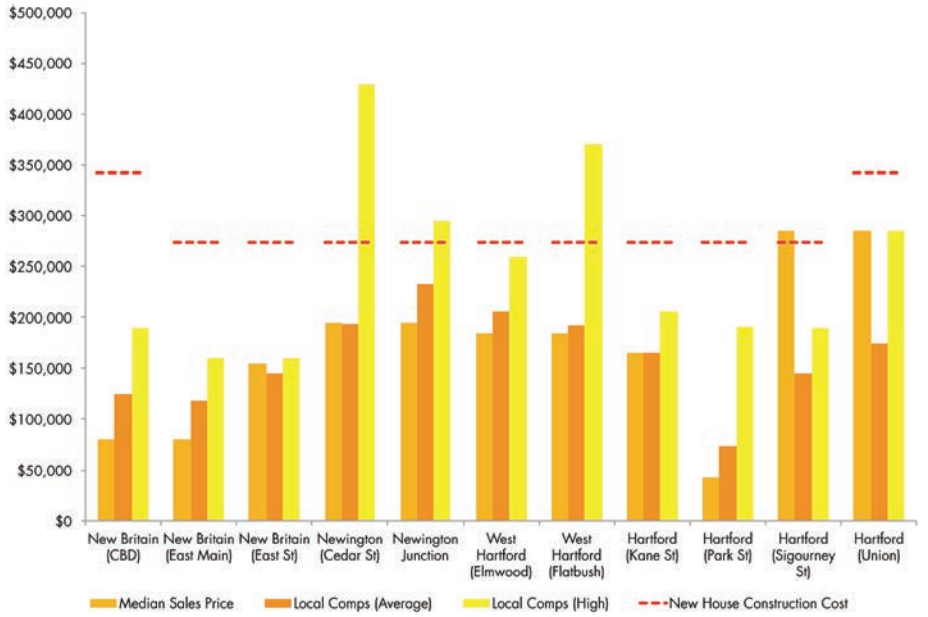
The analysis indicates that for-sale TOD is most feasible in the suburban towns south and west of Hartford. These towns have relatively higher sales prices, share of owner-occupied housing, household incomes, and number of new single-family house permits than the region as a whole. This analysis

Figure 28: NHHS and Vermonter Rail Owner-Occupied Housing Feasibility



SOURCE: MLS, Trulia.com, Craigslist.org, CT Homebuilders and Remodelers, Jonathan Rose Companies

Figure 29: CTfastrak Owner-Occupied Housing Feasibility



SOURCE: MLS, Trulia.com, Craigslist.org, CT Homebuilders and Remodelers, Jonathan Rose Companies

indicates that, with enabling zoning regulations, available land, local political support for TOD, and improved for-sale market conditions, TOD around these station areas could potentially occur from private market activity.

The analysis also indicates for-sale TOD feasibility in Hartford and Northampton, although these locations present different challenges than the suburban towns. These stations exist within a denser urban area where challenges to new development will be greater. The analysis indicates that, even with higher costs of construction, new construction of for-sale units may be feasible and there exists a population of higher-income residents willing to pay a premium to live in these locations.

The analysis indicates that the remaining stations do not currently exhibit market conditions conducive to near-term TOD feasibility. Comparable sales prices are below the cost to construct a new housing unit.

Income Feasibility Approach

Figure 30 shows the household income gap at each station area between the income necessary to afford the average existing house and a new for-sale TOD unit.

Figure 30: Owner-Occupied Income Gap

CT Fastrak Stations

Station Area	Existing Housing Household Income	New Housing Household Income	GAP
New Britain (CBD)	$35,355	$108,270	($72,915)
New Britain (East Main)	$33,099	$85,296	($52,198)
New Britain (East St)	$42,147	$85,296	($43,149)
Newington (Cedar St)	$58,474	$85,296	($26,822)
Newington Junction	$71,429	$85,296	($13,867)
West Hartford (Elmwood)	$62,623	$85,296	($22,673)
West Hartford (Flatbush)	$57,798	$85,296	($27,498)
Hartford (Kane St)	$48,840	$85,296	($36,456)
Hartford (Park St)	$18,130	$85,296	($67,167)
Hartford (Sigourney St)	$42,103	$85,296	($43,193)
Hartford (Union)	$51,976	$108,270	($56,294)

NHHS Rail Stations

Station Area	Existing Housing Household Income	New Housing Household Income	GAP
Berlin	$61,446	$85,296	($23,850)
Newington	$71,429	$85,296	($13,867)
West Hartford (Flatbush)	$57,798	$85,296	($27,498)
Hartford (Union)	$51,976	$108,270	($56,294)
Windsor	$50,487	$85,296	($34,810)
Windsor Locks	$36,682	$85,296	($48,614)
Enfield	$41,183	$85,296	($44,113)
Springfield	$26,227	$99,870	($73,643)
Holyoke	$18,610	$78,576	($59,966)
Northampton	$81,791	$78,576	$3,214

SOURCE: 2010 U.S. Census, CT Homebuilders and Remodelers, Jonathan Rose Companies

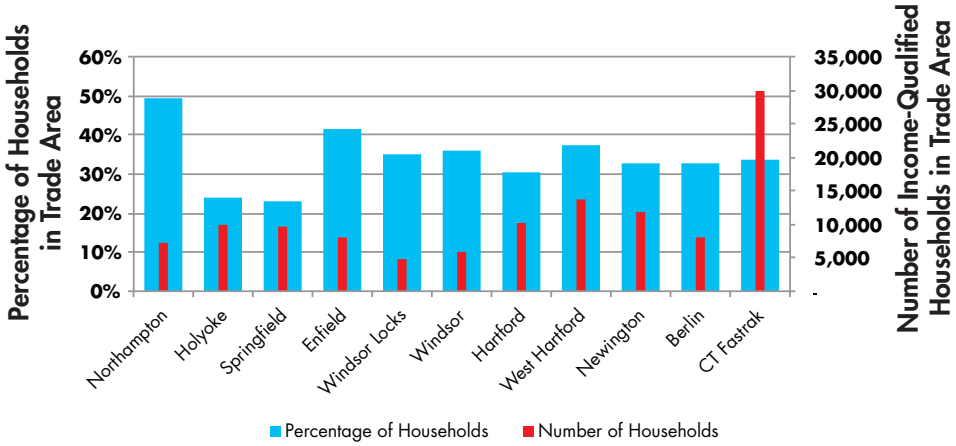
In all station areas except for Northampton there is a gap between the income needed to support the existing housing and the income needed to support new housing construction. However, an income gap is to be expected at this point in time, since there is no premium associated with the station areas, due to the current lack of transit service at most locations. In many locations, though, the income gap is substantial and will be difficult to overcome.

Although the income gap between the income required to afford existing station area housing and the income required to afford new TOD housing may appear daunting, there is a second form of analysis typical of real estate development feasibility studies, which is to analyze the number of households living within a defined "trade area" that earn enough income to afford a new housing unit. A trade area is a geographical district from which a new development would likely draw most of its consumers, which is usually a radius of several miles from the development location in which a sufficient population exists to draw from. Due to the relatively high population densities of the corridors, the Consulting Team drew a 3-mile radius around each station, although the ***CTfastrak*** corridor is considered as one trade area due

to the relatively small distances between the stations. It is important to note this area is an approximation for analytical purposes only and the actual trade area for a TOD in this region could differ substantially based on the specific housing type, geography, economic conditions, and other factors.

Figure 31 shows the percentage of households living in the trade areas of each NHHS Rail Station area and the CT***fastrak*** corridor that earn enough income to afford a new for-sale housing unit at the Station area or in the CT***fastrak*** corridor.

Figure 31: Households Able to Afford New Construction, Owners



Source: 2010 U.S. Census

These data represent substantial latent capacity among the existing population to support a new for-sale TOD. Developers will often calculate the "capture rate", which is the percentage of income-qualified households within a trade area that a new development would need to "capture" to sell all of the homes. The lower the capture rate, the more likely that the developer will find households earning enough income to afford the costs of new construction. The above analysis demonstrates that many station areas have substantial numbers of households that could afford a new for-sale TOD living within a 3-mile trade area, even if these households are not currently residing in the station areas themselves.

Several station areas show greater latent capacity for for-sale TOD than current development feasibility. Enfield, Windsor and West Hartford, in particular, have capacity within a 3-mile trade area to support for-sale TOD, although current local comparable sales in the station areas suggested that the local demand for for-sale TOD was insufficient to support new construction.

The *CTfastrak* corridor, as a whole, has a substantial number of income-qualifying households living in a 3-mile trade area around the corridor, which indicates a potential latent capacity for new for-sale housing construction. It is assumed, though, that many of these households overlap with the households captured in the Hartford, West Hartford and Newington trade areas.

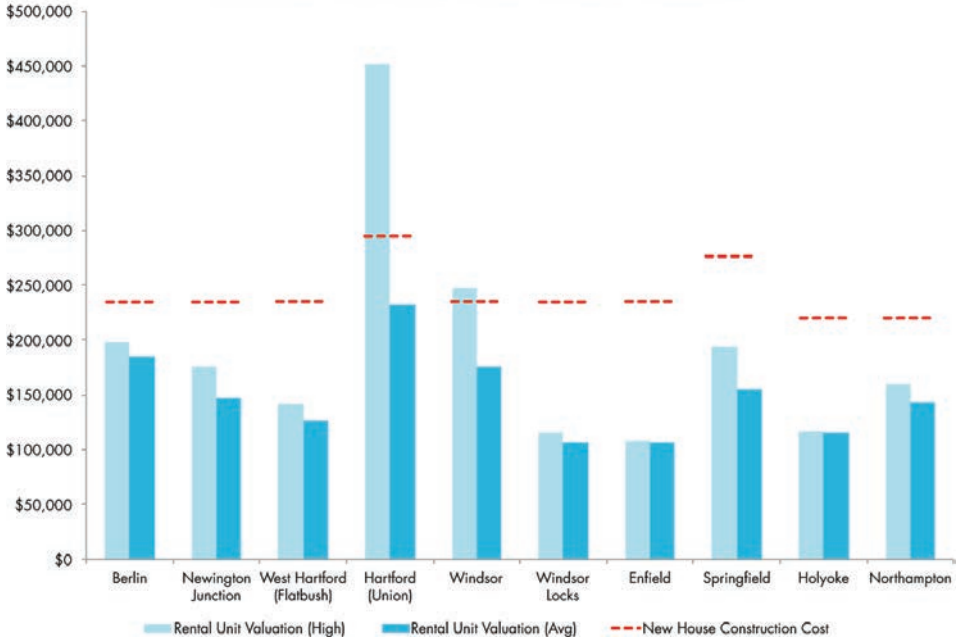
RENTAL FEASIBILITY ANALYSIS

The previous section described the multifamily rental market in the Hartford/Springfield region as turning a corner and likely to improve in the coming years. Although the existing supply of multifamily housing in the region is dated and rents are relatively low, newer multifamily developments were commanding higher rents in Hartford and Manchester, and indicators such as vacancy rates and rent levels were all pointed towards increased demand for multifamily rental housing. Additionally, regional demographic trends appear aligned with an increased demand for multifamily rental housing, particularly among Echo Boomer and Baby Boomer populations. However, rental housing is highly concentrated within the region in a few communities. In this context, the Rental Feasibility Analysis found that a few locations showed immediate multifamily rental feasibility, but a larger number of locations may become feasible over time as the demand for multifamily rental housing increases. Like the For-Sale Feasibility Analysis, the Consulting Team utilized both the Comparison Approach and the Income Approach to benchmark TOD feasibility.

Comparable Sales Approach

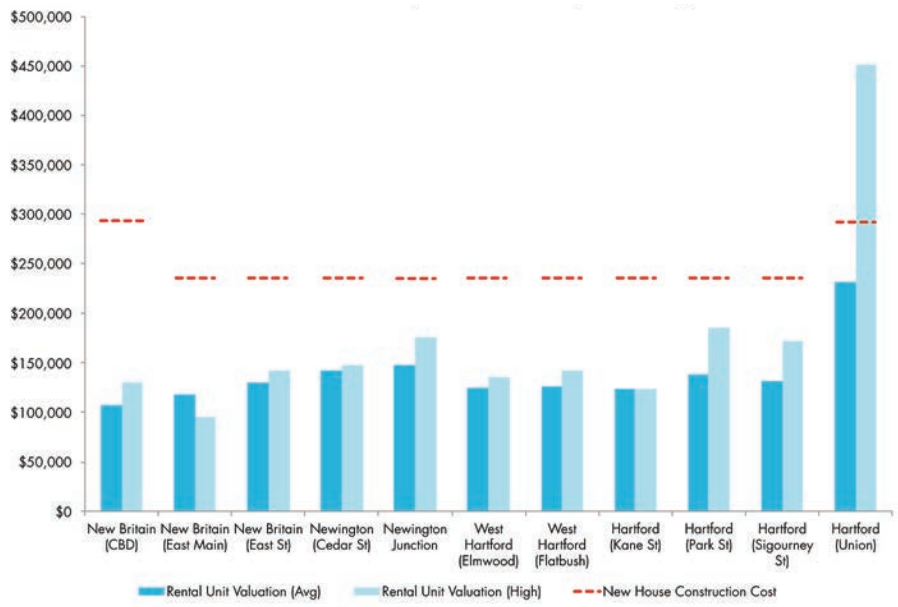
The Consulting Team investigated the Average of Comparable Rentals, and High Comparable Rental of each station area, and compared those against the estimated cost to construct a new unit of multifamily rental housing. For urban locations, the comparable sales are generally high-rise condominiums and a premium was added to the cost of construction to account for the higher cost of constructing such units in an urban area. In order to calculate the value of a rental unit against the cost of construction, the Consulting Team utilized standard real estate valuation assumptions (5 percent vacancy loss; operating expenses at 35 percent of rents; and 6 percent capitalization rate). The resulting graphs (Figures 32 and 33) demonstrate which station areas may have immediate multifamily rental TOD feasibility.

Figure 32: NHHS and Vermonter Rail Renter-Occupied Housing Feasibility



SOURCE: MLS, Trulia.com, Craigslist.org, CT Homebuilders and Remodelers, Jonathan Rose Companies

Figure 33: CTfastrak Renter-Occupied Housing Feasibility



SOURCE: MLS, Trulia.com, Craigslist.org, CT Homebuilders and Remodelers, Jonathan Rose Companies

The analysis indicates that multifamily rental TOD is most feasible in Downtown Hartford. Downtown Hartford has emerged in the last decade as a regional center for rental housing and commands the highest market rents in the region, although it is well-noted that new Hartford rental developments require subsidy in order to become feasible. However, if rental demand continues to tighten and with the availability of $60 million from the Capital Region Redevelopment Authority for market-rate rental development in Hartford, multifamily rental construction appears likely in the coming years.

Some suburban locations are near feasible rental levels, but low supply of rental housing impedes the analysis. Windsor and Berlin both demonstrate rent levels that are near new construction-feasible levels, however neither location has a sizeable supply of existing rental properties for comparison. This is a typical challenge with the suburban station areas, where the Consulting Team was only able to locate a few comparable rentals within a 0.5 - 1 mile radius of the station, and most of the comparable rentals were either single-family houses or apartments in multifamily houses. It can be reasonably assumed in these locations that new construction would be a superior product to the existing supply, which signifies that in Windsor and Berlin the rent premium associated with a new multifamily rental development would likely be sufficient to cover the costs of construction.

The analysis indicates that the rents in many station areas are not sufficient to prove market feasibility of new multifamily rental construction. In a broad spectrum of locations, including areas of New Britain, Hartford, Enfield, and the Massachusetts municipalities, there was a larger sample of nearby rental apartments, but the rents were insufficient to cover the costs of new multifamily rental construction.

Income Feasibility Approach

The Consulting Team calculated the household income necessary to afford a new unit of rental housing and compared it against the household income necessary to afford the average rental in each station area. The Consulting Team assumed for this calculation that the rental amount would not exceed 30 percent of the household's gross income. The resulting gap between the income needed for new construction versus the income needed for existing housing represents the total amount incomes would need to increase in the station area for new multifamily rental TOD to become feasible.

Figure 34 shows the gap at each station area between the income needed to afford the average existing rental and a new rental TOD unit.

Figure 34: Renter-Occupied Income Gap

CT Fastrak Stations

Station Area	Existing Housing Household Income	New Housing Household Income	Gap
New Britain (CBD)	$34,600	$94,989	($60,389)
New Britain (East Main)	$38,200	$75,992	($37,792)
New Britain (East St)	$42,000	$75,992	($33,992)
Newington (Cedar St)	$46,000	$75,992	($29,992)
Newington Junction	$47,667	$75,992	($28,325)
West Hartford (Elmwood)	$40,500	$75,992	($35,492)
West Hartford (Flatbush)	$41,050	$75,992	($34,942)
Hartford (Kane St)	$39,900	$75,992	($36,092)
Hartford (Park St)	$44,667	$75,992	($31,325)
Hartford (Sigourney St)	$42,392	$75,992	($33,600)
Hartford (Union)	$74,992	$94,989	($19,997)

NHHS Rail Stations

Station Area	Existing Housing Household Income	New Housing Household Income	Gap
Berlin	$60,000	$75,992	($15,992)
Newington	$47,667	$75,992	($28,325)
West Hartford (Flatbush)	$41,050	$75,992	($34,942)
Hartford (Union)	$74,992	$94,989	($19,997)
Windsor	$56,900	$75,992	($19,092)
Windsor Locks	$34,467	$75,992	($41,525)
Enfield	$34,500	$75,992	($41,492)
Springfield	$50,224	$88,889	($38,665)
Holyoke	$37,667	$71,111	($33,445)
Northampton	$46,200	$71,111	($24,911)

SOURCE: 2010 U.S. Census, CT Homebuilders and Remodelers, Jonathan Rose Companies

In general, the gap between incomes needed to afford existing rental housing and the incomes needed to afford new rental housing is substantial. The income gap ranged from a low of $15,992 in Berlin to as high as $60,389 in New Britain.

As in the For-Sale Feasibility Analysis section, the Consulting Team also calculated the number of households living within a 3-mile trade area that earn sufficient income to afford a new multifamily rental unit, shown in Figure 40. The following data present a more nuanced picture of the transit corridors, indicating pockets of latent capacity for new TOD that do not appear in the previous analysis.