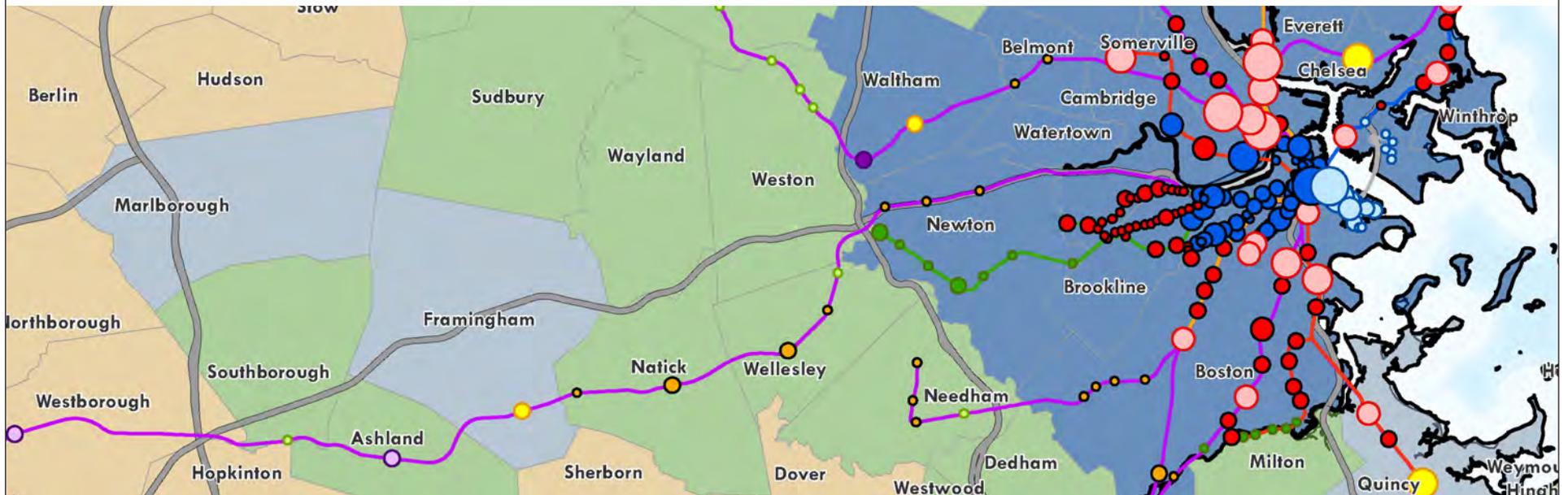


Growing Station Areas

The Variety and Potential of Transit Oriented Development in Metro Boston



June, 2012

Table of Contents

Executive Summary

Introduction

Context for TOD in Metro Boston

A Transit Station Area Typology for Metro Boston

Estimating the Potential for TOD

Conclusions

Matrix of Station Area Types and TOD Potential

Station Area Type Summaries

Authors: Tim Reardon, Meghna Dutta

MAPC contributors: Jennifer Raitt, Jennifer Riley, Christine Madore, Barry Fradkin

Advisor: Stephanie Pollack, Dukakis Center for Urban & Regional Policy at Northeastern University

Graphic design: Jason Fairchild, The Truesdale Group

Funded by the Metro Boston Consortium for Sustainable Communities and the Boston Metropolitan Planning Organization with support from the Dukakis Center for Urban and Regional Policy at Northeastern University. Thanks to the Metro Boston Transit Oriented Development Finance Advisory Committee for their participation in this effort.

Visit www.mapc.org/TOD to download this report, access the data for each station, or use our interactive map of station areas.

Cover Photos (L to R): Waverly Woods, Hamilton Canal Lofts, Station Landing, Bartlett Square Condos, Atlantic Wharf.

Photo Credits: Cover (L to R): Ed Wonsek, DBVW Architects, 75 Station Landing, Maple Hurst Builders, Anton Grassl/Esto
Inside (Top to Bottom): Pg 1: David Steger, MAPC, SouthField; Pg 3: ©www.bruceTmartin.com, Anton Grassl/Esto; Pg 8: MAPC; Pg 14: Boston Redevelopment Authority; Pg 19: ©www.bruceTmartin.com; Pg 22: Payton Chung flickr, David Steger; Pg 23: MAPC, Boston Redevelopment Authority; Pg 24: ©www.bruceTmartin.com, Maple Hurst Builders; Pg 25: 75 Station Landing, 2008 Asian CDC Competition Team; Pg 26: Beacon Communities LLC, Beal + Street-Works Development LLC; Pg 27: Cliff Boehmer, Oaktree Greenlin Project, MAPC; Pg 28: MA Pictometry, Legacy Place-Dedham, MA; Pg 29: The Seaport at Cordage, Southfield; Pg 30: MAPC; Pg 31: Lincoln Station

Growing Station Areas: Executive Summary

Transit oriented development has been a major factor in Boston's growth since the earliest days of the horse-drawn railways. In fact, we live in a uniquely transit-oriented region, where 25% of housing units and 37% of employment is located within a half-mile of a rapid transit or commuter rail station. Now Metro Boston is experiencing a new wave of station area growth, with hundreds of residential and commercial developments underway near transit, and even more on the horizon. Cities and towns are creating station area plans and updating their zoning to unlock development potential; the MBTA is actively soliciting proposals for development on prime T-owned parcels near stations; state agencies are using transit proximity as a criteria for prioritizing infrastructure or housing resources; and the development community is finding a strong market for housing units and commercial space near transit.

There are good reasons for this burgeoning interest in Transit Oriented Development (TOD.) New growth near transit stations can help reduce congestion, improve affordability, bolster the T's bottom line, and satisfy the growing demographic preference for transit proximity. But with over 250 rapid transit and commuter rail stations in the region, there is no one-size-fits-all approach to TOD. Downtown Boston, streetcar suburbs, gateway cities, and village centers all present distinct and complementary opportunities for growth near transit.

The region's TOD activity reflects this diversity: there are over 30,000 housing units and 45 million square feet of commercial space planned or under construction near transit, ranging from high-rise office towers and small-scale infill developments to entirely new transit districts and compact townhouse communities. This development pipeline suggests that growing station areas can accommodate a substantial share of the region's residential and commercial development over the coming 25 years, helping to achieve the MetroFuture vision of a sustainable, equitable, and prosperous future.

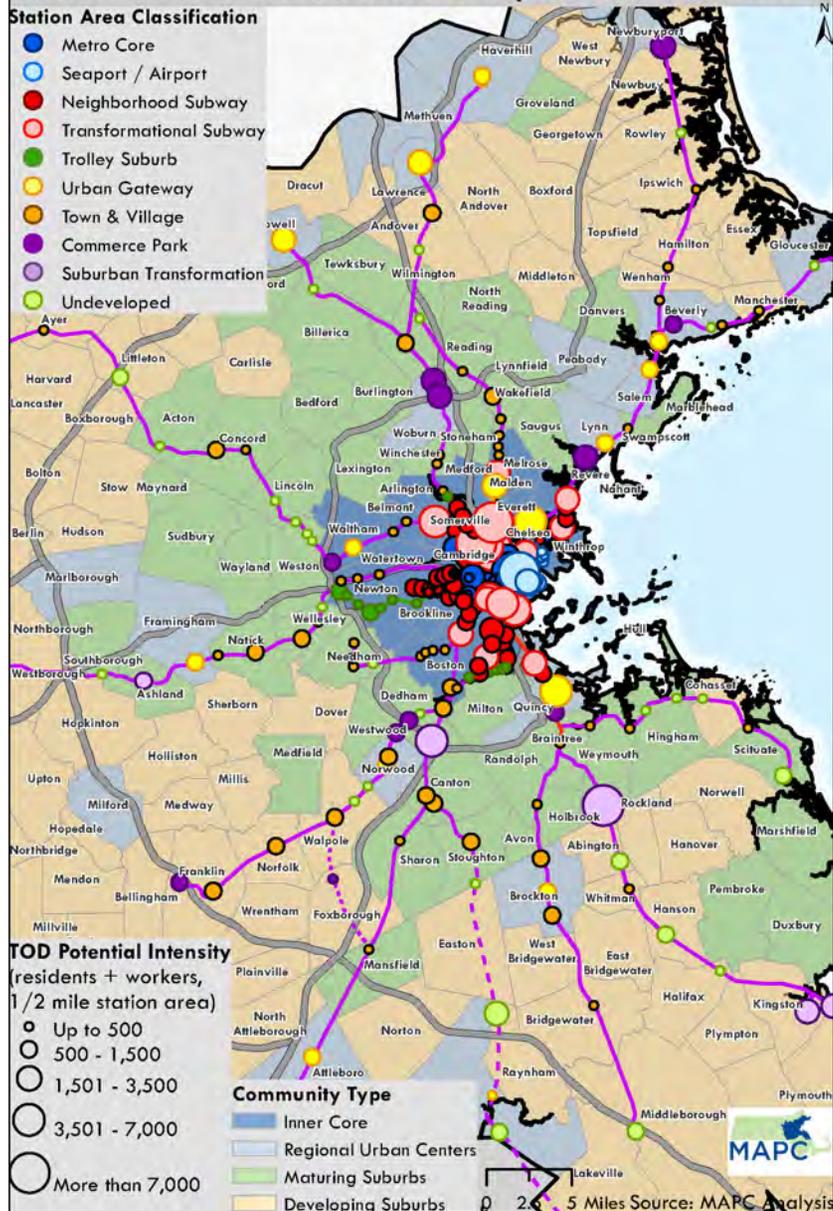
While TOD holds great promise for the region, the diversity and complexity of transit station areas may frustrate efforts to develop policies to promote TOD, to prioritize infrastructure and planning investments, or to evaluate specific development proposals. A better understanding of the diversity of transit station areas in the region is necessary to craft policies and programs that realize the full potential of TOD. In response to this need, the Metropolitan Area Planning Council has developed a new transit station area typology that defines ten distinct types, ranging from the Metro Core stations of Downtown Boston and Cambridge to

largely undeveloped station areas in low-density suburbs.

The ten Station Area Types, illustrated on the following page, are distinguished by existing population and employment, transit service type, land use, demographics, and travel behavior. In addition to this information about existing conditions, we also considered the nature and magnitude of development that could occur over the coming decades. Around some stations, TOD takes the form of small-scale infill development or adaptive reuse that reinforces or strengthens the existing fabric and character of the station area. Other locations are amenable to large-scale "transformational" development that creates entirely new neighborhoods or districts. Our typology also helps to highlight those locations where TOD might do the most to increase sustainable transportation patterns. We also identify 'lower performing' areas where the transit proximity alone is less likely to have a beneficial impact on the travel patterns of new residents and workers.



Transit Station Area Types and Transit Oriented Development Potential



Utilizing the typology and the underlying data, MAPC also estimated the potential for additional TOD over the coming 25 years, based on current development proposals, existing land use, underutilized parcels, and other factors. We estimate that station areas in the region could accommodate more than 76,000 new housing units and space for more than 130,000 new jobs by 2035: nearly one-third of projected housing unit growth and more than half of projected job growth. Were this potential to be fully realized, the region would see substantial benefits as compared to a more dispersed growth scenario: higher transit ridership, fewer vehicle miles travelled, lower housing and transportation costs, and increased economic vitality. Initial estimates suggest that this development could generate more than 60,000 commute trips per weekday, not to mention a substantial number of non-work trips. This additional ridership would bolster the MBTA's fare revenue but also possibly exceeding the capacity of the system to transport those additional riders, especially at the hub of the system.

While the development pipeline is strong, there is a need to pick up the pace. From 2000 – 2010, the region added more than 15,000 new housing units near transit. This demonstrates strong demand, but the rate of housing development needs to double in order to achieve the full potential of TOD in the region.

The transit station area typology can help advance equitable and sustainable TOD in a variety of ways:

- Housing, economic development, and infrastructure programs can use the typology to establish funding criteria that reflect both local conditions as well as regional TOD goals.
- Analysis of TOD financing needs and the design of potential new TOD finance products can acknowledge the distinct station area types and the different finance/market conditions that exist in each one.
- Technical assistance from MAPC and other partners can be targeted to station areas with strong potential for TOD but few developments in the pipeline.
- Municipalities and stakeholders can use the analysis to evaluate specific development proposals against the range of densities and project attributes appropriate for the station area type.
- The MBTA can use the analysis of TOD potential to plan for capacity expansion or to evaluate the potential development impacts of service changes & eliminations.

All of the data developed for this report can be downloaded or viewed with our interactive data viewer at www.mapc.org/TODtypology



Introduction

Imagine you are riding on a subway or commuter rail train, somewhere in the MBTA's 3,200 square mile service area. You arrive at a station and the door opens. Where are you? The Financial District or a traditional town center? A bustling urban neighborhood or a quiet park-and-ride station? A streetcar suburb or a suburban industrial park?

The communities served by the MBTA are as diverse as the region itself, and the real estate development that is occurring near these stations is similarly diverse, not to mention substantial: there are over 30,000 housing units and 45 million square feet of commercial space planned or under construction near transit, ranging from high-rise office towers and small-scale infill developments to entirely new transit districts and compact townhouse communities. This new wave of Transit Oriented Development (TOD) is no accident. Recognizing the significant benefits that result from TOD (see page 8), cities and towns have been busy creating station area plans and updating their zoning to unlock development potential; the MBTA is actively soliciting proposals for development on prime T-owned parcels near stations; state agencies are using transit proximity as a criteria for prioritizing infrastructure or housing resources; and the development community is finding a strong market for TOD—both residential and commercial—across the region.

Despite this interest, there has been little effort to characterize the TOD opportunities that exist across the MBTA system, to estimate the magnitude of development that might be accommodated over the coming decades, or to tailor policies that reflect the diversity of TOD opportunities in the region. With more than 250 stations in all corners of the region, no one approach will be applicable everywhere. There are common principles and characteristics that define successful TOD (see sidebar), but the application of these principles depends on community context. Some stations already have a very strong ridership base, a mix of uses, complete pedestrian infrastructure, diverse housing choices, human-



scale urban design. Others station areas lack key ingredients, such as density or land use diversity, and therefore do not generate the kinds of benefits that transit proximity can confer (high transit ridership, low auto usage, strong tax revenues, and a diversity of residents.) TOD can reinforce and—where necessary—remediate these existing conditions to enhance the performance of station areas. A better understanding of how these conditions and opportunities vary across the region will help decision makers craft policies and make investments that support sustainable and equitable TOD.

This report seeks to fill that gap through an analysis of more than 280 existing and proposed subway, trolley, bus rapid transit, or commuter rail station in Metro Boston to determine their existing conditions, planned development, and prospects for development. Based on this analysis and review of similar efforts elsewhere, MAPC has also identified ten different station area types in the region. This work was initiated for an effort funded by the Metro Boston Consortium for Sustainable Communities to develop new TOD financing tools for the region, but the typology has broader application for policy creation, resource allocation, and evaluation of specific development proposals.



Principles of TOD

Research across the U.S. has identified a set of common characteristics of TOD that are correlated with better transportation performance, greater economic return, and improved social equity.

- A diversity of land uses, including employment and common destinations
- Higher levels of density appropriate to the community context
- A mix of housing options and dedicated housing affordability
- Intermodal connectivity (pedestrian and bicycle connections, other transit)
- Green infrastructure and open space
- Low parking requirements and alternatives to car ownership (e.g., Zipcar)
- High quality urban design and sense of place

The Diversity of Metro Boston Station Areas

Our study area comprises 283 fixed guideway MBTA stations¹, including 149 subway, trolley, or bus rapid transit stops; 119 commuter rail-only stations; and 15 proposed stations along the Green Line Extension or the South Coast Rail². A map of all station areas with labels can be found inside the back cover of this report. For purposes of this analysis, station areas are based on a ½ mile radius around the station, though some boundaries were adjusted to account for water bodies or other barriers. Principal data sources for our analysis include the U.S. Census (population & housing), American Community Survey (income and commute mode), InfoGroup (employment), MBTA (ridership), and MassGIS (land use), among others.

The data immediately demonstrate that we live in a transit-oriented region. The ½ mile station areas constitute just 5% of the region's land area but include 25% of its housing units, and 37% of total employment (470,000 housing units and 880,000 jobs). However, the amount of existing development around transit stations varies dramatically. One measure of development is *intensity*, the combined population and employment within the station area. Because some station areas include large areas of open space, ocean, or otherwise unavailable land, we have calculated the *normalized intensity* which is population and jobs divided by acreage in developed land uses. Station areas also vary in the type of development. Some are predominantly residential; others are major employment centers. The *mix* of a station area is the ratio of workers to total intensity in the station area. A value near 1.0 indicates relatively more employment, and a values close to 0.0 indicate predominately residential areas.

The map on the opposite page shows the normalized intensity and development mix for transit station areas in the region. Not surprisingly, the highest intensities are found in the Inner Core, where there are 31 stations with intensities of over 100 persons per developed acre. The inset shows that the development mix becomes increasingly employment-heavy toward the hub of the system. The lowest intensities on the core subway system are found in the moderate density residential neighborhoods along the Green Line Riverside Branch and the Red Line

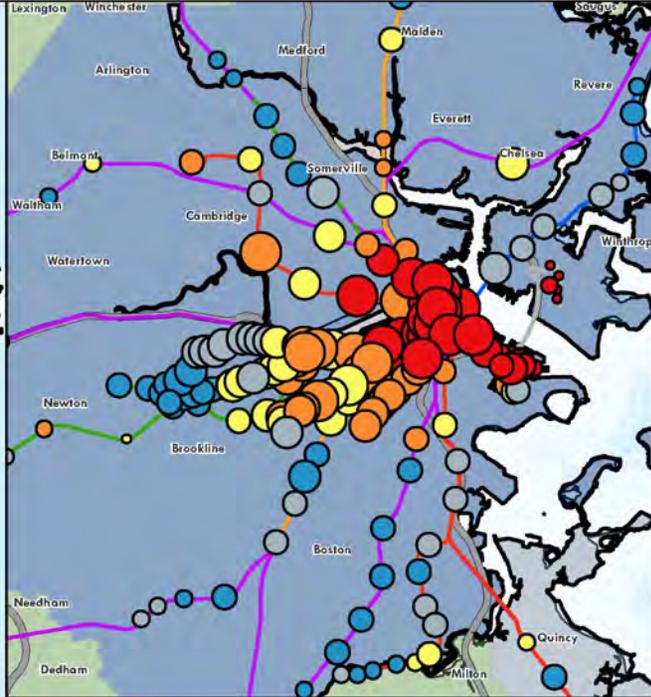
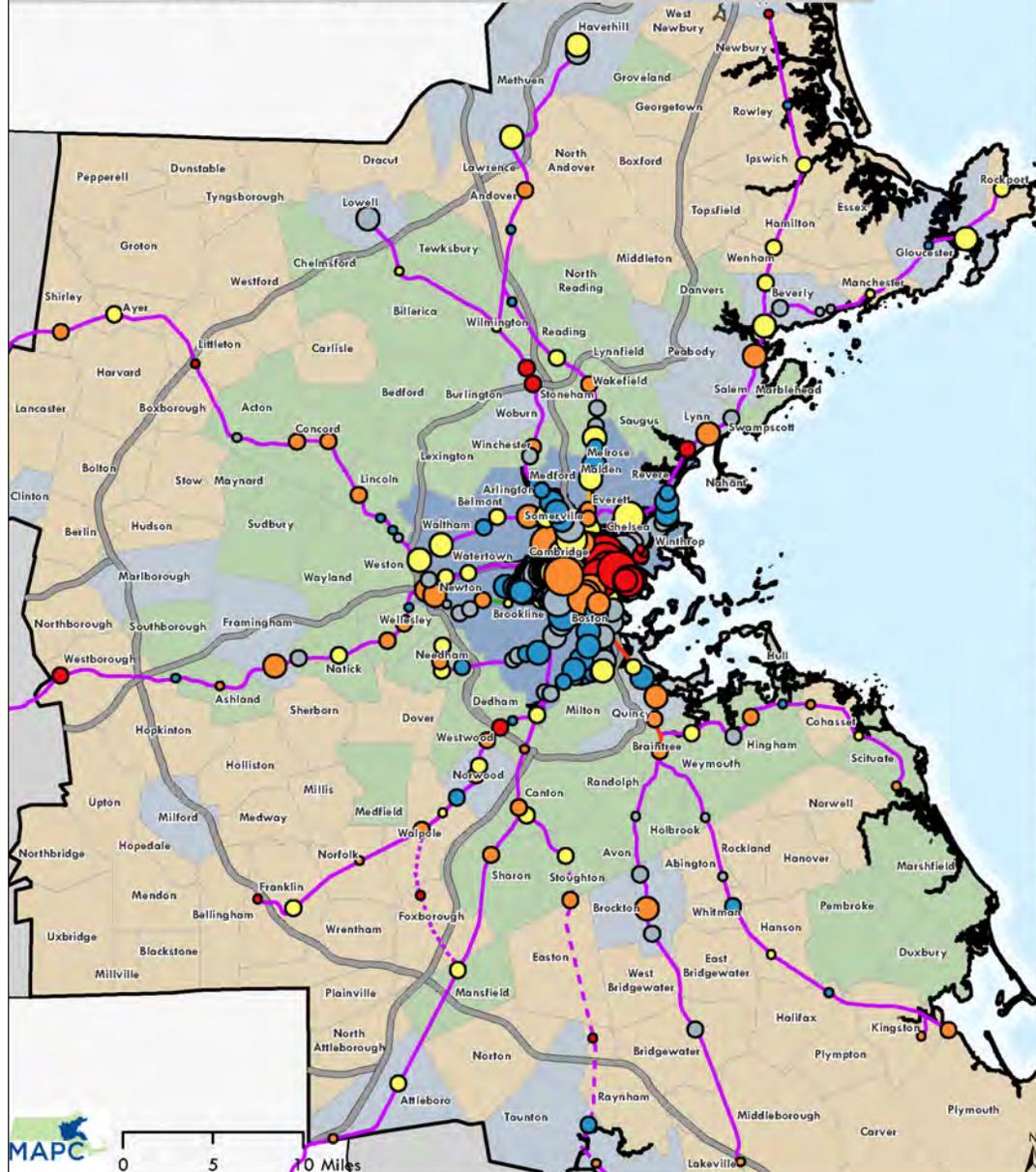
in Milton, and in underutilized commercial/industrial areas such as Assembly Square, Wellington, and Revere. Beyond Route 128, station areas vary considerably higher, ranging from higher-density (50 – 100 per acre) urban stations with balanced development to moderate-density suburban areas and very low-density areas with fewer than 10 persons per developed acre

Since one of the fundamental goals of TOD is to increase transit ridership and reduce vehicle miles travelled (VMT), it is also important to assess the transportation 'performance' of existing stations. Transit proximity alone does not assure sustainable transportation patterns, especially where densities are low and destinations are few. Map 2 shows the daily VMT per household for each station area, with larger circles indicating higher mileage. (For comparison, the average daily VMT for all of Metro Boston is 49 miles per day.) The patterns here are nearly the inverse of the intensity in Map 1. The lowest VMT (<20 miles per day) is found almost exclusively in station areas with intensities of 35 persons or more per developed acre. Meanwhile, above average VMT occurs in 80 station areas with intensities of less than 25 persons per developed acre. This is a particular concern in the low-density, low/ moderate-income station areas, where VMT is well above the regional average and a low income household might pay over a quarter of its income on transportation. Not only does such development fail to achieve the sustainability objectives of TOD, but it may also unduly burden low-income households in those locations. This should be an important consideration of initiatives to site suburban affordable housing near transit. Fortunately, the data also suggest that, given the right conditions, high-income station areas may perform well. In Brookline, for example, a high density of destinations and high barriers to car ownership result in low VMT.

1 Our study area comprises the 164 municipalities in the MetroFuture study area and the Boston MPO transportation modeling region. This area excludes six stations on the outer reaches of the Worcester, Fitchburg, and Providence commuter rail lines as well as the ends of the South Coast Rail.

2 We acknowledge that there is a growing body of research to suggest that high frequency bus routes can also support TOD, but have chosen to focus on rail and BRT for clarity of scope, availability of data, and management of workload.

Existing Station Area Development Normalized Intensity and Development Mix, 2010



Normalized Intensity
(residents + workers per developed acre),
1/2 mile station area

- Less than 10
- 10 - 25
- 25 - 50
- 50 - 100
- More than 100

Development Mix
(ratio of workers : total intensity)
1/2 mile station area

- 0.10 - 0.20
- 0.21 - 0.30
- 0.31 - 0.45
- 0.46 - 0.70
- 0.71 - 1.0

Community Type

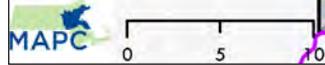
- Inner Core
- Regional Urban Centers
- Maturing Suburbs
- Developing Suburbs

Subway Lines

- BLUE
- GREEN
- ORANGE
- RED
- SILVER

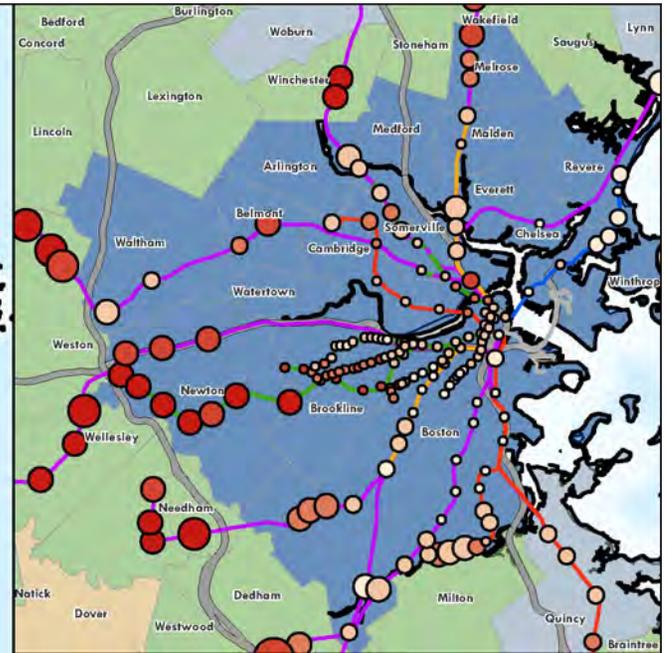
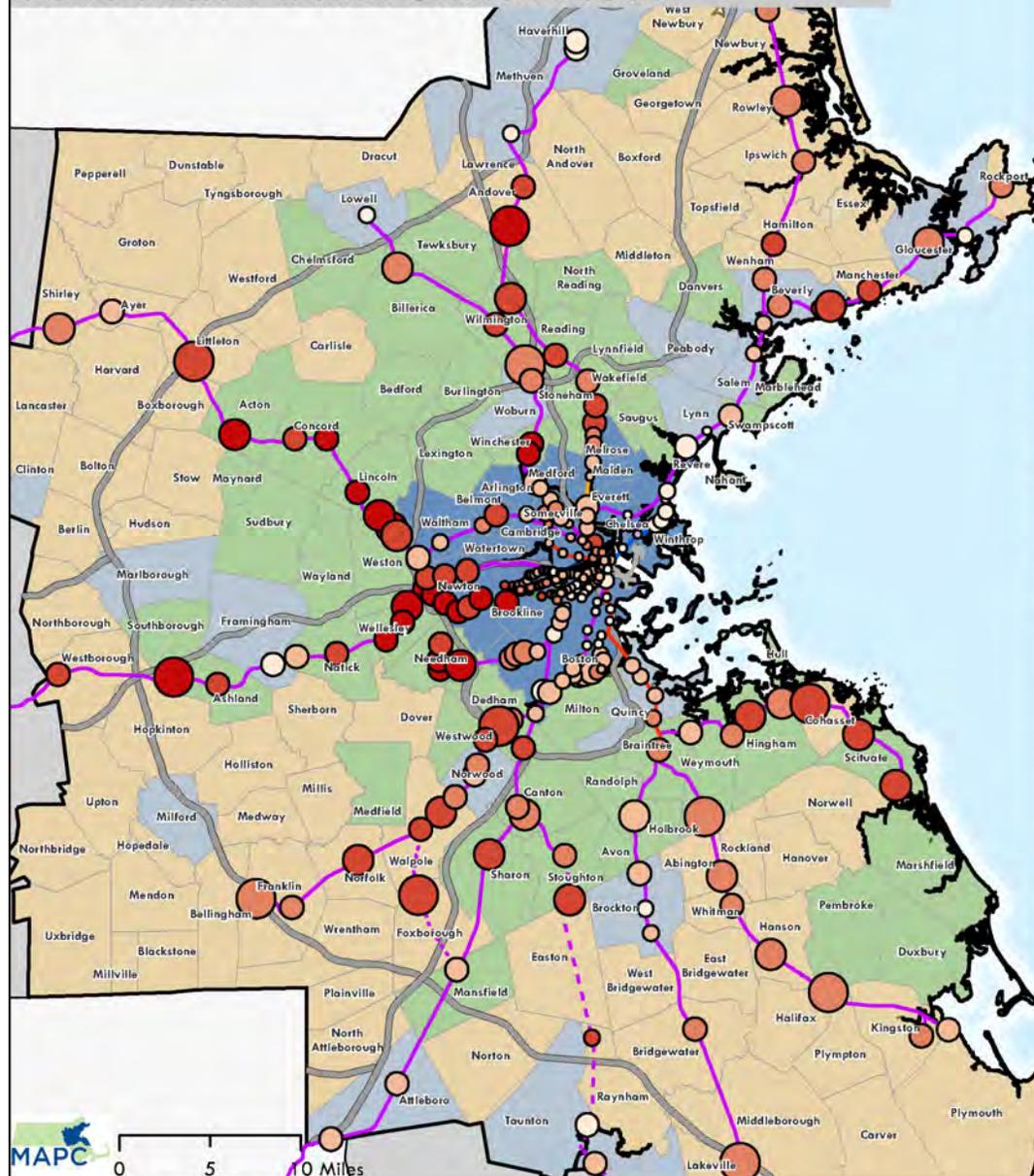
Commuter Rail Lines

- Operational
- Special Events
- Proposed



Source: U.S. Census, MIT, InfoGroup, MAPC Analysis

Household Income and Vehicle Miles Travelled Metro Boston Transit Station Areas



Household Income
(average of tract median incomes,
1/2 mile station areas, 2006 -2010)

- Less than \$50,000
- \$50,000 - \$70,000
- \$70,000 - \$85,000
- \$85,000 - \$115,000
- More than \$115,000

Community Type

- Inner Core
- Regional Urban Centers
- Maturing Suburbs
- Developing Suburbs

Subway Lines

- BLUE
- GREEN
- ORANGE
- RED
- SILVER

Commuter Rail Lines

- Operational
- Special Events
- Proposed

Daily Household VMT
1/2 mile station areas,
2005 - 2007

- Up to 30
- 31 - 40
- 41 - 60
- 61 - 80
- More than 80

Note: Seaport/ Airport Stations excluded from map due to small sample size.

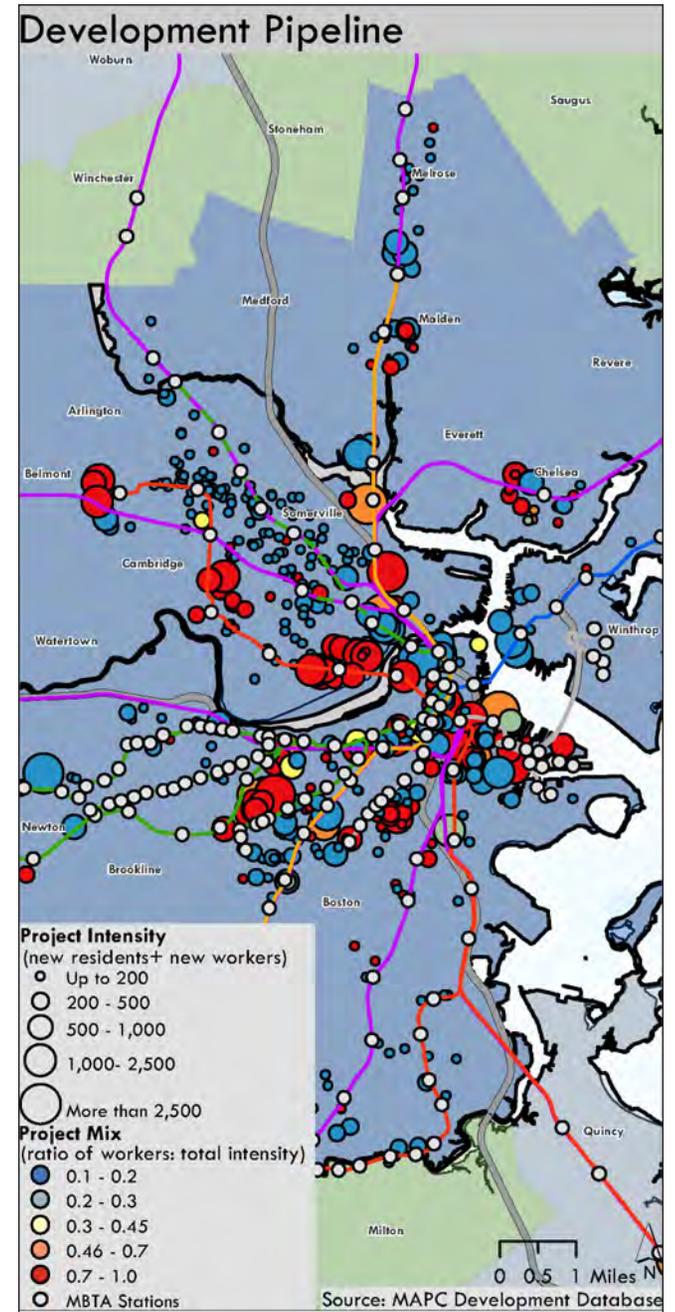
Source: MA RMV, MassGIS, American Community Survey 2006 - 2010, MAPC Analysis

The Many Size and Shapes of TOD in Metro Boston

The good news about TOD is that there is a considerable amount of it already underway in Metro Boston. MAPC's Development Database includes information on 391 development projects in ½ mile station areas completed or in construction as of January 2011, comprising nearly 15,000 housing units and 15 million square feet of commercial or office space. The Database also includes information about 210 projects planned or proposed, comprising 27,000 housing units and more than 27 million square feet of commercial and office space. The diversity of these projects is comparable to the variety of station areas themselves.

TOD projects completed over the past decade range from small townhouse developments in a village center to high-rise office towers in Boston. In fact, the region's largest real estate development efforts underway are transit oriented, including Assembly Square (Somerville), Southfield (Weymouth & Rockland), and Seaport Square (Boston.) These transformative projects are creating entirely new districts around transit stations, often with a new or reconfigured street grid and creation of an entirely new public realm. In the most densely developed areas, TOD builds upward through office or residential tower development, such as Atlantic Wharf, the Liberty Mutual home office (Back Bay), 45 Province Street (Downtown Crossing), or the Watermark (Kendall Square.) In urban neighborhoods and city & town centers beyond the hub of the system, TOD often occurs through infill on individual vacant or underutilized parcels or through adaptive reuse of historic buildings, with dozens of examples underway from Arboretum Place (Forest Hills) to Stone Place (Melrose) and 30 Haven Street (Reading.) Less commonly, growth near transit occurs on previously undeveloped land, including small-scale single family subdivisions or stand-alone multifamily residential development.

There are many factors that contribute to the success of TOD. As noted previously, proximity to transit is not alone sufficient to reap the possible transportation benefits—new development must be programmed, designed, and managed to enable and promote sustainable transit and equitable growth. Unfortunately, not all development near transit fulfills the promise. High-end residential development with abundant parking in urban areas may contribute to the displacement of long-time transit-dependent residents without generating much transit ridership. Low-density single-family or townhouse development near commuter rail stations may preclude the mix of uses that helps reduce auto usage. Multifamily housing that happens to be near commuter rail but no other destinations may drive up transportation costs for residents, resulting in unaffordable housing and transportation costs.



The Benefits of Transit Oriented Development

Transit oriented development—done right in the right place—creates benefits for local communities and the broader region:

- **Reduced vehicle miles travelled and greenhouse gas emissions.** Households living near transit tend to own fewer cars and drive less than households who lack transit access, even after controlling for income, neighborhood density, and other factors. Not only do residents take transit instead of driving, they also benefit from the greater density of destinations that tend to exist around transit stations. As a result, there are fewer cars on the road and less congestion for people who are driving.
- **Increased housing and transportation affordability.** The cost of living is a major burden to many Metro Boston households and a deterrent to attracting more workers to the region. In Metro Boston, the average household spends 28% of its income on housing and an additional 20% on transportation. As a result of the greater accessibility described above, households in transit station areas spend less of their income on transportation, especially if they can get by with one or zero vehicles instead of two.
- **Expands housing choices and prevents displacement.** National research demonstrates a growing consumer preference for housing units near transit, and some of the region's fastest growing demographic groups—Hispanics and seniors—demonstrate a preference for transit-accessible locations. More housing near transit is needed to meet this growing demand and to prevent displacement of low- and moderate income families living in transit-rich neighborhoods as real estate prices rise.
- **Supports economic development.** Employers both large and small are increasingly recognizing the value of locating in transit-accessible locations that also feature a variety of housing and destinations of interest to their workers. Firms at the hub of the system have access to a labor market of more than half a million workers living near subway or commuter rail lines. Major employers such as Google, Liberty Mutual, Novartis, Vertex, and others are in the midst of major expansion efforts at the core of the transit system. Many retail and service establishments also choose to locate near transit stops where they have access to a large commuter market.
- **Increases transit ridership and fare revenue.** Development near transit can help to improve the MBTA's bottom line by increasing ridership and fare revenue. To the extent that increased ridership can be accommodated without additional service frequency, new ridership will directly benefit the T's fare recovery ratio, which is currently at 35%. Revenue from the sale or lease of MBTA land near transit can also improve the system's bottom line.
- **Improves health.** TOD fosters greater physical activity as people walk to transit and nearby destinations; increased transit usage may also result in fewer auto accidents and less air pollution as compared to a scenario with less transit access.
- **Reduces sprawl and land consumption.** By providing more compact housing choices, generally on redeveloped land near destinations, TOD helps the region to meet its housing needs while consuming less open space. MAPC's MetroFuture regional plan anticipates that placing 60% of new housing near transit would help preserve 115,000 acres of land as compared to a more dispersed Current Trends scenario.



A Station Area Typology for Metro Boston

The great diversity of station areas in the region means that a single approach to TOD will not work everywhere. But it is clear that many stations share similar attributes, challenges, and opportunities and may benefit from similar strategies, investments, and design approaches. A framework for understanding the different types of TOD places will help public policy, planning activities, and project design.

Many regions elsewhere in the U.S. have developed TOD or station area typologies to help inform and organize their TOD efforts. Most commonly, these typologies utilize a framework developed by the Center for Transit Oriented Development, which defines general categories of station areas based on existing intensity (population + employees) and development mix (ratio of workers to total employment.) However, this approach does not account for other factors that distinguish station areas, such as service type or community context; and it does not incorporate any analysis of planned growth or development potential.

The Station Area Typology for Metro Boston described here seeks to classify stations into specific categories based on their existing conditions and the nature and magnitude of development that they might accommodate over the coming decades. Based on this analysis, MAPC has identified ten station area types, described below and shown on the map on Page 8. A matrix with summary data for each station area type appears on Pages 20 & 21; followed by a one-page detailed description of each station type and descriptions of selected stations on pages 22 - 31.

Metro Core: Subway, trolley, and Silver Line station areas in or near Downtown Boston and adjacent high density employment and institutional centers. These stations have the greatest number of boardings, highest existing intensity, and highest intensity of planned development.

Seaport / Airport: Areas around Silver Line and Blue Line stations in the Seaport District and at Logan Airport, with low- to moderate intensities, residents, large amounts of surface parking and underutilized land, very few current residents, and capacity for transformative redevelopment.

Neighborhood Subway: Subway and trolley station areas in predominantly residential, moderate-density, transit neighborhoods throughout the Inner Core; new development in these station areas is likely to occur through parcel-by-parcel infill and redevelopment.

Transformational Subway: Subway station areas with potential for transformative change through district-scale land development projects involving the redevelopment of multiple city blocks and the creation of new street networks; some stations have specific development projects already proposed, while others demonstrate similar attributes but have no current development proposals.

Urban Gateway: Station areas in or adjacent to the downtown of Regional Urban Centers, with a moderate-intensity balance of residential and commercial development and a large population of low income residents, served by commuter rail or subway and often functioning as a hub for local MBTA or regional transit authority bus service.

Town & Village: Commuter rail station areas in mixed-use town centers, business districts, or villages, ranging from outlying Boston neighborhoods to suburban downtowns and small village centers.

Commerce Park: Commuter rail station areas in existing office or industrial parks or adjacent to major institutional employers outside Boston; many feature large park & ride facilities.

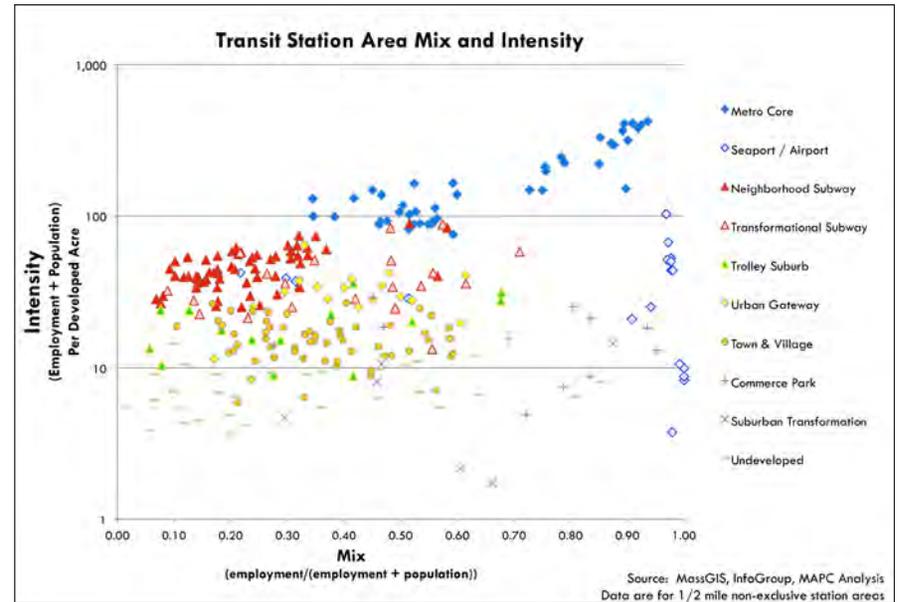
Suburban Transformation: Suburban commuter rail station areas likely to experience transformative TOD through a major planned development or redevelopment.

Trolley Suburb: Trolley station areas, mostly in Newton and Milton, that are considerably less dense than other subway station areas, with higher income, higher VMT, and lower transit commute mode share than Neighborhood Subway stations.

Undeveloped: Isolated commuter rail stations in low-intensity, high-income suburban areas with very few nearby destinations, incomplete pedestrian infrastructure, and large areas of vacant undeveloped land.

The figure on this page shows how these station area types compare based on their current normalized intensity and development mix, depicting the same variability that is apparent on Map 1 with the addition of the station area type. While there is considerable overlap among some of the station area types, they are also distinguished from one another by a number of factors not depicted on the chart. Other factors used to distinguish the station area types include:

- **Community Type:** This MAPC-defined typology summarizes a wide variety of information about municipalities, including recent growth rates, demographics, housing stock, land use, and other attributes that relate to future growth. For example, stations in the downtowns of the Regional Urban Centers were identified as a distinct station area type given the many characteristics shared by these communities.
- **Transit service availability:** some station areas are served by a single mode or line; others may have multiple service types, may serve as hubs for local bus service, or may be within walking distance of other stations, providing a variety of transit options that contributes to more sustainable travel patterns
- **Planned or potential development:** We identified station areas that are anticipated future to experience substantial growth based on projects under construction, specific development proposals, or existing conditions amenable to major development. These are the Seaport, Transformational Subway, and Suburban Transformation station areas.
- **Household income, transit mode share, and household VMT:** These measure the sustainability and equity performance of transit station areas. For example, the trolley suburb stations have similar service type and land use to many Neighborhood Subway stations, but much higher income, lower transit usage, and higher VMT.
- **Land use and impervious surfaces:** Station areas with extensive commercial and industrial land uses (based on MassGIS land use data) and large amounts of surface parking may be more supportive of substantial TOD than predominately residential areas.
- **Nearby employment and destinations:** the number of employees, the number of establishments, and the WalkScore of a given sta-

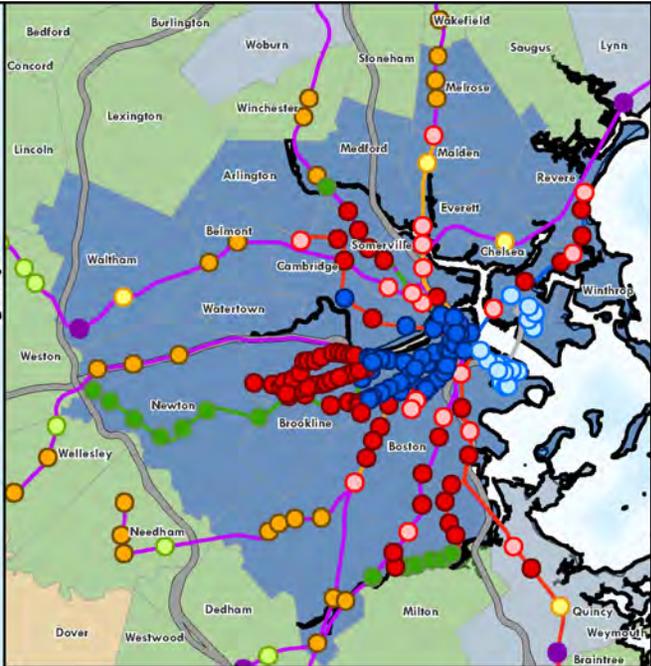
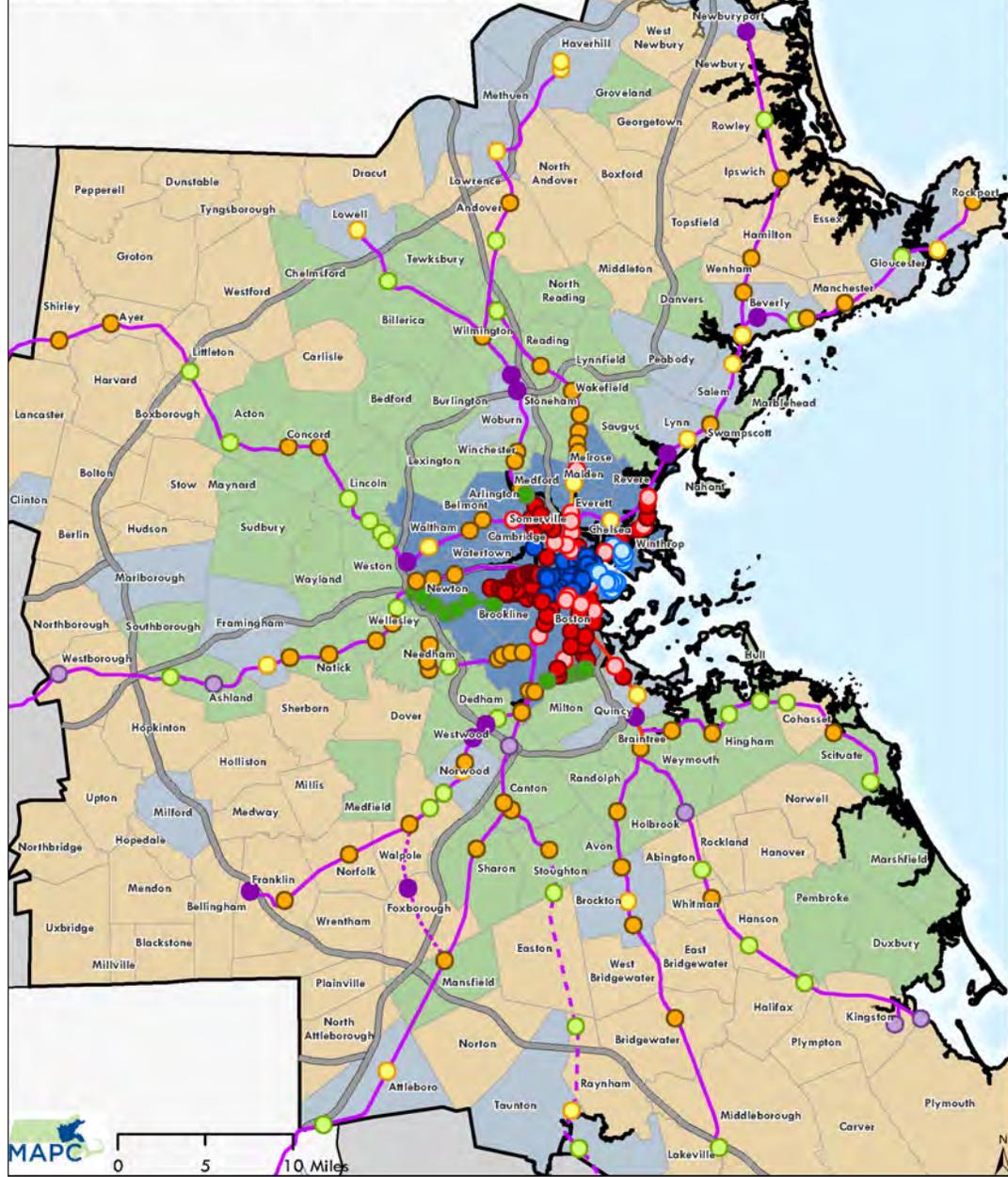


tion area indicate the mix of destinations that contribute to transit usage and lower VMT. For example, the number of establishments and the WalkScore was used to help distinguish the smallest Town & Village stations from Undeveloped station area that include a handful of commercial uses

In consultation with the TOD Finance Working Group of the Metro Boston Consortium for Sustainable Communities, MAPC reviewed initial station area categories and assignments and adjusted them where necessary to develop types that exhibit both quantitative rigor and utility for planning and development purposes.

Following this hybrid quantitative/qualitative approach to station classification, MAPC confirmed the typology through the use of Latent Class Analysis (LCA), a statistical technique that is used to find groups in multivariate categorical data. Based on the data listed above, the LCA returned nine station area classes. More than 200 station areas (70%) were clustered in seven classes strongly consistent with the MAPC typology. The other two classes included a mix of Commerce Park, Suburban transformation, Undeveloped, and Seaport stations that are difficult to classify based solely on the station area statistics. This exercise confirmed that our hybrid approach to station area typology is consistent with a strictly quantitative classification system.

Metro Boston Transit Station Area Types

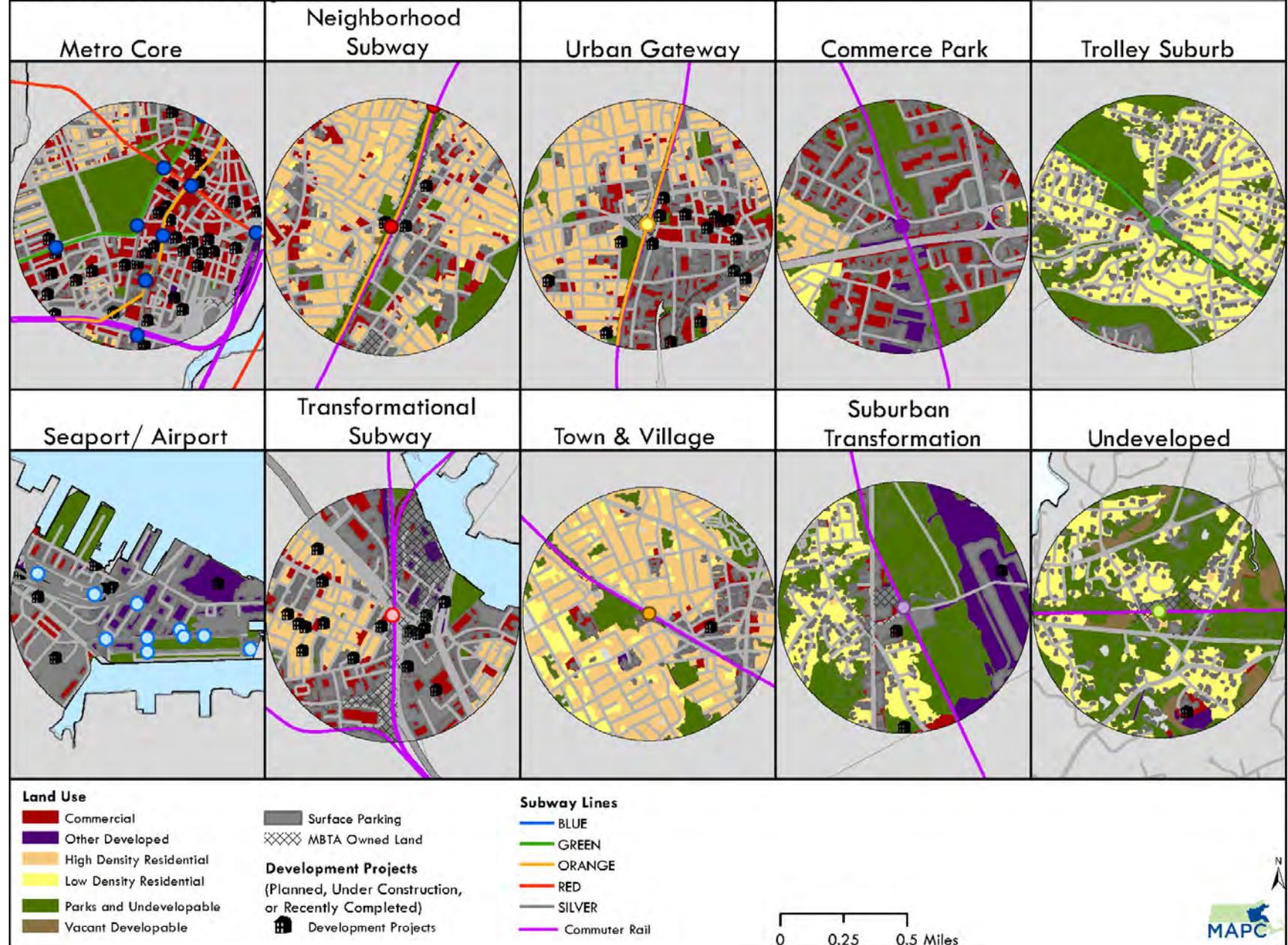


- | | | | |
|---|--|--|--|
| Station Area Classification | | Community Type | |
| ● Metro Core | Inner Core | Regional Urban Centers | Maturing Suburbs |
| ● Seaport / Airport | Developing Suburbs | | |
| ● Neighborhood Subway | | | |
| ● Transformational Subway | | | |
| ● Trolley Suburb | | | |
| ● Urban Gateway | | | |
| ● Town & Village | | | |
| ● Commerce Park | | | |
| ● Suburban Transformation | | | |
| ● Undeveloped | | | |
| Subway Lines | | Commuter Rail Lines | |
| — BLUE | — Operational | - - - Special Events | |
| — GREEN | - - - Proposed | | |
| — ORANGE | | | |
| — RED | | | |
| — SILVER | | | |



0 5 10 Miles

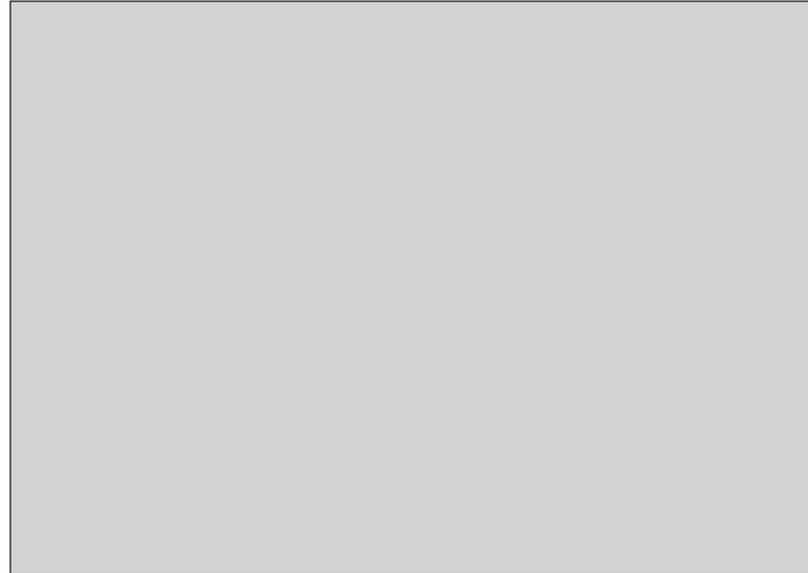
Station Area Snapshot



The snapshots on the facing page depict the diversity of land use that exists around typical stations in each type, ranging from the fully-developed commercially-oriented Metro Core stations to the predominately residential Trolley Suburbs and Undeveloped stations. In conjunction with the data that underlie our analysis, these snapshots begin to illustrate the range of opportunities that exist for TOD and the goals that might be established for different station area types. Neighborhood Subway, Urban Gateway, and Town & Village station are already transit-oriented communities, and future growth should reinforce and amplify this orientation by maximizing density appropriate to the context, establishing pro-transit parking policies, upgrading pedestrian infrastructure, and adding destinations that complement the transit availability.

Our analysis of transportation metrics also indicates those station areas where new development near transit might *not* fully achieve the desired benefits. In the high-income, low-transit usage Trolley Suburbs and Undeveloped Station areas, the travel behavior of new residents and employees is likely to be only marginally better than many non-transit areas, due to the low density of land uses, the lack of destinations, and high vehicle ownership. Only with very intensive efforts to build at significantly higher densities, add additional destinations, and promote low auto ownership will TOD in these station areas result in more sustainable transportation patterns. The Commerce Park station areas may present substantial opportunities for new growth, but small-scale changes are not sufficient to correct the auto-oriented nature of these locations that discourages commuters from taking transit. In order to generate substantial ridership and change travel patterns, these station areas require large-scale redevelopment efforts that restructure the urban form of these areas to a much higher-density, mixed use, pedestrian-oriented district.

Finally, it is important to recognize that this is a dynamic system that may change over time: a Commerce Park might experience a Transformation, and over time the Seaport will grow to look more like the Metro Core.



Estimating the Potential for TOD in Metro Boston

Given a framework for organizing the diverse contexts and opportunities of TOD in the region, the next question might be: how much can these stations continue to grow over the next 25 years, and what would be the collective impact of this potential TOD? A better understanding of the development potential across different station area types and parts of the system can help to guide the allocation of infrastructure resources or technical assistance. Understanding the amount of development that might occur around stations—and the transit ridership that might result—is also critical to ensuring that the transit system has the capacity to serve that new demand.



MAPC's regional plan MetroFuture identifies transit areas as key growth locations established numeric objectives for TOD based on the regional growth model. The objectives call for 66% of new development within a mile of fixed route service, a broader definition of transit-oriented, both geographically and type of service (fixed route includes bus service.) As a result, the development potential estimated by this study is not directly comparable, but supplements the MetroFuture objectives with

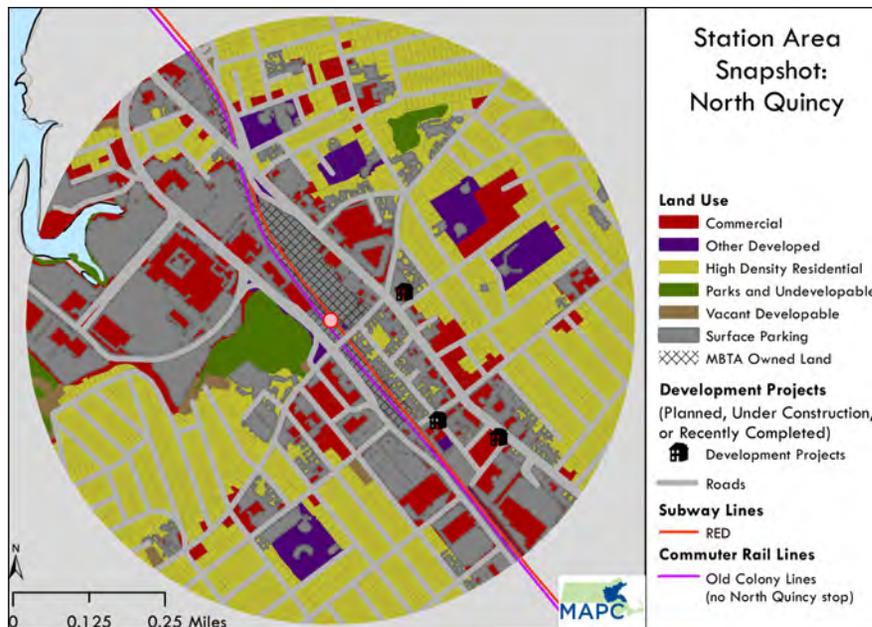
greater geographic specificity, improved data, and detailed methods.

MAPC estimate the TOD Potential for each station in the study area based on the station area typology, information about land use and development constraints, and information about development projects already proposed or planned. Our estimates are based on detailed assumptions about the amount of land that might be developed or redeveloped and the intensity and mix of new growth.

The figure on this page illustrates key inputs used for a typical station area. For each station, MAPC calculated the following metrics:

- Acreage in commercial, industrial, and residential land use categories, including the estimated surface parking area
- Acreage of vacant, potentially developable land
- Intensity and mix of existing development
- Acreage, intensity, and mix of developments planned, completed, or underway

For each land use type, we defined factors for the percent of the area that might be developed or redeveloped over the next 25 years as well as the intensity and mix of development. Standard factors were established for each station area type based on recent/planned development consistent with TOD principles. Results for each station were evaluated and adjusted values were applied where necessary to reflect station-specific conditions or development projects proposed or underway. The elements of the TOD potential estimation and average assumptions are described on the following page.



Commercial Redevelopment: the amount of redevelopment or adaptive reuse of existing commercial land; expressed as a percent of commercial acreage (not including surface parking), generally ranging from 2 – 15%. Higher factors are applied where employment densities are low.

“Other Developed” Redevelopment: redevelopment or adaptive reuse of other developed land uses such as transportation uses, junkyards, etc.; expressed as a percent of land acreage (not including surface parking.) Generally 0% - 2%, but higher in transformational areas.

Parking Reuse: the creation of housing or commercial uses on existing surface parking lots; expressed as a percent of parking area, generally ranging from 5 – 25%. Higher rates applied in areas with extensive parking or low employment density.

Greenfield Development: Development on previously undeveloped land; expressed in terms of percent of developable land (excludes wetlands, open space, most developed land uses, and transportation corridors.)

TOD Potential Intensity: the intensity of new development (either redevelopment or greenfield), expressed in terms of population + employment per acre; generally a minimum of 50 (equivalent to 20 housing units per acre or a floor-area ratio of 0.5), though may be much higher based on existing density or intensity of proposed developments in the station area (if known).

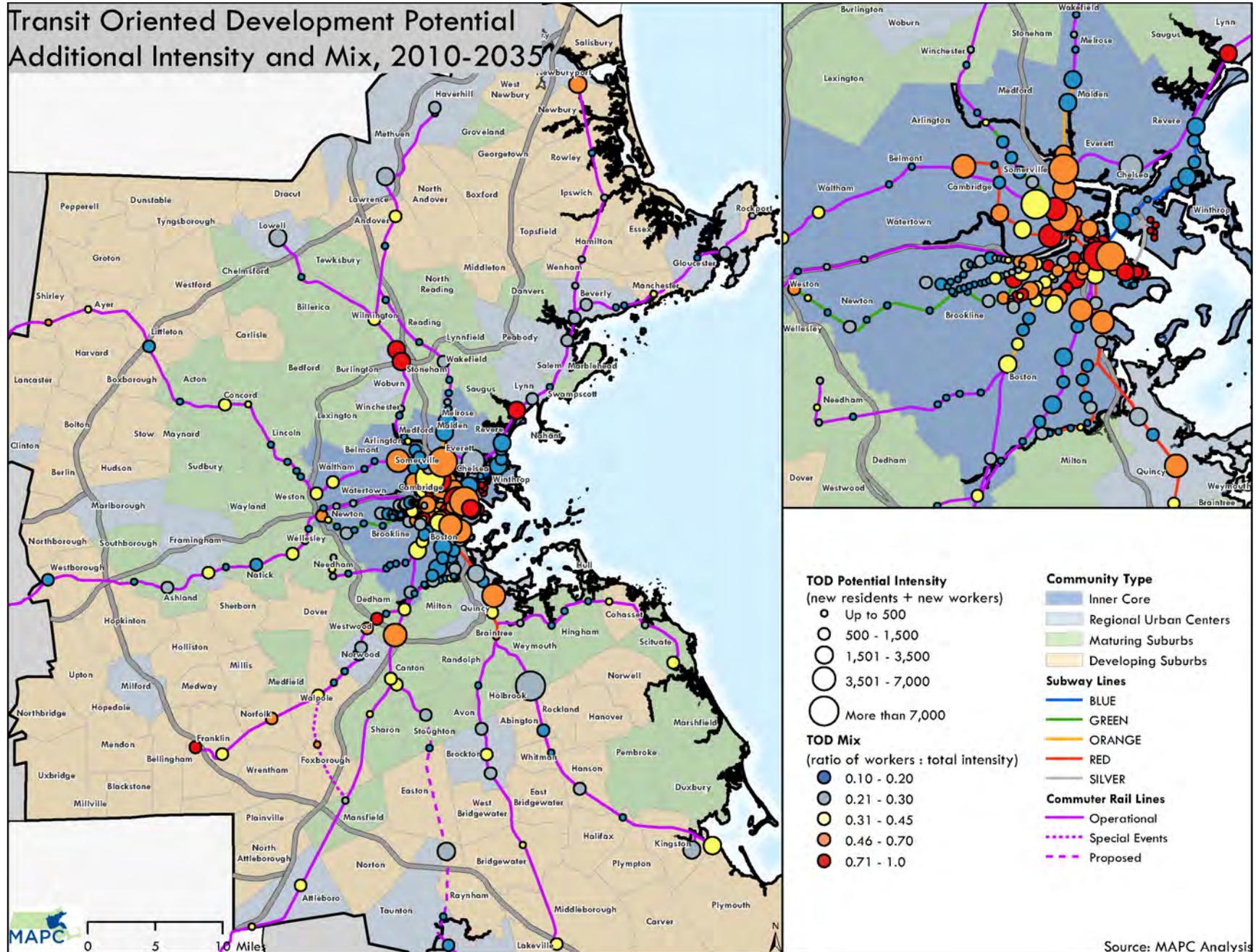
TOD Development Mix: the balance of population and jobs in the new development, expressed in terms of employment share of intensity. Based on the mix of existing development but modified based on specific development proposals.

Residential Densification: increase in housing unit density in existing neighborhoods, through infill development, teardowns, subdivision of single family home to multifamily, or creation of accessory units; expressed as a percent increase in housing unit density, generally ranging from 2 – 4%. Value range derived from densification patterns observed 2000 – 2010.

Estimating TOD Potential: Average Station Area Development Factors					
Station Area Type	% of Commercial & Parking Area Redeveloped	Existing Intensity per Developed Acre	TOD Potential Intensity (per Acre of Commercial Redevelopment)	Housing Density Increase, Existing Neighborhoods	TOD Mix
Metro Core	8%	300	369	1%	0.58
Seaport / Airport	17%	116	171	2%	0.76
Neighborhood Subway	15%	62	82	2%	0.19
Transformational Subway	28%	48	127	3%	0.39
Trolley Suburb	9%	23	58	3%	0.20
Urban Gateway	10%	43	84	3%	0.26
Town & Village	8%	20	68	3%	0.24
Commerce Park	16%	20	52	2%	0.64
Suburban Transformation	36%	8	93	4%	0.28
Undeveloped	10%	9	41	3%	0.14
All Station Areas	14%	81	110	2%	0.43

MAPC developed standard assumptions for each station type, based on literature review, professional judgment, and existing plans. These standard assumptions were augmented by a station-by-station review and comparison to proposed and planned projects in MAPC’s Development Database. Where indicated by this review, station-specific assumptions were applied to account for unique opportunities, constraints, and existing development proposals. We did not factor in the density limits of existing zoning because of the lack of regionwide zoning data and because much of the TOD that occurs in the region is permitted through special permits, variances, and programs such as 40R and 40B. Table 3 summarizes the aggregate development/ redevelopment assumptions and the resulting change in station area intensity.

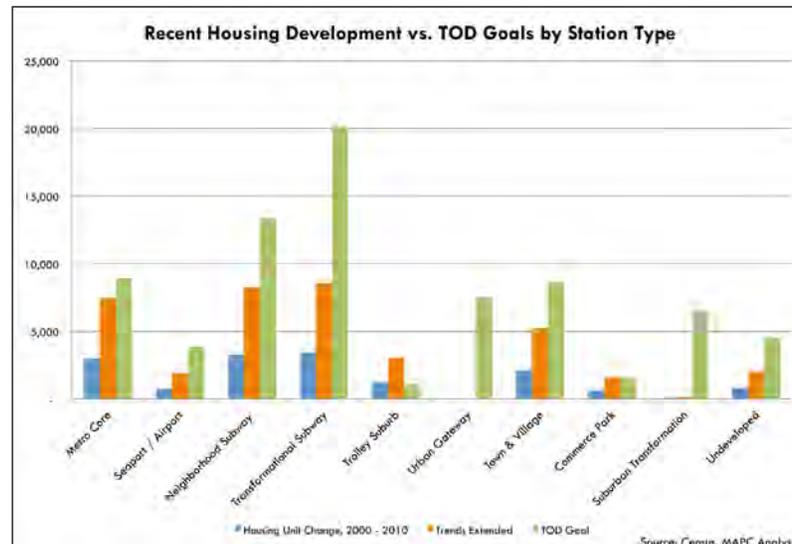
Transit Oriented Development Potential Additional Intensity and Mix, 2010-2035

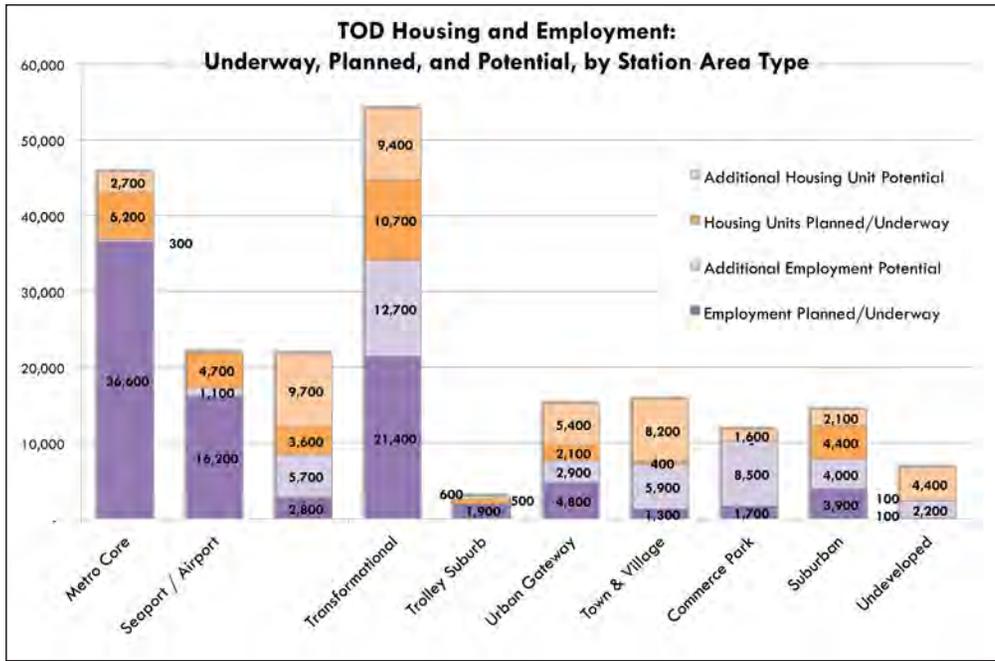


Station Area Type	Commercial/Industrial Redevelopment			Greenfield Development			Residential Densification
	Total Acres	Housing Units	Employment	Total acres	Housing Units	Employment	Housing Units
Metro Core	150	8,190	36,510	-	-	-	680
Seaport / Airport	140	3,680	17,250	-	-	-	160
Neighborhood Subway	380	9,670	8,420	10	180	120	3,490
Transformational Subway	590	18,540	33,830	30	240	290	1,330
Trolley Suburb	50	580	1,360	-	-	-	510
Urban Gateway	250	5,770	7,710	-	-	-	1,770
Town & Village	260	5,090	5,850	70	870	1,330	2,670
Commerce Park	250	1,300	9,550	50	100	610	150
Suburban Transformation	280	6,360	7,710	40	100	180	50
Undeveloped	90	1,000	1,340	180	3,220	910	310
All Station Areas	2,430	60,180	129,530	380	4,780	3,830	11,120

We have a long way to go to reach this potential. MAPC compared the estimated TOD potential to recent development in the station area as documented by Census 2000 and 2010 housing unit count. The chart on this page demonstrates that the *rate of housing unit production in transit station areas over the last ten years must double in order to achieve the full potential of TOD.* Metro Core, Neighborhood Subway, Town & Village, and Commerce Park station areas have been growing more rapidly, and continuation of recent trends might achieve 50 – 80% of TOD potential. Understandably, recent growth in the Seaport and Transformational Subway has been very slow compared to the estimates. Of greatest concern are the Urban Gateway station areas, which experienced no net change in housing unit counts around transit over the past ten years, but which are targeted for nearly 8,000 housing units in the coming decades. While the trolley suburb station stations are the only type that might exceed the estimated TOD potential by 2035, the low transit commute share and high VMT around these station means that this development might not necessarily generate the sustainable transportation patterns that are a key goal of TOD.

Based on this analysis, MAPC estimates there is potential for development of 76,000 housing units and enough commercial space to accommodate 133,000 jobs in the ½ mile station areas by the year 2035. This level of development would accommodate 31% of regional housing unit demand projected by MAPC and neighboring regional planning agencies over the same period and 58% of employment growth. Not surprisingly, more than two thirds third of the TOD would be in the Inner Core, but TOD can also make a substantial contribution to the housing supply in Maturing Suburbs and Regional Urban Centers, comprising 20% - 40% of projected growth for those Community Types. The table on this page shows the acreage, housing units, and employment that could be generated through commercial/industrial redevelopment, greenfield development, and residential densification. The vast majority of TOD potential exists on land that is already developed. Only in the Undeveloped station areas and the Town and Village stations does greenfield development constitute a substantial increment of new development. Residential densification—small-scale infill, accessory apartments, or conversion of single-family homes to multi-family structures—might account for nearly 15% of all housing unit growth near transit, especially in the Subway Neighborhoods, Town & Village stations, and Urban Gateways.





Fortunately, the development pipeline indicates that change is in the air. MAPC's Development Database includes information on over 33,000 housing units being planned, permitted, or built as of March 2011. On the commercial side, there are active development proposals and construction projects underway with a combined capacity of over 90,000 jobs, mostly in the Metro Core, Transformational Subway, and Seaport station areas. Not all of those development proposals may come to fruition, but they demonstrate that our estimates of substantial development potential are consistent with market demand in those station types.

In other station types, our estimates are far ahead of the demonstrated market interest; there are development plans on the table for just 30% of the potential housing units and jobs in Neighborhood Subway station areas; 15% of potential growth at Commerce Park stations; and 10% of potential growth in Town & Village stations.

MAPC also estimated the ridership that might result from this new development, if occupants of the TOD had the same travel patterns as current residents and workers. Using journey-to-work data from the 2006 – 2010 American Community Survey (for place of residence) and

the 2000 Census (for place of employment), we estimate that new development near transit might generate 63,000 one way commute trips on an average weekday, equivalent to 4.5% of current weekday ridership. However, this should be considered a low estimate, because it does not fully account for the changes in transit mode choice that may result from new TOD, especially in areas of transformative development (e.g., South Weymouth), areas where transit service has been introduced since 2000 (Silver Line, Greenbush) or is still proposed (Green Line Extension, Fairmount, South Coast Rail, Assembly Square). Nor does it include the many non-commute trips that will result from new housing and destinations near transit. Nevertheless, this estimate demonstrates a need to plan for increased demand, especially near the hub of the system which encompasses the greatest potential for new employment near transit: Metro Core stations might see an additional 29,000 trips daily as a result of new employment, with an equivalent number in the Seaport and Transformational Subway stations.

Coupled with other demographic and economic factors driving increased transit ridership, the new demand could exceed the available capacity of the existing system, with simply not enough trains to carry the potential riders. The need to expand capacity of the system to serve this new ridership is the subject of a companion report released by the Urban Land Institute and authored by Stephanie Pollack of the Dukakis Center for Urban and Regional Policy, *Hub and Spoke: Core Transit Congestion and the Future of Transit and Development in Greater Boston*. Over the next year, MAPC will be developing population and employment projections for the region that will be used for regional travel demand modeling which should help to pinpoint possible transit congestion issues and assess the impact of potential improvements. Ensuring adequate capacity and levels of service on the MBTA system is critical to achieving the potential of TOD and its economic, environmental, and social benefits for all of Metro Boston.

Conclusion

While there is no one-size-fits-all approach to TOD in Metro Boston, many stations share similar attributes, challenges, and opportunities and may benefit from similar strategies, investments, and design approaches. The transit station area typology described in this report provides a new framework for context-sensitive TOD policy, planning, and investments. Our analysis of the TOD capacity around each station area also demonstrates that growing station areas are positioned to be a significant component of the region's growth and development over the coming decades. If this potential is realized, it will bring great benefits, including higher transit ridership, less congestion, more housing choice and greater economic vitality. The challenges to achieving this future are two-fold: accelerating the pace of TOD, and ensuring the continued existence of a robust transit system that can support future development.

Specific applications of the station area types and TOD potential described here might include:

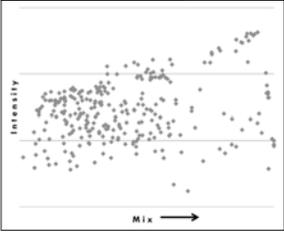
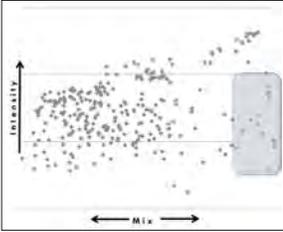
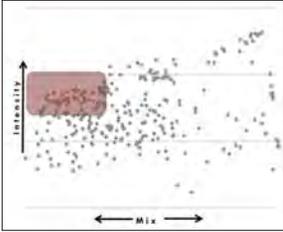
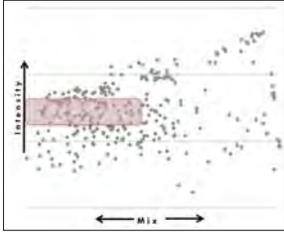
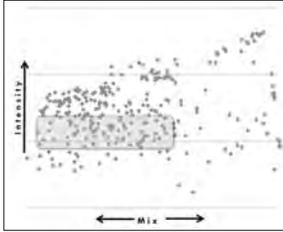
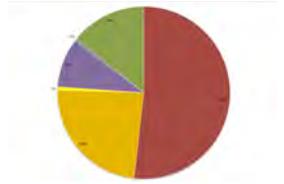
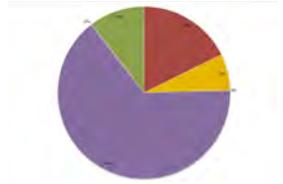
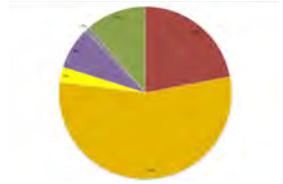
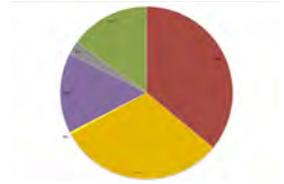
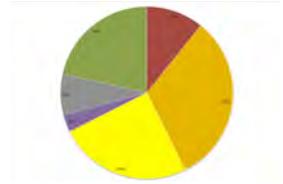
- State housing and economic development programs that use transit proximity as a criteria can use this analysis to develop context-sensitive programs that recognize the different types of station areas, the different transportation performance of those station areas, and the types of development that are appropriate for those areas. Incentives and funding should be targeted to locations and proposals with the most substantial capacity and the greatest potential to achieve sustainable travel patterns.
- Regional agencies and advocates can use the station area types to develop communication tools, model regulation, case studies, and other tools that will help to advance implementation of TOD-supportive policy at the local level.
- Municipalities should develop station area plans that maximize the potential of TOD and should establish zoning and land use controls consistent with the scale and character of the TOD appropriate for their station area. Land use controls should discourage or prohibit development at lower densities, higher parking ratios, and with less affordable housing.
- The MBTA should consider potential ridership resulting from new TOD when conducting service planning to ensure that capacity is sufficient and should maintain or enhance service where necessary to support significant TOD projects.
- The station area types and TOD potential can be used to establish benchmarks for density, mix, and housing affordability against

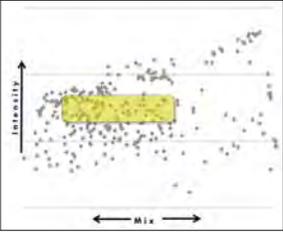
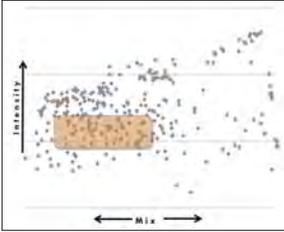
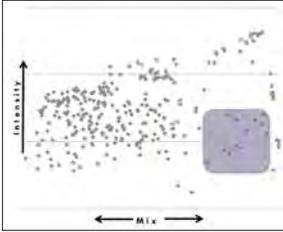
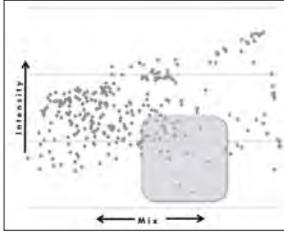
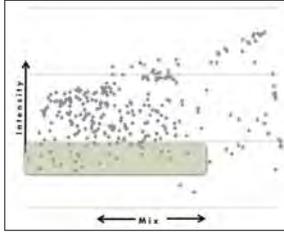
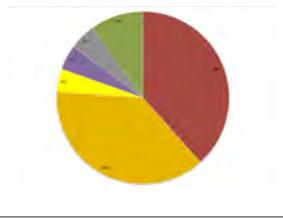
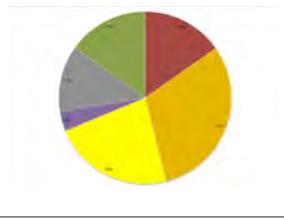
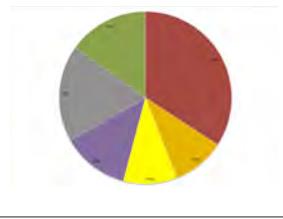
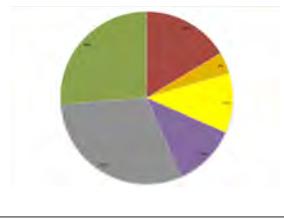
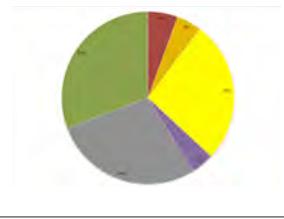
which development proposals can be evaluated. These metrics can be used for scoring individual development proposals against the range of anticipated scale and style of growth in similar station areas.

- State agencies and reviewers can consider the station area types during environmental review and should encourage project proponents to develop projects consistent with their type.
- Proponents of affordable housing in suburban locations near transit should consider that household transportation costs are still likely to be higher in those locations than in high-density urban settings.
- Developers can use the analysis and station area data for prospecting and initial assessment of development opportunities in station areas similar to those where they are currently working.



Station Area Typology Matrix

	Metro Core	Seaport / Airport	Neighborhood Subway	Transformational Subway	Trolley Suburb
Service Type	Subway, Commuter Rail, MBTA bus	Subway (Silver Line)	Subway, MBTA bus	Subway, MBTA bus service	Green Line/Red Line trolley, some MBTA bus
Normalized Intensity (Average, all stations)	184	37	47	40	20
Development Mix (Average, All Stations)	0.65	0.85	0.23	0.40	0.31
Normalized Intensity & Development Mix					
Median Household Income	\$57,800	\$52,800	\$63,100	\$50,200	\$99,600
Average WalkScore	94	67	84	77	66
Transit Commute Mode Share	27%	31%	36%	34%	19%
Average Daily Household VMT	20	N/A	25	29	44
Estimated Household Transportation Cost	\$8,450	\$11,050	\$10,400	\$11,050	\$14,300
Land Use					
TOD Potential Normalized Intensity	424	127	119	123	104
TOD Mix	0.58	0.76	0.19	0.39	0.20
TOD Housing in Development Pipeline	70%	100%	27%	53%	54%
TOD Jobs in Development Pipeline	99%	94%	33%	63%	53%

Urban Gateway	Town & Village	Commerce Park	Suburban Transformation	Undeveloped	
Commuter Rail, often MBTA or RTA bus hubs	Commuter Rail, some MBTA or RTA bus	Commuter Rail, limited MBTA bus	Commuter Rail	Commuter Rail	
32	16	16	7	7	Total workers and residents per developed acre in station area.
0.41	0.36	0.71	0.56	0.31	Ratio of workers to total intensity. (0= residential; 1= employment centered.)
					
\$48,300	\$88,300	\$74,300	\$85,500	\$99,600	
84	73	55	41	32	Source: Walkcore.com
10%	11%	7%	7%	7%	Percent of resident workers using transit for commuting (Source: ACS 2006-10)
39	52	70	54	69	Based on Annual vehicle mileage data for 2005-07 (Source: MassGIS)
\$14,300	\$16,250	\$16,250	\$17,550	\$17,550	Source: Center for Neighborhood Technology
					
110	97	48	68	52	Residents and workers per acre of potential new TOD
0.26	0.24	0.64	0.28	0.14	Development Mix of potential new TOD
28%	4%	1%	67%	1%	Percent of potential housing units in construction or planned.
62%	18%	17%	50%	6%	Percent of potential commercial square footage in construction or planned.

Metro Core



The Metro Core stations areas comprise the largest employment cluster in Metro Boston, with more than 400,000 employees working near 43 subway, trolley, and Silver Line station areas in or near Downtown Boston and adjacent employment and institutional centers (Kendall Square, Longwood

Medical Area, Boston Medical Center, Harvard Square.)

These station areas are characterized by very high intensity of existing development (average of 180 persons per developed acre, but ranging as high as 400 in Downtown Boston) and an employment-dominated mix. The density of stations is high, and most locations are within walking distances of multiple nearby stations served by multiple lines or modes. By virtue of their location at or near the 'hub' of the MBTA system, these stations have the greatest access to potential transit commuters and the best potential for very high commute mode shares.

New development in Metro Core station areas includes 20+ story office or residential towers in Downtown Boston, mid-rise mixed use development in the South End, Fenway, and Kendall Square; and institutional expansion of hospitals and universities at the Longwood Medical Area, BU Medical Center, Kendall Square, and Harvard Square. Over 6.2 million square feet of new development has been completed in the last two years or is nearing completion, with an additional 9.8 million square feet of development being planned or permitted. There has also been substantial housing growth in the Metro Core, predominantly in the form of luxury condominiums or apartments for residents seeking proximity to downtown amenities. High land values make it challenging to develop affordable housing, so linkage payments or community benefit agreements that support housing construction elsewhere in Boston or Cambridge are critical to expanding housing choice.



Kendall Square is home to a rapidly growing cluster of high-tech, biotech, and information-related firms, not to mention the Massachusetts Institute of Technology. Nearly a million square feet of office and R&D space have come on line in the last year alone, with more than 2 million additional square feet and hundreds of housing units in the advanced planning stages.



Newton Street is typical of stations on Washington Street in the South End. Since introduction of the Silver Line, substantial residential development and major expansion of the Boston Medical Center and associated institutions have occurred. Pro-transit parking policies and dedicated affordable housing (or payments in lieu of units) are critical to preserving housing opportunities for low income residents and maximizing transit usage among wealthier new residents.

Brigham Circle is one of a half-dozen stations that serve the Longwood Medical Area, with over 32,000 employees and thousands more contractors, students, and patients visiting the area on a daily basis. Over 2 million square feet of research, educational, and medical facilities have been completed in the past two years or are nearing completion, with an equivalent amount in the planning phase.

Seaport / Airport



The Seaport District is unparalleled in Metro Boston for the magnitude of TOD in the works. Currently characterized by large amounts of surface parking, vacant land, underutilized buildings, and transportation facilities, development plans will transform this area into a high-density mixed-use urban

neighborhood comparable to the stations of the Metro Core.

This area has seen dramatic growth since introduction of the Silver Line service began in 2004. There are currently at least 35,000 jobs and 23,000 residents in these station areas, but normalized intensity is moderate to low due to the extensive underutilized developed land area. (40 persons per developed acre.)

There are numerous large-scale redevelopment proposals planned for the Seaport District, including residential, office, retail, and hotel components; and potential for improvement of Logan Airport facilities and development of surrounding Massport real estate.



The **Courthouse** station in the Seaport serves the largest developments planned or projected for the area. At Fan Pier, more than 540,000 square feet of office and retail space (One Marina Drive) is complete and 1 million square feet are under construction for the headquarters of Vertex.

Fan Pier is dwarfed by Seaport Square, which as proposed would include 3.2 million square feet of office, retail, and institutional space, 500 hotel rooms, and 2,500 housing units.

While not yet manifest in specific development proposals, the Boston Redevelopment Authority's master plan for the "100 Acres" (near the Gillette facility) identifies the potential for an additional 2.8 million square feet of office and retail, 800 hotel rooms, and 2,300 housing units. While construction of these master plans may take many years and may be scaled back somewhat over time, they demonstrate the capacity and market interest for development in the area.

Neighborhood Subway



Neighborhood Subway station areas are found throughout Boston, Cambridge, and the surrounding Streetcar Suburbs and Regional Urban Centers. These 63 station areas are moderate density, predominately residential urban neighborhoods, ranging from Roxbury to Wollaston,

Davis Square, and Brookline Village. They are also home to large populations of low-income and transit dependent populations. The median household income across these station areas averages \$63,000, but in about one third of the station areas that figure is below \$50,000.

These stations are generally “well-performing” compared to the region, with high transit ridership and low VMT: 36% of workers take transit and household VMT averages 25 miles per day (half of the regional average.) New development takes the form of parcel-scale infill, adaptive reuse, or small-scale land assembly and redevelopment. 58% of the land area is in residential uses; intensification of those areas may occur through infill, conversion of single-family to multifamily, adaptive reuse, or accessory apartments.

The housing market in these station areas is growing stronger, and with increased demand for housing comes the potential for displacement of low-income, minority, immigrant, and transit-dependent populations. Furthermore, if new residents have higher auto ownership rates and lower transit utilization rates, the transportation benefits of TOD will not be fully realized. In these areas it is especially critical to establish housing and parking policies that will help to maintain a diverse and transit-oriented community.



Adjacent to **Ashmont Station** on the Red Line in Dorchester is The Carruth, a mixed use TOD featuring 74 affordable rental units and 42 market-rate homeownership units in a six story building atop 10,000 square feet of retail space. There are 85 below-grade parking spaces (0.75 spaces per unit) the type of pro-transit parking policy that promotes low vehicle ownership and high transit usage.

Also within the Ashmont station area is Blandino Farms, a small infill development with 16 condominiums, 32 parking spaces, and only two units affordable to low-income residents. In contrast to the Carruth, the characteristics of this development do not promote low auto usage or prevent displacement.



The neighborhoods along the Orange Line from **Jackson Square to Green Street** have experienced considerable development over the past ten years, through a combination of community development corporation (CDC) initiatives as well as for-profit developers. At Jackson Square, a local CDC recently completed 270 Centre Street, with 30 affordable units (including 15 units for extremely low income households), 6,000 sq. ft. of retail, and only 13 parking spaces. At 225 Centre Street, the first phase of Jackson Square redevelopment is under construction.

At Green Street station, the Bartlett Square development (13 condominiums, 2 affordable units, 20 parking spaces, and 4,300 square feet of retail) is nearing completion.

Transformational Subway



These subway and rapid transit station areas have the potential for *transformative* change through district-scale TOD that involves the redevelopment of large land parcels, the creation of new street networks, and substantial improvements to the urban realm. These areas are likely to see more than 1,500 new residents or employees, an increase of at

least 15% over the existing intensity. Some station areas are dominated by a single district-scale project such as Station Landing (Wellington), North Point (Lechmere), or Assembly Row (Assembly Square). In other cases the transformation may be driven by a critical mass of individual developments, such as at Oak Grove, Forest Hills, or Melnea Cass/Dudley Square. The disposition of publicly owned land is often a key element of these transformations, and the guidelines for development that accompany such disposition are critical to ensuring sustainable and equitable TOD.

Some of the stations in this type do not have specific development projects in the pipeline, but exhibit similar characteristics (extensive surface parking, low-intensity land uses, municipal/state/MBTA land) and demonstrate high capacity for redevelopment and infill.

There are a number of challenges that accompany transformational development projects: establishing a pedestrian-oriented urban realm and minimizing auto accommodation is critical to maximizing transit usage, but may be difficult when there are large trip generators such as office or retail uses that will necessarily attract some autos. Integrating TOD into the surrounding neighborhoods may prove difficult, either as a result of physical barriers or differences in scale. Finally, it is important to ensure opportunities for local tradesmen and entrepreneurs to participate in the construction and retail opportunities of the development, which may be dominated by large contractors and national retail tenants.

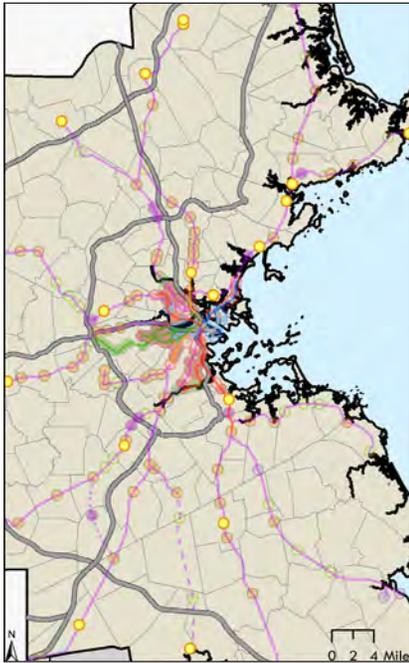


Located at the **Wellington** stop on the Orange Line, Station Landing is a New Urbanist, mixed-use development that includes nearly 600 housing units, 125,000 square feet of retail and commercial uses, and 160,000 square feet of office space. The development shares a 1,900 space parking garage with the MBTA and Zip-cars are available on-site.

The **Brickbottom** stop on the proposed Green Line Extension in Somerville would provide rapid transit access to over 80 acres of industrial and underutilized land in Brickbottom and Inner Belt portions of Somerville. The City of Somerville anticipates this area could accommodate more than 8 million square feet of commercial development in an area that would have direct transit connections to Downtown Boston and North Station. Notably, in conjunction with the economic development planning for Brickbottom the city of Somerville is also actively planning for housing production and preservation of affordable housing to maintain opportunities for existing Somerville residents.

At the **North Quincy** stop on the Red Line, nearly one-fifth of the station area is used for surface parking, comprising more than 90 acres of pavement. Redevelopment of the MBTA parking could create more than 200 housing units while better integrating the station into the surrounding business district. Over the long term, redevelopment of the surrounding commercial areas could transform this neighborhood.

Urban Gateway



These station areas are found in the heart of Regional Urban Centers such as Quincy, Malden, Lowell, Brockton, Beverly, Gloucester and Framingham. They provide connections to Boston via commuter rail and, in the case of Malden and Quincy, rapid transit service. Many stations are also the local hub for MBTA or Regional Transit Authority bus service. The two densest station areas in this type could be

served by proposed MBTA expansion via the Urban Ring (Chelsea) or the Blue Line extension (Lynn.)

While these stations are in downtown areas, the land use intensities are often lower than the Neighborhood Subway stations, and the mix of uses is more even, ranging from .30 to .60. Most of these downtowns are home to large communities of low-income, minority, and foreign born residents; the average median income is just \$48,000.

TOD may take the form of gradual parcel-scale revitalization (Chelsea), major adaptive reuse opportunities (Lowell), or transformative district-scale redevelopment (Quincy Center). Unfortunately, the real estate market and economy in many of these station areas is particularly weak, and the development pipeline is small compared to our estimated potential for growth. While rising prices and displacement could eventually become an issue in these communities, stimulating the housing and retail market is the principal concern.

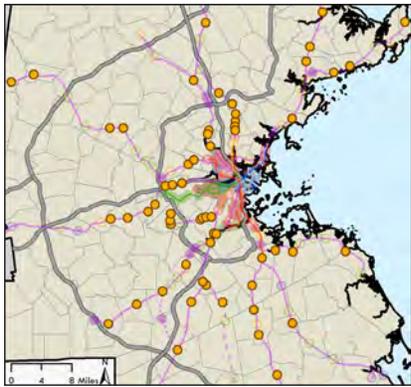


In Downtown **Haverhill**, there have been three major conversions of former factory buildings to residential development immediately adjacent to the MBTA commuter rail station: the Cordovan (146 housing units, including 40% affordable and live work spaces); the Hayes building (57 units), and Hamel Mill Lofts (305 units.) The city's 40R Smart Growth Zoning district is a key tool in expediting development near the station.

Malden Center has seen the development of over 300 housing units and 300,000 square feet of office and retail uses over the past decade. The potential for future development is strong with the disposition of the City Hall site directly across from the T station now being planned as well as development of the large NSTAR site southeast of the station.

The **Quincy Center** station area is on the verge of undergoing a transformation through a \$1.2 billion public private partnership to create 1.6 million square feet of retail, office, and medical space, 800 housing units, 200 hotel rooms, and a completely reconfigured downtown streetscape.

Town & Village



These station areas are located in business districts, traditional town centers, and village centers served by commuter rail, including business districts in the outer reaches of Boston (Hyde Park, Roslindale), villages in Newton and Belmont, suburban town centers, and small village centers in Developing Suburbs.

These station areas vary considerably in the amount of existing development nearby, but they occupy the mid-low intensity range between subway neighborhoods and the undeveloped station areas, generally ranging from 10 to 30 persons per acre. The mix generally ranges from .20 to .50, reflecting the presence of retail businesses and other destinations that characterize these areas. With a few exceptions, each station area has at least 100 business establishments and more than 1,000 workers within the ½ mile area. A WalkScore of greater than 50 (“somewhat walkable”) also helps to distinguish these stations from the Undeveloped stations with even fewer destinations.

Large parking areas and low-intensity commercial uses create conditions for parcel-scale reuse or small-scale land assembly. These station areas may also be prime opportunities for the creation of affordable housing in transportation-efficient suburban locations where transportation costs will be less burdensome. However, redevelopment in these station areas often faces substantial permitting challenges as a result of local opposition to higher densities, reduced parking requirements, pedestrian-oriented design, and housing development. The use of as-of-right zoning and permitting tools such as 40R Smart Growth Zoning is critical to help manage this opposition, and public engagement and scenario planning techniques can help to mitigate local concerns.

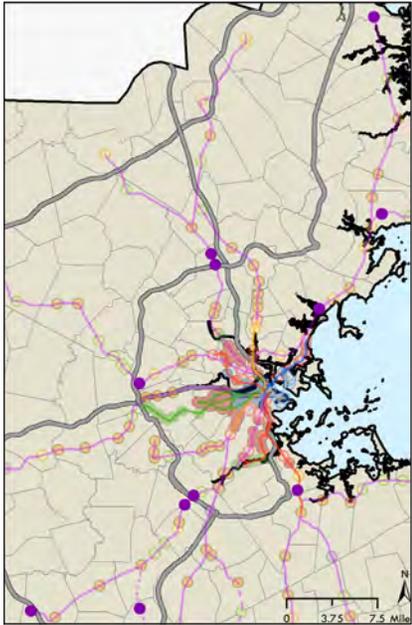


Directly across the street from the **Manchester** commuter rail station, 10 & 12 Summer Street includes 22 affordable housing units in one of the region’s most exclusive communities. Developed by the Manchester Housing Authority, the site also include 17 market rate condominiums and 5,000 square feet of retail space. Created through a “friendly 40B” process, this development demonstrates that compact, affordable housing can be harmoniously integrated into small village centers and business districts.

Steps from the commuter rail platform in downtown **Reading**, there are 53 housing units and 20,000 square feet of retail space currently under construction at 30 Haven Street. This is the first project created through the town’s Downtown Smart Growth Bylaw (a 40R district) and includes 11 affordable units and 75 underground parking spaces.

A recent MAPC planning effort identified significant opportunities for development around the **Weymouth Landing/East Braintree** station, including the potential for a multi-story mixed-use development on a vacant site where a stand-alone drug store with drive-through has been proposed. As a result of this planning effort, both towns updated their zoning to encourage mixed use development. Braintree’s new zoning requires just 0.75 parking spaces per housing unit.

Commerce Park



This station area type includes suburban commuter rail stations within or adjacent to auto-oriented office or industrial parks (Mishawum, Dedham Corporate Center, Quincy Adams), institutions (Brandeis, Monserrat/Beverly Hospital), or entertainment destinations (Foxborough.) Residential uses comprise a minority of the development mix and land use at most station

areas. There is extensive surface parking and some stations also contain large MBTA park and ride facilities.

These station areas are generally characterized by dispersed, pedestrian-unfriendly land use patterns and are often isolated from the surrounding community. Furthermore, transit service is generally structured to convey commuters from the station to Boston, not to facilitate reverse commutes. In 2000, only 2% of workers in these station areas took transit to work.

The greatest potential TOD at these sites might be achieved through large scale mixed-use redevelopment such as is proposed for the Suburban Transformation stations on the next page. The replacement of the current low-intensity industrial development with a higher-density mix of residential and commercial uses would create additional housing opportunities, and might generate the critical mass of employment needed to support reverse commute and local bus service.

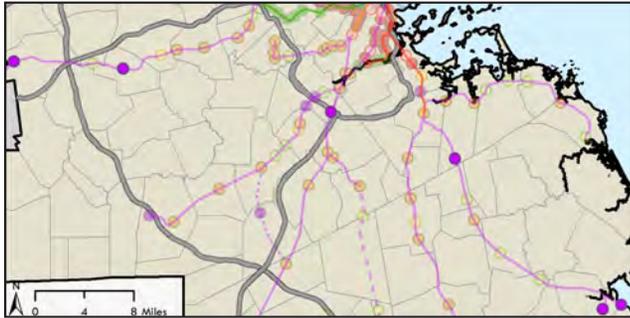


Adjacent to the **Newburyport** station, the MBTA is currently seeking to dispose of 11 acres of land for mixed use development. The site is situated within an industrial area of 144 acres, with limited connectivity to surrounding business districts or residential areas. Transit access at this site will be good, but a much larger development with a substantial mix of destinations is necessary to promote transportation sustainability.

Dedham Corporate Center contains a mix of land uses that are not well integrated. Nearby commercial uses include a storage facility, nursing home, motels, and the Legacy Place lifestyle center. There are two 40B developments totalling 585 units located immediately adjacent to the station.

MAPC recently identified the **Forge Park** industrial zone as a regionally-significant Priority Development Area through the I-495 Compact process. The industrial area lies in relatively close proximity to the station, but pedestrian improvements and other amenities are needed to solve the "last mile" problem at this location.

Suburban Transformation



These suburban station areas are likely to experience transformative change through a major development or redevelopment proposal that will add 1,000 or more residents or jobs to a given location.

These station areas are currently undeveloped or substantially underutilized, with normalized intensities of 2 – 14 persons per acre. They have large amounts of vacant developable land or commercial & industrial areas that can be redeveloped. Development plans generally include a mix of residential and commercial uses, and application of TOD principles to varying degrees. If done right, these areas can be models of suburban TOD for other communities in Metro Boston, especially Commerce Park stations. As with the Transformational Subway stations, the primary challenges here include maintaining a pedestrian-oriented urban scale, promoting low auto ownership, creating economic opportunities for a diversity of entrepreneurs, and finding the financing for such enormous projects.

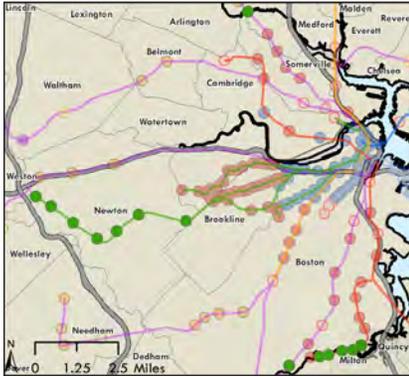


SouthField is the name of the enormous mixed use redevelopment of the former naval air station adjacent to the **South Weymouth** commuter rail station. With more than 3,800 housing units planned and up to 2 million square feet of commercial space, this is the largest single development outside of the Inner Core. It can be a model to other developments because it features a mix of housing types in a new urbanist setting that promotes pedestrian mobility.



Adjacent to the **Plymouth** commuter rail station, Cordage Park is a 45-acre site with a Smart Growth Zoning District that can accommodate 675 housing units and a variety of office and commercial uses through redevelopment of historic waterfront mill buildings.

Trolley Suburbs



These areas, adjacent to trolley stations in Newton and Milton, have transit service comparable to many Neighborhood Subway stations but are considerably less dense and wealthier than. Only a handful of these stations have

land use intensities of more than 25 persons per acre, and residential densities are generally 3 – 10 units per acre. With an average household income of \$100,000 annually, only 19% of workers use transit and HH VMT averages 44 miles per day.

Commercial land uses immediately surrounding the station area are very constrained (about 10% of the land area), posing challenges to significant redevelopment. Intensification of existing residential areas is likely to occur through subdivision of land or buildings, estate development, or institutional expansion.

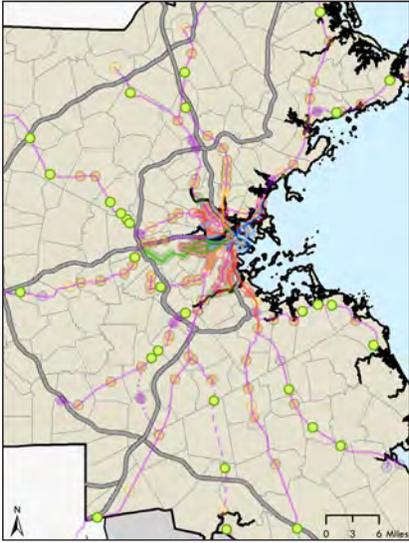


The proposed **Route 16** station at the terminus of the Green Line Extension is surrounded by a small amount of commercial and industrial development in an otherwise residential neighborhood. As part of a planning process for the station, MAPC identified the opportunity for new housing and commercial development that would provide increased housing options for the neighborhood's senior and low-income residents while also increasing the diversity of destinations available to households.



Adjacent to the Red Line **Milton** station is Milton Landing, a 73-unit condominium building developed on the site of a burned-down refrigeration facility. Created through a Planned Unit Development zoning, the building includes 85 below-grade parking spaces for residents; 40% of the site was turned into a public park and marina.

Undeveloped



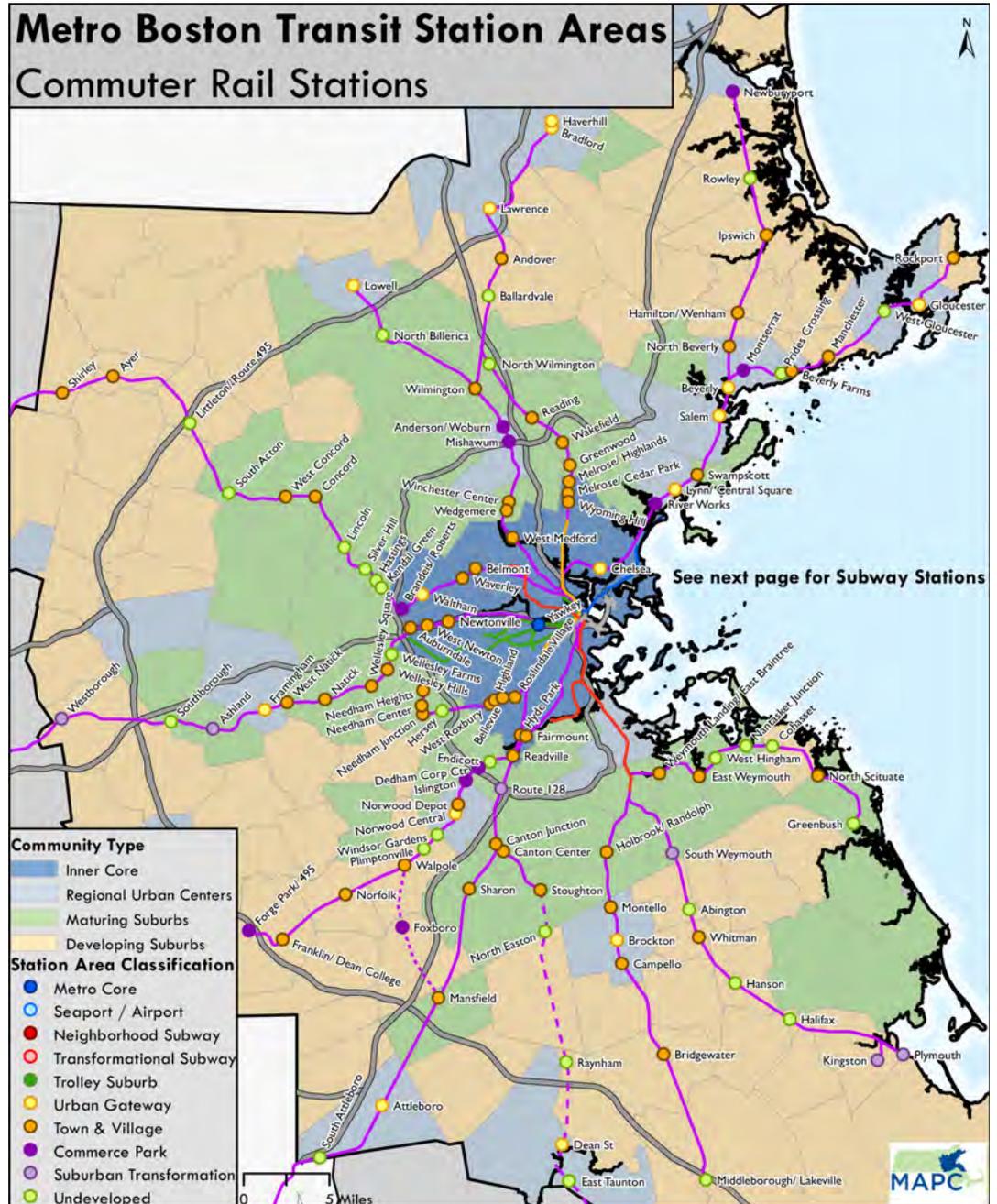
These station areas include commuter rail station areas with very little surrounding development, few nearby destinations, and large areas of vacant undeveloped land. The average intensity is just 7 persons per acre, and the average mix is .30. Even those station areas where employment is in the majority, there are fewer than 100 workers in the station area. On average, 60% of the station area is undeveloped land, and commercial uses average just 6% of the land area.



The development around the **Lincoln** commuter rail station is an example of community-driven housing and economic development near transit. A 71-acre parcel was subdivided, and 16 acres were used for a 125-unit affordable housing development and a small retail plaza with a supermarket, post office, and other services. The remaining land was put into conservation.

These stations areas are also home to the wealthiest transit-adjacent residents in the region and those least likely to use transit. Average household income is over \$100,000, only 7% of workers use transit, and the average household drives 69 miles per day. These stations could experience small-scale redevelopment or greenfield development, but such TOD may have limited transportation benefits given the isolation and poor local accessibility of these stations. With average household transportation costs exceeding \$17,000 per year, even subsidized housing in these locations would still result in unaffordable housing + transportation costs for most low- or moderate-income residents.

Metro Boston Transit Station Areas Commuter Rail Stations



Metro Boston Transit Station Areas

Rapid Transit Stations

Green Line

B Line		C Line		E Line	
Type	Station	Type	Station	Type	Station
●	Blandford Street	●	St. Mary's Street	●	Prudential
●	Boston University East	●	Hawes Street	●	Symphony
●	Boston University Central	●	Kent Street	●	Northeastern University
●	Boston University West	●	St. Paul Street	●	Museum of Fine Arts
●	Saint Paul Street (B)	●	Coolidge Corner	●	Longwood Medical Area
●	Pleasant Street	●	Summit Avenue	●	Brigham Circle
●	Babcock Street	●	Brandon Hall	●	Fenwood Road
●	Parkards Corner	●	Fairbanks	●	Mission Park
●	Harvard Avenue	●	Washington Square	●	Riverway
●	Griggs Street	●	Tappan Street	●	Back of the Hill
●	Alliston Street	●	Dean Road	●	Heath Street
●	Warren Street	●	Englewood Avenue		
●	Washington Street	●	Cleveland Circle		
●	Sutherland Road				
●	Chiswick Road				
●	Chestnut Hill Avenue				
●	South Street				
●	Boston College				

Silver Line

SL1		SL2	
Type	Station	Type	Station
○	Courthouse	○	Northern Avenue @ Harbor Street
○	World Trade Center	○	Northern Avenue @ Tide Street
○	Silver Line Way	○	21 Dry Dock Avenue
○	Airport Terminal A	○	25 Dry Dock Avenue
○	Airport Terminal B 1	○	88 Black Falcon Avenue
○	Airport Terminal B 2	○	Black Falcon @ Design Center
○	Airport Terminal CD	○	Dry Dock Ave @ Design Center Pl
○	Airport Terminal E	○	Dry Dock Ave @ Harbor St

SL4/SL5	
Type	Station
●	Herald St.
●	East Berkeley St.
●	Union Park St.
●	Newton St.
●	Worcester Square
●	Massachusetts Avenue
●	Lenox St.
●	Mehegan Cass Blvd.
●	Dudley Square

