Expanding the Use of Value Capture for Transportation and TOD in Massachusetts

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Prepared for:

Metropolitan Planning Area Council (MAPC)
City of Somerville
Barr Foundation
A Better City

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EXECUTIVE SUMMARY

Public investments in transit, highways, roads and other infrastructure generate value for nearby property owners. The term "value capture" refers to any strategy whereby a public agency "captures" a portion of the increased property values to help pay for the infrastructure itself. Around the country, commonly used value capture tools include special assessments and taxes, tax increment financing, various forms of developer contributions, and joint development or other public sector real estate transactions.

The concept of value capture is increasingly discussed in the context of transportation finance, particularly as a means to fund new transit. In Massachusetts, value capture is being considered as one potential source that can be tapped to provide much-needed funding for a variety of state and local transportation projects. This study identifies opportunities for expanding the use of value capture in Massachusetts to pay for transit, other transportation projects, and infrastructure required to support transit-oriented development (TOD).

The study examines the Commonwealth's current value capture tools, drawing on examples from around the country, as well as interviews with 35 state, regional and local officials. The study also considers the potential for value capture through five case studies of transportation and TOD projects currently planned or underway in Massachusetts. Based on this research, the study recommends a number of ways in which Massachusetts laws, policies, and regulations could be changed in order to encourage broader use of value capture for transportation and TOD infrastructure generally, with a special focus on transit.

This executive summary provides an overview of key findings and recommendations from the report, and is organized into the following sections:

- **Massachusetts' Infrastructure Needs:** Describes the types of transportation and TOD-supportive infrastructure that the Commonwealth, cities, and towns are expected to prioritize in the coming five to ten years, and that are the focus of this study.
- **Overview of Value Capture Tools:** Reviews the types of value capture tools that are used around the country, as well as the tools that are authorized for use in Massachusetts.
- **Considerations for Implementing Value Capture:** Describes the conditions that are required for the successful use of value capture, in the context of the specific fiscal and governance issues that shape the use of value capture in the Commonwealth.
- **Common Uses of Value Capture in the U.S. and Massachusetts:** Discusses the ways in which value capture is currently used, both nationally and in Massachusetts.
- **Recommendations:** Provides a series of recommendations for action by state and local governments for expanding the use of value capture to pay for transportation and TOD in Massachusetts, with a focus on transit capital improvements and operations.

Massachusetts' Infrastructure Needs

This study evaluates the potential use of value capture for the types of transportation projects that the Commonwealth and local governments are expected to prioritize over the next five to ten years. Based on the transportation investments identified in the Commonwealth's Five-Year Capital Investment Plan (CIP) for Fiscal Year 2017 and interviews with state, regional, and local officials, the study focuses on the following types of projects:

- **Transit capital expansions**: While the current Administration is focused primarily on improvements to existing infrastructure, nevertheless a few capital expansion projects are underway or may proceed in the next five to ten years. These include construction of the Green Line Extension, planning and

design work on the Knowledge Corridor commuter rail and South Coast Rail projects, new or improved bus rapid transit (BRT) in the Boston region, and new infill stations and multi-modal facilities to expand service on existing transit lines.

- **Transit improvements:** State of good repair and modernization improvements are a particularly high priority for the MBTA following major breakdowns in the system during the record-setting snows of early 2015, and as a result of ongoing challenges in the timely performance of commuter rail, the Red Line, and other systems.
- **Capacity improvements to existing transit facilities:** This category includes improvements to existing systems that will allow for more frequent headways and accommodate increased ridership, such as the purchase of new vehicles for existing train lines or investment in expanded platforms.
- **Highway capital projects:** While Massachusetts is planning few if any investments in new highway lane miles, potential projects include building new interchanges, tearing down outdated highway infrastructure, and building or replacing bridges.
- **Local investments needed to encourage transit-oriented development:** By focusing new development near transit, Massachusetts can increase ridership and maximize the returns on the state's transit investments. Typically defined as a mix of compact housing, commercial, and other development located within walking distance of high-frequency rail, subway, or bus transit, TOD often requires significant up-front investments in infrastructure and community facilities, such as:
    - *Connectivity Improvements and Other Infrastructure to Support Development:* Investing in local streets, new or improved sidewalks, bicycle facilities, streetscape improvements (e.g., crosswalks, lighting, street furniture), or other infrastructure improvements (e.g., sewer, water, storm drain) in order to address infrastructure constraints, encourage private investment, and connect residents and workers to transit stations and other amenities.
    - *Affordable Housing and Other Community Facilities:* In addition to connectivity and other infrastructure improvements, successful TOD may require investing in the production or preservation of affordable housing to ensure that low- and moderate-income residents can take advantage of the benefits of transit access. Investing in affordable housing near transit can also help to support the transit system through increased ridership. Other community facilities, such as parks and open space, may also be required to make development feasible and/or improve local quality of life.

Overview of Value Capture Tools

Value capture tools consist of a variety of property-based financing mechanisms that are employed by the public sector. Nationally, these tools include special assessments and taxes, tax increment financing (TIF), various forms of developer contributions, and public sector real estate transactions. State legislative authority is typically required to enable the use of value capture tools. Not every tool is used in every state, and the tools work differently in different parts of the country depending on each state's constitutional and statutory framework. Figure 1 provides a generalized description of each type of tool, and shows which tools are authorized for use in Massachusetts.

Figure 1: Types of Value Capture Tools

Type of Tool	Definition	Tools Used in Massachusetts
Tax increment financing (TIF)[a]	Diversion of growth in tax revenues generated within a district (usually property tax)	District Improvement Financing (DIF) Infrastructure Investment Incentive Program (I-Cubed)[b]
Special assessments and taxes	An additional assessment or tax on properties or businesses within a specific district or jurisdiction	Local Infrastructure Development Program (LIDP) Business Improvement Districts (BIDs) Betterments and Special Assessments
Developer contributions	Includes a variety of mechanisms by which developers contribute directly to the provision of infrastructure and community facilities, including: • *Development impact, linkage, and in-lieu fees:* A one-time fee assessed on new development to offset the cost of infrastructure needs generated by development • *Negotiated development contributions:* Direct provision of or payment for public improvements by a developer in conjunction with a development project • *Density bonus programs:* A zoning tool that allows developers to build to a higher density or height in exchange for provision of specific community benefits	Impact Fees[c] Affordable Housing Linkage and In-Lieu Fees Negotiated developer contributions Density Bonuses
Public sector real estate transaction	Revenues generated through sale, ground lease, joint development, or concessions on publicly-owned land, air rights, or facilities	Joint Development Sale and Ground Lease Concessions

[a] In Massachusetts, the term "tax increment financing" is typically used to refer to tax abatements provided to developers or employers in order to promote economic development. DIF is a more traditional form of TIF, in that it is intended to capture incremental growth in municipal property tax revenues in order to fund public improvements.
[b] Note that I-Cubed also includes a special assessment district component.
[c] Subject to significant constitutional restrictions.
Source: Strategic Economics, 2016.

Value Capture Case Studies

The findings and recommendations in this report are based in part on five case studies of projects that are currently planned or under construction in the Commonwealth:

- **Allston Interchange:** The Massachusetts Department of Transportation (MassDOT) is developing a plan to replace and reconfigure the existing Allston interchange and viaduct on I-90, and to build a new commuter rail station to serve the area. This transportation project will open up major opportunities for new development and create significant value for Harvard University, which owns the land currently occupied by the interchange. MassDOT is already capturing some of this value through an agreement that the agency negotiated with Harvard University. This case study discusses the potential for the Boston Planning and Development Agency (BPDA) (formerly Boston Redevelopment Authority) and other public partners to use negotiated development contributions, the Local Infrastructure Development Program, District Improvement Financing, and/or I-Cubed to capture additional value to help create a new, high-quality, urban district in Boston's Allston neighborhood.

- **South Boston Waterfront:** The South Boston Waterfront is one of the fastest growing urban areas in the Commonwealth. As part of the city approval process for the development projects that have been completed or are underway, the BPDA has already negotiated local infrastructure improvements and other public benefits. This case study examines the potential to implement more systematic, district-based value capture tools (such as a density bonus program, impact fees, a special assessment district, or DIF) to help fund the connectivity improvements that are required to both address existing congestion and mobility challenges in the South Boston Waterfront, and to ensure that the transportation system can accommodate additional growth.

- **South Coast Rail:** MassDOT is considering extending commuter rail service to Massachusetts' South Coast. The project, which has been under review since 1994, would restore transit access to Boston for the gateway cities of Taunton, New Bedford, and Fall River – the only three major communities within 50 miles of Boston that cannot currently access the city by rail. The reintroduction of commuter rail to the South Coast is expected to attract economic development and generate environmental and quality of life benefits in a region that has experienced limited growth in recent years. However, the large number of jurisdictions involved and the relatively weak real estate market in many of the station areas may limit the potential to use value capture to help pay for the rail project. In light of these challenges, this case study discusses the potential to use a tax increment financing tool such as DIF to help pay either for the transit itself, or for local connectivity improvements and other infrastructure needed to enable new development.

- **Red Line:** The Red Line is the Massachusetts Bay Transit Authority's (MBTA's) busiest rapid transit line. Large-scale system failures experienced in the winter of 2015 highlighted both the critical importance of the Red Line to the region's economy, and the maintenance challenges associated with operating a rapidly aging system. Significant improvements are required to bring the system into a state of good repair, expand capacity, and improve efficiency to enable future economic development around the stations. While there is limited precedent for using value capture to pay for state of good repair or other improvements to existing transit systems, Red Line service plays such a critical role in enabling investment and economic growth that this line may provide an opportunity for the Commonwealth to pioneer a new type of value capture strategy. This case study explores innovative approaches for using value capture to help pay for state of good repair and improvements, from negotiated developer contributions to a municipal contribution funded by special assessments, DIF, or another mechanism.

Continued on following page.

Value Capture Case Studies (Continued)

- **Green Line Extension (GLX):** This project would extend MBTA Green Line service into Somerville, Cambridge, and Medford. A significant amount of development is planned for development in future GLX station areas, much of which will only happen if the GLX is completed as planned. New development that is directly associated with the GLX (and is unlikely to occur in the absence of the transit project) is expected to generate $250 to $280 million in combined property tax revenues for Somerville, Cambridge, and Medford, and $399 to $431 million in state tax revenues over thirty years. This case study estimated the potential magnitude of value that could be raised by either dedicating a share of the incremental growth in local property tax revenues to the project, or negotiating development contributions to pay for local-serving infrastructure needs such as bicycle and pedestrian connections to the stations. The case study also explored the potential implementation challenges with capturing this value, especially given that construction of the GLX and many nearby development projects are already underway. This analysis helped inform negotiations among MassDOT and the cities of Somerville and Cambridge over an appropriate local financial contribution to support completion of the project.

Reflecting the fact that most of case study projects (with the exception of the GLX) are still in the early planning stages, there is uncertainty about the amount of value that the projects might generate for property owners, developers, and municipalities. Nevertheless, the five case studies helped highlight some of the opportunities and challenges associated with expanding the use of value capture in the Commonwealth. For example, Massachusetts law currently authorizes a variety of financing tools that can be used to capture value from individual development projects (such as the Allston Interchange project). However, new tools and approaches are required to expand the use of value capture for use in larger districts (such as the South Boston Waterfront), or to help fund transit corridors serving multiple jurisdictions within a region (such as the Red Line improvements, the Green Line Extension, or South Coast Rail). These and other findings from the case studies are discussed in more detail below.

Considerations for Implementing Value Capture

Value capture is not a "silver bullet" strategy that can be applied to every transportation or TOD project. In general, value capture is most likely to be successful when certain conditions are met. These conditions are discussed below and summarized in Figure 2. Note that value capture may still be successful in some cases that meet some, but not all, of the following conditions:

- **Strong real estate market with significant development potential:** Most value capture tools are designed to capture value from new development. As a result, value capture strategies are most likely to be successful in locations with relatively strong real estate markets where significant new development is expected. It is important to note that Massachusetts includes a wide range of communities characterized by very different economic conditions, from cities and towns in the Boston metro area that are experiencing rapid development and property value appreciation, to more economically challenged gateway cities and rural areas. Even along a single transit corridor (such as along the Red Line or the Green Line Extension) or within one jurisdiction, some neighborhoods may have booming real estate markets, while others may require major public investments or economic development incentives in order to attract private sector interest. Moreover, not every infrastructure project generates the same value for nearby properties. Some projects generate substantial additional value; others are much more modest.
- **Infrastructure investment that serves a limited number of jurisdictions:** Local governments typically have primary responsibility for implementing value capture tools – even in Massachusetts, where the state government plays a larger role in the direct provision and the funding and financing of infrastructure (including in the implementation of tools such as I-Cubed) compared to many other

states. Implementing a value capture strategy for projects that involve many municipalities (such as South Coast Rail, the Red Line, or the Green Line Extension) requires much more complex coordination among the different stakeholders, and individual municipalities may not see a clear value proposition in contributing to projects needed to serve an entire district or region. However, multi-jurisdiction projects, though complex to coordinate, provide clear regional benefits. Using value capture to finance regional-serving infrastructure will require creative approaches, and active involvement on the part of the Commonwealth.

- **Relatively limited number of property owners and strong private sector interest:** Many value capture tools require direct negotiations with or approval by affected property owners or developers. As a result, while value capture strategies may involve multiple property owners (for example, within a planning or development district), they are generally easiest to implement where there are limited number of property owners who strongly support a planned improvement and expect their properties or development projects to receive direct benefits. The Allston Interchange project is a good example of an infrastructure project that creates value for the private sector (in this case, by relocating a highway interchange and viaduct to free up land that would not otherwise be available for development, in a location where the market is likely to support significant development activity), involves a single property owner (Harvard University), and a relatively limited number of public agencies (the City of Boston and MassDOT).

- **Strong municipal finances:** Value capture tools often rely on the same sources of revenue – such as property tax – that local governments rely on to pay for other essential local services and infrastructure, including schools, parks, public safety, sidewalks and sewers. In the absence of any local sales or income tax, cities and towns in Massachusetts are particularly dependent on property tax revenues to fund local services and provide local infrastructure. Moreover, Proposition 2½ limits local governments' ability to increase property tax revenues and municipalities require state legislative authorization in order to enact new taxes or fees. The use of value capture transportation projects can be particularly challenging for municipalities with limited resources facing high levels of social need or other costly infrastructure investments, or when value capture strategies are viewed as important for providing other community benefits such as affordable housing.

- **Political support and municipal capacity:** Because value capture requires local governments, property owners, and/or developers to devote scarce resources to specific project, value capture will be most successful for projects where there is strong leadership and support for both the implementation of the project, and the use of value capture as an appropriate funding source. Implementing and administering value capture financing tools also requires considerable municipal staff expertise and capacity, and/or assistance from legal and financial consultants. This is an especially important consideration for smaller communities.

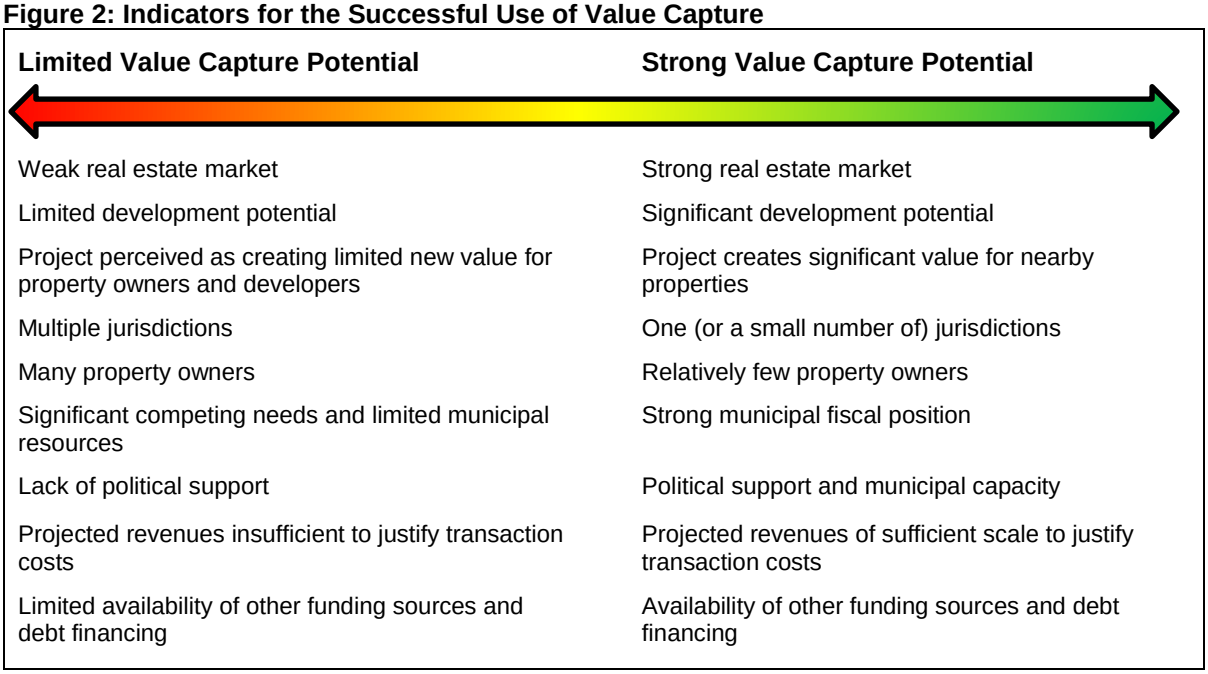
- **Scale:** Value capture strategies are time consuming and complex, and typically require the expertise of municipal bond financing experts, economic development experts, real estate appraisers, financial analysts, and planners. Projects must be of sufficient scale and offer significant potential for the public and private sectors in order to justify the time and effort involved in implementation.

- **Availability of other funding sources:** Value capture is typically just one of many funding sources included in the financing strategy for an infrastructure project.

- **Ability to secure debt:** One of the fundamental challenges for value capture strategies is the need to secure debt in advance of expected future increases in property values and development, in order to pay for upfront improvements. In Massachusetts, cities and towns rarely issue revenue bonds (i.e., bonds that are backed solely by a special, dedicated funding stream, such as revenues from a tax increment financing or special assessment district). Instead, most municipal projects are financed with general obligation bonds, meaning they are backed by the full faith and credit of the city or town. The

Commonwealth also sometimes issues revenue bonds to assist with local infrastructure financing – for example, through the I-Cubed program.

Figure 2: Indicators for the Successful Use of Value Capture



Common Uses of Value Capture in the U.S. and Massachusetts

Around the country, the most common use of property-based financing tools is for connectivity and other infrastructure improvements that serve either an individual development project, or a district encompassing multiple property owners where significant development is planned. These types of improvements are often well-suited for a value capture strategy because they are located within a single jurisdiction, and they can open up new development opportunities by addressing constraints on growth or improving access to transit stations and other amenities. Moreover, providing this type of infrastructure is typically the responsibility of local governments, creating a clear rationale for municipal officials to dedicate incremental property tax revenues or other resources to paying for these uses. Some value capture tools are also commonly used to pay for affordable housing and other community facilities.

In contrast, value capture tools are used relatively infrequently in the U.S. for transit and highway infrastructure. These types of projects tend to be more challenging to finance using value capture, because most value capture tools are implemented by individual municipalities, and may often be used only within small districts or single development projects. As a result, transportation projects that serve a geographically limited district within a single city – such as streetcars, infill stations, or highway on- or off-ramps – are more likely to utilize value capture strategies than projects that serve multiple neighborhoods or jurisdictions (such as a BRT, subway, or commuter rail line).

When value capture is used for transit, it is typically used for transit expansions and other major capital projects, rather than state of good repair improvements. As discussed in the Red Line case study, state of good repair and other improvements to existing transit systems often enhance the overall transit system, which may serve multiple jurisdictions and encompass a variety of real estate market contexts. Property owners and developers in one station area or district may be reluctant to pay for system-wide improvements, especially in the absence of a strategy for extracting contributions from other project beneficiaries. Moreover, some improvements to existing facilities may be considered maintenance, and the

use of some value capture tools are limited to major capital (as opposed to operating and maintenance) expenses.

Massachusetts is already using value capture to pay for transit, other transportation projects, and TOD. The value capture tools most commonly used for these purposes include negotiated development contributions, joint development, the Infrastructure Investment Incentive Program (I-Cubed), and District Improvement Financing (DIF). These tools are well designed to capture value from individual properties or development projects, such as the Allston Interchange project or from individual master planned developments within the South Boston Waterfront district.

However, most of the existing value capture tools authorized by the Commonwealth are not well-suited to capturing value from multiple properties or jurisdictions. Massachusetts has limited tools available to pay for infrastructure to serve a broader district (such as a shuttle or other district connectivity improvements needed in the South Boston Waterfront), let alone a corridor spanning multiple jurisdictions (such as the Red Line improvements, the Green Line Extension, or South Coast Rail).

Value Capture and Bus Rapid Transit

Bus Rapid Transit (BRT) is a type of bus-based transit system that typically combines dedicated bus lines with other characteristics such as off-board fare collection, platform boarding, and bus priority at intersections. These elements allow BRT systems to provide higher capacity and speed, and better service quality than regular bus service. The Boston metro area currently has one bus line, the Silver Line, that operates as a BRT in some segments, and the region is considering both improving service on the existing line and expanding the BRT network.

While value capture has been used to fund streetcars, commuter light rail stations, and a variety of other rail transit projects with characteristics similar to BRT, there are no known examples of value capture tools being used – either in the U.S. or internationally – to help fund BRT. Some Brazilian cities (including São Paulo and Curitiba) have established the legal framework to use value capture tools to pay for transit, but the programs have not been implemented to date and are not specific to BRT. However, recent research has found that BRT systems promote higher property values and rents, and attract new commercial and residential development. For example, a 2012 study of Boston's Silver Line found that a condominium unit located 100 feet away from a station was worth $45 per square foot more than one located 1,000 feet away from a station.[a] A study of 21 North American light rail and bus rapid transit lines found that BRT attracted significant new development – often more than comparable light rail corridors.[b]

These emerging findings suggest that there may be potential to use value capture tools to help pay for capital or operating costs of BRT projects, especially for BRT projects that involve a limited number of jurisdictions, serve areas with significant development potential, and offer major reductions in travel time and other transportation benefits compared to existing bus service. For example, , a BRT line that offers a clear value proposition for nearby property owners might be partially funded using a district-based property assessment, similar to streetcar projects in Portland and Seattle.

[a] Victoria Perk, "Land Use & Property Value Impacts of BRT" (5th National Bus Rapid Transit Conference, Las Vegas, NV, August 20, 2012), http://onlinepubs.trb.org/onlinepubs/conferences/2012/BRT/Perk.pdf.
[b] Walter Hook, Stephanie Lotshaw, and Annie Weinstock, "More Development for Your Transit Dollar: An Analysis of 21 North American Transit Corridors" (Institute for Transportation & Development Policy, September 2013), http://www.itdp.org/documents/ITDP_MORE_DEVELOPMENT_924.pdf.

Recommendations

As discussed above, the Commonwealth, local governments, and transit agencies in Massachusetts are already using value capture to pay for transit, other transportation projects, and other TOD-supportive infrastructure. However, opportunities exist to expand the use of value capture by adjusting existing tools, drawing on examples from other states, and considering innovative new approaches. In particular, the study identifies four ways in which Massachusetts laws, policies, and regulations could be changed in order to support broader use of value capture for transportation and TOD infrastructure. The recommendations are summarized below and discussed in more detail in Chapter VI of this report. It is important to note that while these recommendations could help facilitate the wider use of value capture in Massachusetts, value capture will not work as a funding source for every transportation project.

Recommendation #1: Clarify existing tools to facilitate their use for transit, transportation, and TOD.

Uncertainty about how some of Massachusetts' existing tools may be used is one factor limiting the broader use of value capture for transit, transportation, and TOD-supporting infrastructure. New state legislation, guidelines, or training could help resolve outstanding questions and facilitate the wider use of tools such as DIF, impact fees, and BIDs. Specific changes that the Commonwealth should consider to clarify existing tools include:

- 1A: Consider issuing guidelines and providing training for local assessors on the use of District Improvement Financing, especially as DIF relates to Proposition 2½.
- 1B: Clarify the authority that cities and towns have to impose impact fees.

Recommendation #2: Create new tools or adjust existing tools to allow for expanded use of value capture at the local district level.

Massachusetts already has a number of tools that are frequently used to pay for infrastructure needed to serve individual development projects, including negotiated contributions, I-Cubed, and DIF. However, unlike some other states, the Commonwealth does not currently have tools that are well-suited to paying for improvements that serve multiple properties within a larger planning area or district. In order to fill this gap, the Commonwealth can draw on the ways that other states use special assessment districts and tax increment financing tools, and/or consider expanding on the existing I-Cubed program so that it can be used at the district level. Specific changes that the Commonwealth should consider include:

- 2A: Reduce the property owner approval threshold for the Local Infrastructure Development Program, or create a new form of special assessment or taxing district that is subject to majority approval by property owners.
- 2B: Create a new Community Benefit District tool that may be used to fund transit operations and/or clarify that Business Improvement Districts may be used for this purpose.
- 2C: Consider amending the District Improvement Financing tool to allow the districts to capture incremental state tax revenues as well as local tax revenues for certain projects.
- 2D: Monitor the downtown Brockton DIF to determine whether other changes to state law could help expand the use of this tool for district-based financing.
- 2E: Consider changing the I-Cubed application process to make funding for TOD projects available earlier in the development process, and to expand use of the tool to larger districts.

Recommendation #3: Explore the creation of new value capture tools to fund transportation improvements that serve multiple jurisdictions.

In Massachusetts, there is growing interest in using value capture to help fund regional-serving transit projects such as the South Coast Rail, Green Line Extension, or improvements to the Red Line. These types of improvements are generally funded, built, and operated by the Commonwealth and serve multiple different neighborhoods with a wide range of real estate market conditions – and in many cases, multiple cities and towns.

Although precedents for using value capture at this scale exist (including the Dulles Corridor Metrorail Project in Northern Virginia, also known as the Silver Line Extension), examples are limited – in part because value capture tools are generally designed be implemented within just one jurisdiction, and often within a small district or for an individual development project. Adding to the challenge, lower-income communities with high levels of social need may find it much more difficult than wealthier communities to contribute new local revenues to pay for the cost of transit. Nevertheless, projects with limited value capture potential may still offer significant transportation, economic development, and environmental justice benefits for both local communities and the Commonwealth as a whole.

Given these challenges, the Commonwealth will need to explore innovative new solutions in order to use value capture to fund regional-serving transportation projects. In designing tools for this use, the Commonwealth will need to consider the appropriate source of revenue (for example, tax increment financing districts, local special assessment districts, or a citywide special assessment district or tax); the mechanism for municipal contributions to state projects; the incentives that municipalities will face in deciding whether to participate; and the potential risks and implications for debt financing associated with using value capture tools to contribute to major state projects. The SIFT tool proposed by Representative William Straus in the 2015-16 legislative session provides a good model for addressing these challenges. If this tool were adopted it would expand the ability to use tax increment financing for transportation improvements in Massachusetts. If this proposed legislation were modified to include an ability to capture state taxes – such as a portion of the sales tax – in addition to local revenue, it would provide even greater funding options to support future transportation projects throughout the Commonwealth.

Recommendation #4: Consider specifying modernization as a permitted use for certain value capture tools.

Investing in the repair and modernization of existing transit systems is a high priority for the Commonwealth. Although there are limited examples of value capture tools being used for this purpose across the country, a growing consensus around the importance of reinvesting in Massachusetts' transit and highway systems suggests an opportunity to use value capture tools for this purpose.

I. INTRODUCTION

Public investments in transit, highways, roads and other infrastructure generate value for nearby property owners. The term "value capture" refers to any strategy whereby a public agency "captures" a portion of the increased property values to help pay for the infrastructure itself. Around the country, commonly used value capture tools include special assessments and taxes, tax increment financing, various forms of developer contributions, and joint development or other public sector real estate transactions. The concept of value capture is increasingly discussed in the context of transportation finance, particularly as a means to fund new transit. In Massachusetts, value capture is being considered as one potential source that can be tapped to provide much-needed funding for a variety of state and local transportation projects.

The Metropolitan Area Planning Council (MAPC) and its project partners – including the City of Somerville, the Barr Foundation, and A Better City – commissioned the Strategic Economics consulting team (Strategic Economics and RKG Associates, Inc.) to evaluate Massachusetts' existing value capture tools and identify opportunities for expanding the use of value capture to pay for transit, other transportation projects, and infrastructure required to support transit-oriented development (TOD). The analysis focuses on the use of value capture for the types of projects that the Commonwealth and local governments are expected to prioritize over the next five to ten years (see text box, below). The study draws on examples from around the country, interviews with 35 state, regional, and local officials, and five case studies of transportation and TOD projects currently planned or underway in Massachusetts. Based on this research, the study recommends a number of ways in which Massachusetts laws, policies, and regulations could be changed in order to support broader use of value capture for transportation and TOD infrastructure.

HOW TO USE THIS REPORT

This report is intended to serve as a resource for state and local officials, transportation and TOD advocates, and others who are interested in expanding the use of value capture in Massachusetts. The report is divided into five main chapters, and includes two appendices with additional information:

- **Chapter II** provides an overview of the use of value capture to fund transportation and TOD projects in the U.S., including an introduction to different types of value capture tools, considerations for the successful use of value capture, and the most common uses of value capture across the country.
- **Chapter III** discusses the specific fiscal and governance issues that shape the use of value capture in the Commonwealth.
- **Chapter IV** evaluates the value capture tools that currently exist or have recently been proposed in Massachusetts. For each tool, the chapter describes the major requirements for approval, source of revenue, potential for bond financing, typical uses, barriers to increasing use for transportation and TOD, and additional resources and examples. The chapter also includes a matrix that summarizes the major strengths and weaknesses of each tool.
- **Chapter V** considers the potential for value capture through four case studies of transportation and TOD projects currently planned or underway in Massachusetts, including the Allston Interchange, South Boston Waterfront, South Coast Rail, and MBTA Red Line. The chapter also draws on the Green Line Extension case study (provided in Appendix A) to draw conclusions about the opportunities and challenges for using value capture in Massachusetts.
- **Chapter VI** recommends ways that Massachusetts laws, policies, and regulations could be changed in order to enable the broader use of value capture for transportation and TOD infrastructure.

- **Appendix A** provides a detailed case study of the potential use of value capture to help fund the Green Line Extension project.
- **Appendix B** lists the state, local, and regional officials, policy experts, developers, and other stakeholders who were interviewed for this study.
- **Appendix C** provides a list of value capture tools from other states that are mentioned in this report, along with links to applicable state enabling legislation.

Massachusetts' Infrastructure Needs

This study is focused on the potential use of value capture for the types of transportation projects that the Commonwealth and local governments are expected to prioritize over the next five to ten years. MAPC and Strategic Economics identified likely types of projects by reviewing of the Commonwealth's Five-Year Capital Investment Plan (CIP) for Fiscal Year 2017 - 2021 and interviewing state, regional, and local officials from around Massachusetts. In general, the Commonwealth's approach to capital planning in FY 2017 is focused on "maintaining and modernizing our existing assets and making targeted investments for the future." However, some long-standing transit capital expansion projects are expected to continue moving forward.

Based on state and local priorities, this study focuses on the following types of improvements:

- **Transit capital expansions:** Examples of projects that are underway or likely to proceed in the next five to ten years include construction of the Green Line Extension, planning and design work on the Knowledge Corridor commuter rail and South Coast Rail projects, new or improved bus rapid transit (BRT) in the Boston region, and new infill stations and multi-modal facilities to expand service on existing transit lines.
- **Transit state of good repair improvements:** State of good repair is a particularly high priority for the MBTA following major breakdowns in the system in the winter of 2015.
- **Capacity improvements to existing transit facilities:** This category includes improvements to existing systems that will allow for more frequent headways and accommodate increased ridership, such as the purchase of new vehicles for existing train lines, investment in state-of-the-art transit signals, or expanded platforms.
- **Highway capital projects:** While few if any investments in new highway lane miles are planned, potential projects include building new interchanges, tearing down outdated highway infrastructure, and building or replacing bridges.
- **Local investments needed to encourage transit-oriented development:** By focusing new development near transit, Massachusetts can help increase ridership and maximize the returns on the state's transit investments. Typically defined as a mix of compact housing, commercial, and other development located within walking distance of high-frequency rail or bus transit, TOD often requires significant up-front investments in infrastructure and community facilities, such as:
    - *Connectivity Improvements and Other Infrastructure to Support Development:* Investing in local streets, new or improved sidewalks, bicycle facilities, streetscape improvements (e.g., crosswalks, lighting, street furniture), or other infrastructure improvements (e.g., sewer, water, storm drain) in order to address infrastructure constraints, encourage private investment, and connect residents and workers to transit stations and other amenities.
    - *Affordable Housing and Other Community Facilities:* In addition to connectivity and other infrastructure improvements, successful TOD may require investing in the production or preservation of affordable housing to ensure that low- and moderate-income residents can take advantage of the benefits of transit access. Other community facilities, such as parks and open space, may also be required to make development feasible and/or improve local quality of life.

II. VALUE CAPTURE OVERVIEW

This chapter provides an overview of the use of value capture to pay for transit, other transportation, and TOD-related infrastructure across the U.S., and covers the following topics:

- Introduction to the types of value capture tools used around the country, including and best practice examples.
- Considerations for implementing value capture, including the typical role of different actors in value capture implementation, conditions for successful implementation, and potential tradeoffs such as social equity and competing funding needs.
- The extent to which value capture is used to pay for different types of projects in the U.S. today.
- The context for implementing value capture in Massachusetts.

VALUE CAPTURE TOOLS

Value capture tools consist of a variety of property-based financing mechanisms that are employed by the public sector. In theory, these tools are intended to directly capture the property value increases and other benefits generated by infrastructure investments. In many cases, however, value capture tools simply leverage the property value appreciation and new development that occurs around a new transit station or other infrastructure improvements in order to help pay for the initial investment; the amount of value captured is rarely directly related to the amount of value that a particular improvement creates.

Nationally, value capture tools generally fall into four categories: special assessments and taxes, tax increment financing (TIF), direct developer contributions (including development impact fees, negotiated developer contributions, and community benefits bonus programs), and public sector real estate transactions. These categories of tools are described briefly below, including best practice examples of how the tools have been used around the U.S. to pay for transportation and TOD-related improvements. Each tool description also includes a short discussion of the tool's availability in Massachusetts. Additional details regarding the tools available in Massachusetts are provided in Chapter IV of this report.

The Property Value and Development Impacts of Transit

A large body of research shows that property values are often higher within a quarter- to a half-mile of a transit, often by as much as 5 to 15 percent. The increased desirability of locations near transit can also help to attract additional real estate development. Based on the research, the impact of transit stations on property values and development is influenced by several factors, including:

- **Extent of the transit system and quality of service.** Transit has the greatest impact on property values when it significantly improves residents' access to employment, education, entertainment, and other destinations.[a] Studies have also shown that transit systems that provide frequent, convenient access to multiple employment centers or other important destinations are likely to attract more new development.[b]
- **Property type:** Some studies have found that multifamily residential and office property values benefit more from proximity to rail than single-family property values. For example, a study of the Metro system in Washington D.C. found that proximity to Metro increased property values by 7 percent for single-family residential, 9 percent for multifamily apartment buildings, and 9 percent for office properties.[c] A meta-study that combined the results from a number of research efforts concluded that the premium is generally higher for commercial properties within short distances of rail stations, but the impact on residential properties extends for greater distances.[d]
- **Local land use context and connectivity:** Neighborhood context also plays an important role in determining the value generated by transit, with higher premiums found in locations that offer good pedestrian connections, a mix of uses, and other neighborhood amenities. For example, a study of the Hiawatha Line in Minneapolis found that while properties on the west side of the alignment benefited from an accessibility premium, properties on the east side – which are separated from the line by a four-lane road and an industrial area – did not.[e]
- **Supportive land use policy:** Supportive public policy can help reinforce the value of transit-served locations for new, higher-intensity development by allowing higher densities (resulting in increased potential revenues) and reduced parking requirements (resulting in decreased construction costs).[f]

For a comprehensive literature review on the economic, property values, and fiscal benefits of transit investments, see Appendix A.

[a] Nancy Pindus, Howard Wial, and Harold Wolman, eds., *Urban and Regional Policy and Its Effects*, vol. 3 (Washington D.C.: Brookings Institution Press, 2010), http://www.brookings.edu/research/books/2010/urbanandregionalpolicyanditseffectsvolume3; Keith Wardrip, "Public Transit's Impact on Housing Costs: A Review of the Literature," Insights from Housing Policy Research (Center for Housing Policy, August 2011), http://www.nhc.org/media/documents/TransitImpactonHsgCostsfinal_-_Aug_10_20111.pdf.
[b] Nadine Fogarty and Mason Austin, "Rails to Real Estate: Development Patterns along Three New Transit Lines" (Center for Transit-Oriented Development, March 2011), http://www.ctod.org/portal/node/2302; Nadine Fogarty et al., "Downtowns, Greenfields, and Places in Between: Promoting Development Near Transit" (Center for Transit-Oriented Development, May 2013), http://ctod.org/pdfs/20130528_DntnsGreenfieldsEtc.FINAL.pdf.
[c] Washington Metropolitan Area Transit Authority, "Making the Case for Transit: WMATA Regional Benefits of Transit," November 2011, http://www.wmata.com/about_metro/makingthecase.cfm.
[d] Ghebreegziabiher Debrezion, Eric Pels, and Piet Rietveld, "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis," *Journal of Real Estate Finance and Economics* 35, no. 2 (June 2007): 161–80.
[e] Edward G. Goetz et al., "The Hiawatha Line: Impacts on Land Use and Residential Housing Value" (Center for Transportation Studies, University of Minnesota, February 2010), http://www.cts.umn.edu/Publications/ResearchReports/.
[f] Nadine Fogarty et al., "Capturing the Value of Transit" (Center for Transit Oriented Development, 2008).

SPECIAL ASSESSMENT AND TAXING DISTRICTS

A special assessments or taxing district is an area within which a special tax is levied on properties that will benefit from a public investment. Depending on the state, assessment districts may be used to finance capital costs and/or ongoing operating costs. Assessments typically require at least a majority vote of affected property owners in order to be implemented. In most states, the amount of the assessment must be directly

related to the expected benefit to the property owner. In order to meet this requirement, many districts use a "tiered" assessment rate that reflects the greater benefits expected to accrue to properties closer to the infrastructure improvement, and the lesser benefits expected to accrue to those further away. Depending on the type of special assessment district, revenues may be used either on a "pay-as-you-go" basis (where an improvement is made only once sufficient revenue is collected to cover the entire cost of the improvement), or to secure the issuance of debt (usually in the form of bonds) to pay for improvements immediately. Indeed, access to long-term, non-recourse,[1] tax-exempt financing can be a major benefit of an assessment district from a developer's perspective, while municipalities can benefit by shifting the burden of financing infrastructure to the private sector.

Because most states require a property owner vote to enact an assessment (or at least, provide an opportunity for property owners to protest a proposed assessment), assessment districts are typically easier to implement in places with one or a limited number of major property owners who will see a direct benefit from an infrastructure improvement. As a result, assessment districts are most commonly used to pay for local-serving infrastructure that will enable a specific development (or redevelopment) project. The Bay Meadows project in San Mateo, California (see text box below) is a typical example of how a special assessment district might be used to facilitate a TOD project by providing the streets, sewers, sidewalks, and other public infrastructure required to make the development possible.

However, assessment districts are increasingly being used to finance transit projects that benefit multiple properties. In particular, assessment districts have been used successfully to assist with the financing of several streetcar projects, including the Portland, Oregon Streetcar (20 percent of total costs) and the South Lake Union Streetcar in Seattle, Washington (nearly 50 percent of total costs). An assessment district is also being used to assist in funding the first phase of the Dulles Metrorail project in Fairfax and Loudoun Counties, Virginia. In Washington D.C., property owners contributed to a special assessment district that funded 23 percent of the NoMA Gallaudet University Metrorail station, an infill station added to an existing transit line.

In Massachusetts, local governments are authorized to form several types of special assessment districts, including Local Infrastructure Development Program districts, Business Improvement Districts, and betterments. The Infrastructure Investment Incentive Program (I-Cubed) also includes a special assessment district component.[2] As discussed below, most of these tools are used infrequently, and none have been used to date to help pay for major transportation or TOD projects.

[1] Non-recourse financing means that if the developer defaults on special district bonds, the developer is not personally liable; instead, the lenders' only recourse is typically to foreclose on the property.

[2] I-Cubed requires that municipalities and developers who receive funding through program established a special assessment and a reserve fund to cover any shortfalls in Commonwealth tax revenues.

Bay Meadows Transit-Oriented Development: San Mateo, California

Bay Meadows is a former horse race track located adjacent to commuter rail station in San Mateo, California. Once fully redeveloped, Bay Meadows will include up to 1,500 housing units, a high school, 1.5 million square feet of commercial office and retail space, and 15 acres of public space.

In 2008, the San Mateo City Council approved the creation of a special tax district that covers the entirety of the 83-acre site and enables the city to raise as much as $92 million in bond revenue to fund public infrastructure (e.g. streets, sewers, and sidewalks) to support the Bay Meadows project. Under California law, two-thirds approval of the landowners within the district (in this case, a single property owner) was also required to create the special taxing district. The tax runs with the land, meaning that homeowners and other property owners who purchase property within Bay Meadows must pay the special tax in addition to their regular property taxes. The amount of the tax is based on the square footage of a property. For example, an owner of a 2,300-square-foot home pays an annual special tax of $5,288, or $2.29 per square foot. The maximum annual special tax on commercial and retail property is $1.77 per square foot and $0.52 per square feet, respectively. Both the residential and non-residential special tax rates are subject to a 2 percent maximum annual increase until the CFD expires in 2061.

Sources: City of San Mateo (2011). "Bay Meadows CFD Administrative Report;" City of San Mateo. "Community Facilities District No. 2008-1 Fiscal Year 2015-2016 Special Tax Requirement."

TAX INCREMENT FINANCING

Tax increment financing (TIF) is a mechanism that allows the public sector to "capture" growth in property tax (or sometimes sales tax) resulting from new development and increasing property values. Depending on the state, TIF can be used to enable individual development projects, or to facilitate development within a district comprised of multiple properties. Some form of TIF is available in every state except Arizona, and the tool works differently according to the laws in each state. Typically, however, it is geared to capture the increase in property tax revenues that occur within a designated area, over and above a base amount. Tax increment is collected for a set period (usually between 15 and 30 years), and can either be used on a "pay as you go" basis to pay for improvements over time as the revenues are collected, or can be bonded against to provide a source of revenue to pay for up-front improvements necessary for development.

The purpose of TIF is usually to encourage new development and to assist in revitalizing distressed neighborhoods, for example by paying for environmental clean-up, land assembly, local infrastructure, or affordable housing. However, in some states, TIF is used for transit or other transportation funding. The City of Chicago has used TIF to pay for a number of transit projects. In Texas, local government are authorized to use tax increment financing districts known as Transportation Reinvestment Zones (TRZs) to help pay for transportation improvements. Pennsylvania passed Transit Revitalization Investment District (TRID) legislation in 2004, intended to foster integrated planning and implementation strategies for transit station areas. Within a TRID, tax increment financing may be used to fund both transit and other station area needs such as local infrastructure and affordable housing.

In Massachusetts, the term "tax increment financing" is typically used to refer to tax abatements provided to developers or employers in order to support economic development. The District Improvement Financing (DIF) program is a more traditional form of TIF, in that it is intended to capture incremental growth in municipal property tax revenues in order to fund public improvements. The Commonwealth also has a unique program called the Infrastructure Investment Incentive Program (I-Cubed) that among other features, captures growth in state tax revenues to help finance local infrastructure improvements intended

to support economic development. In the 2015-2016 legislative session, the state legislature considered creating a new type of district, called Supplemental Infrastructure Financing for Transportation (SIFT), that would capture local property tax increments specifically for transportation projects, but this legislation did not become law.

DEVELOPER CONTRIBUTIONS

In many municipalities, developers contribute directly to the provision of infrastructure and community facilities. Some of the most common tools for requiring or incentivizing development contributions include impact fees, negotiated developer contributions, and community benefits or density bonus programs. Each of these tools is described below. Note that in Massachusetts, there are significant legal barriers that limit the use of impact fees, although past state legislation has sought to expand the use of this tool. Negotiated developer contributions and density bonus programs are more frequently used in the Commonwealth.

- **Development Impact Fees:** Development impact fees are one-time fees assessed on new development within a jurisdiction as a means to defray the cost to the jurisdiction of expanding and extending public services to the development. These fees are charged to mitigate impacts resulting from development activity, and cannot be used to fund services or address existing infrastructure deficiencies (i.e., repair or maintenance of existing infrastructure). Impact fees generally do not require voter or property owner approval, but must be adopted based on findings of a "nexus" (or reasonable relationship) between the development paying the fee, the size of the fee, and the use of fee revenues. Because impact fees are dependent on new development projects, they are not usually consistent or predictable enough to serve as security for the issuance of bonds.

  Many jurisdictions have transportation impact fees that include an allocation for transportation improvements; however, most are focused on roadways. Broward County, Florida, and San Francisco, California use impact fees to pay for transit service. A brief discussion of the Transit Sustainability Fee in San Francisco is included below.

- **Negotiated Developer Contributions:** In some cases, cities may choose to negotiate directly with developers in order to obtain desired improvements in exchange for development rights. A negotiated development contribution may take the form of an in-kind improvement built and paid for directly by the developer, or a financial contribution to a project that a city is constructing. The extent to which a development project contributes to the provision of infrastructure or other public improvements depends on the results of the negotiation, and is affected by the projected profitability of the development project (which in turn depends on construction costs, market prices, lot size and configuration, parking requirements, etc.). Negotiated agreements are typically used by cities to pay for local-serving infrastructure like affordable housing, open space, or street or sidewalk improvements, but can also be implemented by other agencies with authority over development.

- **Density Bonus Programs:** Under a density bonus program (also known as a community benefits bonus program), development is eligible for a pre-defined increase in density or floor area ratio (FAR) in exchange for providing public benefits. Depending on the program, the developer may select the public benefits to be provided from a list of improvements and build the improvements directly, either on- or off-site. Alternatively, the developer may contribute funding at a pre-determined, per-square-foot price which the city then uses to pay for district-wide improvements. Different levels of density or FAR may be available in exchange for providing additional public benefits. Compared to negotiated developer contributions, a density bonus programs can create certainty and save time for both the city and the developer.

In general, density bonus programs are used to pay for local-serving infrastructure such as affordable housing, parks, community facilities, or local street improvements. For example, the City of San Diego's FAR Bonus Payment program collects a dollar amount per square foot of bonus density, up to a specified maximum density. The payments go into a fund that is used for parks and local infrastructure improvements.

Transportation Sustainability Fee: San Francisco, California

San Francisco's Transportation Sustainability Fee (TSF) is a developer impact fee intended to mitigate the impact of new development on transit. Adopted by the San Francisco Board of Supervisors in December 2015, the TSF is projected to pay for $1.2 billion ($38 million annually) in transportation improvements over the next 30 years. The TSF can fund transportation projects such as expanding bikes lanes, enhancing intersections and sidewalks, and upgrading and purchasing bus and train cars for the San Francisco Municipal Transit Agency (the local transit operator, which is also a City agency).

In order to determine the rates, the city commissioned two studies, a nexus study and an economic feasibility analysis, to test a range of fees based on demands on the transportation system generated by development. The TSF applies citywide to new commercial development, market-rate residential developments with more than 20 units, and certain large institutions. Affordable housing developments, subsidized middle income housing, market rate housing with 20 units or less, and most nonprofit developments are exempt from the fee. The fee is $18.04 per gross square foot for small commercial projects, $19.04 per gross square foot on large commercial developments, $7.74 per square foot for residential developments between 20 and 100 units, and $8.74 per square foot for residential developments over 100 units.

Sources: San Francisco Planning Department (2015). "Transportation Sustainability Fee Fact Sheet." http://www.sf-planning.org/ftp/files/plans-and-programs/emerging_issues/tsp/tsp_TSF_Fact_Sheet_072115.pdf; San Francisco Planning Department (2016). "San Francisco Citywide Development Impact Fee Register." http://default.sfplanning.org/administration/Master_Impact_Fee_Schedule_2016_DBI_Register-040416.pdf.

PUBLIC SECTOR REAL ESTATE TRANSACTIONS

Public sector real estate strategies include a variety of transaction types involving publicly-owned land or facilities. Such strategies can include the sale or ground lease of land, sale of "air rights," or other type of development project on publicly-owned land. Joint development, one type of real estate strategy, generally refers to a real estate development project that involves a cooperative arrangement between a private entity and a transit agency. Joint development arrangements can take a number of forms, including sale or ground lease of agency-owned land or air rights for specific types of development, or joint construction of a transit station or other public facility. Because transit agencies often have significant land holdings – but do not typically have the ability to impose taxes or fees, or impose conditions of approval on new development projects – joint development is one of the few value capture mechanisms that is commonly employed directly by transit agencies. Other ways that transit agencies and other public agencies can leverage their real estate assets include concessions (i.e., negotiating deals with private vendors to operate on public land) and advertising.

The MBTA has had extensive joint development and concessions programs for many years, while MassDOT has a smaller real estate program focused on landholdings in the Boston metro area.

Leveraging Multiple Funding Sources: Denver Union Station, Colorado

Most infrastructure and TOD projects require multiple different funding and financing sources. Denver Union Station is an example of a complex project that involved multiple funding sources – including the use of two different value capture tools – as well as collaboration between multiple public and private partners. Project planning began in 2001, when four project partners – the City and County of Denver, the Colorado Department of Transportation, the Regional Transportation District (RTD, the Denver region's transit agency), and the Denver Regional Council of Government – signed an intergovernmental agreement to consider redevelopment options for the historic Union Station site in lower Downtown Denver. RTD purchased the site, and the project partners jointly sponsored the creation of a master plan for the site. In the mid-2000s, the City and County of Denver created the Denver Union Station Project Authority (DUSPA) to manage financing, construction, operations, and maintenance of the station, and the project partners selected the Union Station Neighborhood Company as the private master developer.

The Denver Union Station Master Plan envisioned transforming the Union Station building, adjacent rail lines, streets, and vacant parcels into an intermodal station serving commuter rail, light rail, and regional bus lines, surrounded by a TOD district including 280,000 square feet of residential development, 70,000 square feet of retail, and 1 million square feet of office and hotel development. The transit elements alone were projected to cost approximately $500 million. The project partners raised funding from a variety of federal, state, and local sources. Major financing sources included $300 million in low-interest loans through the federal Railroad Rehabilitation and Improvement Financing (RRIF) and Transportation Infrastructure Financing and Innovation Act (TIFIA) programs. The TIFIA loan will be repaid by RTD, using revenues from a regional sales tax measure (FasTracks) that voters approved in 2004. The RRIF loan will be repaid over 30 years by a TIF district that encompasses 40 acres around Union Station, a special assessment district, and a local hotel tax. Because TIF revenues are speculative, the City and County of Denver agreed to appropriate up to $8 million a year from the city general fund if TIF revenues fall short. In addition to these sources, other funding sources included land sales and other project revenues and various federal grants.

Construction of the project began in 2010. Most of the transit elements, including restoration of the historic station itself, were completed in 2014. Commuter rail service will begin in 2016. In the meantime, private development has transformed the blocks around the station into a thriving, mixed-use extension of Downtown.

Source: U.S. Environmental Protection Agency, Infrastructure Financing Options for Transit-Oriented Development, January 2013, https://www.epa.gov/smartgrowth/infrastructure-financing-options-transit-oriented-development.

CONSIDERATIONS FOR IMPLEMENTING VALUE CAPTURE STRATEGIES

Value capture is not a "silver bullet" strategy that can be applied to every transportation or TOD project. Evaluating the potential use of value capture for a given project requires understanding the different actors involved and their likely roles, assessing whether the project meets the conditions required for successful implementation of value capture tools, and weighing potential tradeoffs such as social equity concerns and competing needs for funding. These considerations for implementation are discussed below.

ROLES OF DIFFERENT ENTITIES

Local governments (cities, towns, or counties) are the primary entities involved in the implementation of most value capture tools. This reflects the fact that local governments typically have the primary responsibility for collecting and allocating property taxes and fees (within the framework established by

the state), as well as for entitling new development projects and building and maintaining local-serving infrastructure.

While local governments are primarily responsible for implementing value capture, **state** legislative authority is required to enable the use of most value capture tools, including assessment districts, TIF, and impact fees. The laws governing the use of value capture mechanisms vary from state to state. Beyond enabling local governments to utilize specific tools, most states have a limited role in the actual implementation of value capture strategies.

Although value capture is often discussed in the context of new transit investments, most **transit agencies** do not have the taxing and fee-charging authority required to implement value capture tools. However, a primary actor in the implementation of joint development is the transit agency that owns the property to be developed. Transit agencies may also work with local governments to implement value capture tools to fund transit. One common mechanism for this type inter-jurisdictional cooperation is a **joint powers authority** (JPA). A JPA is a governmental or quasi-governmental entity involving two or more public authorities that can be charged with overall management and financial responsibility for projects determined to be of regional need and significance. Although JPAs have no independent taxing power, certain powers of the member authorities can be conferred upon a JPA.

Finally, most value capture strategies require active support and participation from the **private sector**, including property owners and real estate developers. For instance, assessment districts typically require support from local property owners or voters (who, depending on the state, may need to petition a municipality to be assessed, may be asked to vote to approve formation of a district, or may be given the opportunity to veto formation through a majority protest process). In other cases, value capture strategies involve direct participation by real estate developers and investors.

CONDITIONS FOR THE SUCCESSFUL USE OF VALUE CAPTURE

In general, value capture is most likely to be successful when the following conditions are met:

- **Strong real estate market with significant development potential:** Most value capture tools are designed to capture value from new development. As a result, value capture strategies are most likely to be successful in locations with relatively strong real estate markets where significant new development is expected, and where development remains feasible even with a value capture strategy in place.
- **Infrastructure investment that creates significant value:** Not every infrastructure project generates the same value for nearby properties. For example, transit investments that significantly improve access to major destinations such as employment centers are expected to generate higher property values and attract new development, especially when they are located in areas where there is already a strong real estate market. Other factors that affect the value that a particular transit investment might create include the level of existing congestion in the corridor or district, the travel time improvement associated with the project, and ease with which nearby residents and workers can access transit stations. The value created by other types of projects – such as highway, sewer, or water improvements – must also be evaluated based on the specific land use and real estate market context.
- **A limited number of jurisdictions:** As discussed above, local governments typically have primary responsibility for implementing value capture tools. As a result, most tools are designed to be deployed within a single jurisdiction, and in some cases only within relatively small districts or single projects. Transportation projects that pass through multiple jurisdictions are therefore more challenging locations for value capture.

- **Relatively limited number of property owners and strong private sector interest:** Many value capture tools require direct negotiations with or approval by affected property owners or developers. As a result, while value capture strategies may involve multiple property owners (for example, within a planning or development district), they are generally easiest to implement where there are limited number of property owners who strongly support a planned improvement and expect their properties or development projects to receive direct benefits. The private sector must see a clear value proposition in contributing to an infrastructure project for implementation to be successful, both because most value capture tools tend to rely on new development to generate revenues, and because property owner, developer, and/or voter approval is often required to implement the tools.
- **Political support and municipal capacity:** Because value capture requires local governments, property owners, and/or developers to devote scarce resources to specific project, value capture will be most successful for projects where there is strong leadership and support for both the implementation of the project, and the use of value capture as an appropriate funding source. Implementing and administering value capture financing tools also requires considerable municipal staff expertise and capacity, and/or assistance from legal and financial consultants. This is an especially important consideration for smaller communities.
- **Scale:** Value capture strategies can be time consuming and complex, and typically require the expertise of municipal bond financing experts, economic development experts, real estate appraisers, financial analysts, and planners. Projects must be of sufficient scale and offer significant potential for the public and private sectors in order to justify the time and effort involved in implementation. The amount of expected revenue that warrants pursuing a value capture strategy varies from project to project, but it is important to consider the potential scale of revenue versus the effort required early in the process of establishing a financing strategy.
- **Availability of other funding sources:** Value capture is typically just one of many funding sources used to pay for infrastructure. For example, a 2010 survey of 55 transit agencies conducted by the Government Accountability Office (GAO) found that for the sample of completed projects included in the report, value capture was used to fund between 4 and 47 percent of total project costs.[3]
- **Ability to secure debt:** One of the fundamental challenges for value capture strategies is the need to secure debt in advance of expected future increases in property values and development, in order to pay for upfront improvements. The ability to issue debt based on anticipated revenues (revenue bonds) from increases in property values or development varies according to state and local laws. Where it is difficult to predict future development or property value increases or there is limited precedent for issuing revenue bonds backed by development, obtaining debt financing can be particularly challenging unless the public sector provides strong financial support (for example, by securing the bond with the full faith and credit of the public agency).

SOCIAL EQUITY AND COMPETING MUNICIPAL FUNDING NEEDS

Because value capture strategies are most likely to be successful in cities and neighborhoods with stronger real estate markets, it is important to consider social equity when they are implemented. A policy that promotes value capture by encouraging transportation investments in stronger market locations runs the risk of limiting investments in low-income neighborhoods that might in fact benefit the most from investment. Similarly, value capture strategies have the potential to encourage land use decisions that are designed to maximize value, at the expense of other uses desired by the community. Rising property values

[3] U.S. Government Accountability Office, "Public Transportation: Federal Role in Value Capture Strategies for Transit Is Limited, but Additional Guidance Could Help Clarify Policies" (Washington D.C., July 2010), http://www.gao.gov/products/GAO-10-781.

and new development can also raise concerns about loss of housing affordability and displacement of existing residents.

Furthermore, it is important to keep in mind that value capture tools often rely on the same sources of revenue – such as property tax – that local governments rely on to pay for other local services and infrastructure, including schools, parks, sidewalks and sewers. The use of value capture for regional-serving improvements, such as to pay for transit or other major transportation investments, can be challenging when local communities need other costly investments, or when value capture strategies are viewed as important for providing other community benefits such as affordable housing. Moreover, not all local communities start the process with the same level of resources. Lower-income communities with high levels of social need may find it much more difficult than wealthier communities to contribute new local revenues to pay for the cost of regional-serving improvements.

At the same time, however, use of value capture does not inevitably result in inequitable outcomes. For example, to the extent that value capture strategies free up other funding sources, they can expand the total amount of funding available to all neighborhoods. All of these factors must be taken into account as the Commonwealth develops an equitable plan to take advantage of value capture, while protecting the critical needs of local communities and neighborhoods.

USE OF VALUE CAPTURE IN THE U.S.

Value capture tools are more frequently used for some types of projects than for others. Figure II-1 summarizes the frequency with which each type of value capture tool is used for the different types of infrastructure and community facilities projects that are the focus of this study. Key findings about the use of value capture for different types of projects are discussed below. In addition to describing the ways that value capture is most typically used, this section also includes a discussion of the potential to use value capture to help pay for bus rapid transit (BRT) – an issue of particular interest in the Boston region.

The most frequent use of value capture mechanisms is to finance connectivity and other infrastructure improvements. These types of improvements – such as streets, sidewalks and bike lines, streetscape and storm drain improvements – are often well-suited for a value capture strategy, because they can open up new development opportunities by addressing specific infrastructure needs, and/or create significant value for development by improving access to transit stations and other amenities. Moreover, providing this type of infrastructure is typically the responsibility of local governments, creating a clear rationale for municipal officials to dedicate incremental property tax revenues or other resources to paying for these uses.

Some value capture tools are also commonly used to pay for affordable housing and other community facilities. For example, local governments often dedicate a share of revenues from tax-increment financing to help pay for the production and/or preservation of low- and moderate-income households, or target TIF to incentivize development that includes affordable units. Many municipalities also incentivize or require developers to either build or contribute funding to the production of affordable housing and other community facilities, through tools such as negotiated developer contributions, density bonus programs, and (in some states) development impact fees. Finally, transit agencies and other public sector owners of real estate may require developers to include affordable housing in their projects as part of a sale, ground lease, or joint development deal.

Figure II-1: Common Uses of Value Capture Tools in the U.S.

Mechanism	Definition	Frequency of Use: Transit Capital Expansions	Transit State of Good Repair Improvements	Capacity Improvements to Existing Transit Facilities	Highway Capital Projects	Connectivity and Other Infrastructure Improvements	Affordable Housing & Community Facilities
Special assessment district	An additional assessment or tax on properties or businesses within a specific district or jurisdiction	Occasional			Occasional	Common	Occasional
Tax increment financing	Diversion of growth in tax revenues generated within a district (usually property tax)	Occasional			Occasional	Common	Common
Development impact fee	A one-time fee assessed on new development to offset the cost of infrastructure needs generated by development	Occasional			Occasional	Common	Occasional
Negotiated development contributions	Direct provision of or payment for public improvements by a developer in conjunction with a development project					Common	Common
Density bonus program	A zoning tool that allows developers to build to a higher density or height in exchange for provision of community benefits					Common	Common
Public sector real estate transaction	Revenues generated through sale, ground lease joint development, or concessions on publicly-owned land or air rights	Common	Common	Common		Common	Occasional

Key: Common; Occasional; Rare

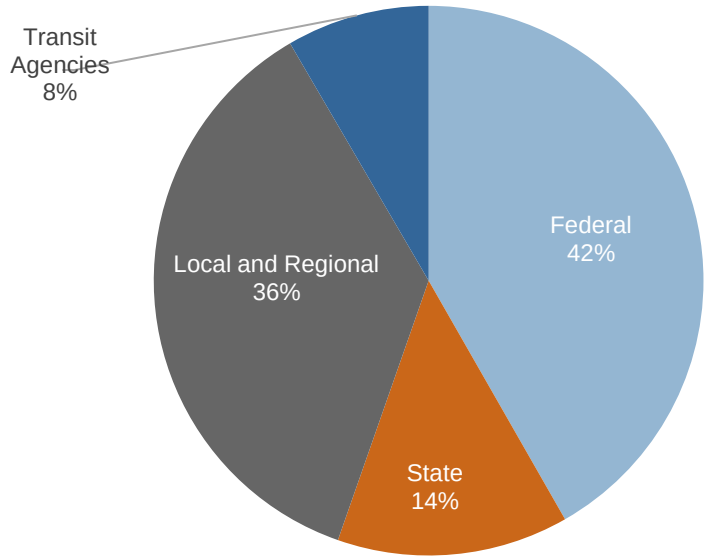
Source: Strategic Economics.

While transit capital projects often rely in part on local and/or regional funding sources, value capture tools are used for transit infrastructure relatively infrequently. Data on the actual use of value capture for transit are limited, but the available information suggests that value capture tools are not widely used for this purpose in the U.S. The National Transit Database (NTD), a national survey of transit projects, provides a breakdown of funding sources. Although the NTD does not report specifically about value capture mechanisms, the 2014 survey found that 36 percent of total funding for transit capital projects came from local and regional sources, including contributions from general revenues and dedicated funding sources such as countywide sales taxes or vehicle registration fees dedicated to transportation. Another 8 percent came directly from transit agencies (Figure II-2). In 2009 (the last year for which data on specific funding sources were available), local property and other types of taxes that could potentially be considered "value capture" accounted for less than 3 percent of the local and regional sources used for transit capital projects.

In 2010, the Government Accountability Office (GAO) released a value capture study that included a survey of 55 transit agencies.[4] According to the GAO study, value capture strategies, defined in that report as joint development, special assessments, tax increment financing, and development impact fees, have not been widely used as a source of funding for transit. The GAO reported that joint development was the most commonly used value capture strategy. Fewer than half of the 55 transit agencies included in the GAO survey reported using one of the other value capture strategies to fund or finance transit projects. After joint development, the development impact fee was the next most commonly used strategy, followed by special assessments and then tax increment financing.

The results of the GAO report and NTD data are not surprising. As discussed above, transit projects must compete for scarce resources with many competing interests, including other station area improvements. Moreover, most value capture tools can only be implemented within a single jurisdiction, and often only within small districts or single projects. As a result, projects that serve a geographically limited area within a single city – such as streetcars and infill stations – are more likely to utilize value capture strategies.

Figure II-2: Total Transit Capital Funds in the U.S. by Source, 2014



Sources: Federal Transit Administration, National Transit Database, (TS1.3 - Capital Funding Time-Series), 2014.

[4] Ibid.

When value capture is used for transit, it is typically used for transit expansions and other major capital projects, rather than maintenance, repair, service upgrades, or improvements that enhance the efficiency of existing transit systems. Major capital projects that result in the introduction of service to new areas provide a clear value proposition for property owners and developers. In contrast, it can be more difficult to make the case that property owners or developers should pay additional fees or taxes in order to reinvest in an existing system that serves the community as a whole. Moreover, some value capture tools have specific requirements that restrict their use to major capital projects. For example, impact fees can only be used to pay for capital improvements that mitigate the impacts of new development, and may not be used to address existing deficiencies or pay for ongoing operating expenses. Joint development (a type of public sector real estate transaction) is the one tool that is commonly used to support operations and maintenance; in many cases, transit agencies use the revenues from joint development deals to support general operations, although revenues from joint development are typically relatively small compared to other sources.

Value capture is also a relatively uncommon funding source for highway infrastructure. While value capture is often used to help pay for local street and road improvements, use of the tool for highway projects appears to be more limited. According to data from the Federal Highway Administration, local government sources accounted for just 2 percent of total funding for state highway projects in 2012.[5] A study by the National Cooperative Highway Research Program (NCHRP)[6] was able to identify some examples from across the country in which special assessment districts and impact fees were used to pay for highway capital projects. In Texas, Transportation Reinvestment Zones, a form of tax increment financing, is sometimes used for this purpose as well. The NCHRP also identified a small handful of examples in which negotiated developer exactions or air rights development were used for highway projects. However, there do not appear to be any more comprehensive studies that have attempted to document the use of value capture tools for highway improvements.

[5] As cited in: National Cooperative Highway Research Program, "Best Practices to Enhance the Transportation-Land Use Connection in the Rural United States," Transportation Research Board of the National Academies, 2007, http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_582a.pdf.
[6] Ibid.

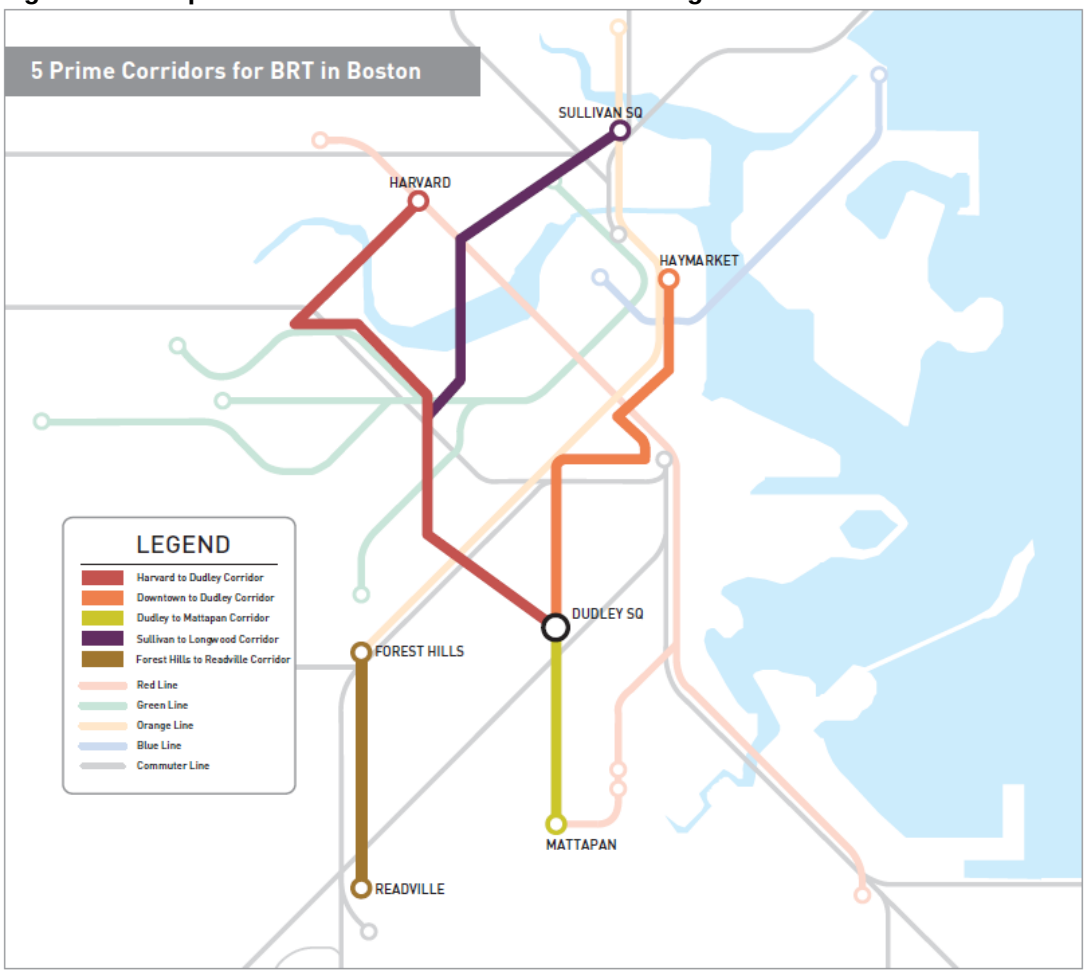
BRT AND VALUE CAPTURE

This section explores the potential to use value capture strategies to fund new bus rapid transit (BRT) lines and/or help upgrade existing bus lines to include BRT features. There are no known examples of value capture tools being used – either in the U.S. or internationally – to help fund BRT.[7] However, there is significant interest in Boston and other regions in using value capture tools to help pay for BRT projects.

BRT is a type of bus-based transit system that typically combines dedicated bus lines with other characteristics such as off-board fare collection, platform boarding, and bus priority at intersections. These elements allow BRT systems to provide greater efficiency, speed, and better service quality than regular bus service.[8] The Boston metro area currently has one bus line, the Silver Line, that operates as a BRT in some segments, and the region is considering both improving service on the existing line and expanding the BRT network. For example, a recent study by the Greater Boston BRT Study Group identified five potential BRT corridors where there is additional demand for transit ridership, potential for transit-oriented development (TOD), and where BRT would result in significantly reduced travel times (see Figures II-3 and II-4).[9] Several other studies have investigated potential options for upgrading Boston's existing bus lines – such as stop consolidation, curb extension, two-door boarding, and restricted or exclusive bus lanes – that would fall short of the commonly accepted BRT standard but could help optimize travel times.[10] While some Brazilian cities (including São Paulo and Curitiba) have established the legal framework to use value capture tools to pay for transit, the programs have not been implemented to date and are not specific to BRT.[11] However, BRT systems have been shown to increase property values and rents and attract new development, suggesting that there may be significant potential to use value capture tools for BRT projects in the future.

[7] Based on literature review and correspondence with ITDP staff (Danielle Hoppe, Active Transportation and TDM Manager, and Iuri Moura, Urban Development Manager), July 2016.
[8] Institute for Transportation and Development Policy (ITDP), *The BRT Standard*, 2016, https://www.itdp.org/wp-content/uploads/2014/07/BRT2016-REV7.75.pdf
[9] The Greater Boston BRT Study Group, *Better Rapid Transit for Greater Boston: The Potential for Gold Standard Bus Rapid Transit Across the Metropolitan Area*, Spring 2015, http://www.bostonbrt.org/the-brt-report/.
[10] For example: A Better City, "Surface Transportation Optimization and Bus Priority Measures, The City of Boston Context," March 2013, http://www.abettercity.org/docs/Surface%20Transportation%20Optimization%20and%20Bus%20Priority%20Measures%20Final.pdf; A Better City, "Bus Priority Measures Corridor Case Study: Washington Street, Belgrade Avenue and Centre Street," March 2014, http://www.abettercity.org/docs/Bus%20Priority%20Measures%20Corridor%20Case%20Study%20Final.pdf.
[11] Based on correspondence with ITDP staff, July 2016.

Figure II-3: Proposed New BRT Lines in the Boston Region



Source: The Greater Boston BRT Study Group, Spring 2015.

Figure II-4: Jurisdictions, Corridor Length, and Travel Time Savings for Proposed BRT Lines

Proposed BRT Line	Jurisdictions	Corridor Length	Time Savings (Minutes)	Time Savings (Percent)
Downtown to Dudley Corridor (enhancement to existing Silver Line)	Boston	3 miles	10 minutes	45 percent
Dudley to Mattapan Corridor	Boston	4.5 miles	10 minutes	33.7 percent
Forest Hills to Readville Corridor	Boston	4 miles	6 minutes	27.8 percent
Harvard to Dudley Corridor	Boston, Cambridge	6 miles	24 minutes	42 percent
Sullivan to Longwood Corridor*	Boston, Cambridge, Somerville	N/A	4-6 minutes	12.5-20.1 percent

* The Sullivan to Longwood Corridor has two routing options, which have different trip time savings effects.
Source: The Greater Boston BRT Study Group, Spring 2015; Strategic Economics, 2016.

The Development and Property Value Benefits of BRT

Although most studies on the development and property value benefits of transit have focused on light rail and commuter rail investments, recent research has found that BRT systems – including the Boston Silver Line – promote higher property values and rents, and attract new commercial and residential development. For example:

- A study of Boston's Silver Line found that a condominium unit located 100 feet away from a station was worth $45 per square foot more than one located 1,000 feet away from a station.[12]
- A study of Pittsburgh's East Busway BRT line found that a single-family home located 100 feet away from a station was worth approximately $9,745 more than a property located 1,000 feet away.[13]
- An early study of new BRT lines in Cleveland, Ohio, Eugene, Oregon and Kansas City, Missouri found significant amounts of new public and private investment underway, including new development by hospitals and universities in Cleveland and Eugene and a $150 million federal grant for urban reinvestment in Kansas City. The study concluded that BRT projects with dedicated right-of-ways and other substantial physical infrastructure can serve as focal points for attracting new development, particularly if located near major institutions and/or employment centers and paired with supportive land use policies and development incentives.[14]
- A comparative study of 21 North American light rail and bus rapid transit lines found that per dollar of transit investment, BRT attracted more TOD than light rail or streetcars under similar conditions. Supportive planning and land use policies, the strength of the land market around the transit corridor, and the quality of the transit investment were all important predictors of the level of TOD. Location also mattered: transit lines located adjacent to downtowns or other major destinations had the strongest impact on development, while lines located adjacent to highways or other barriers had a more limited impact.[15]
- A study of 13 BRT systems in the U.S. showed that the transit corridors appear to be attracting new office development, multi-family development, and jobs more quickly than other parts of their respective regions. Office properties located within a half-mile radius of BRT stations were also found to experience a rent premium.[16]

Note that while BRT has been shown to have a positive impact on property values and rents, comparative studies have shown that heavy rail, commuter rail, light rail, and metro rail transit systems typically have a larger impact on property values and development. This may be due to the greater accessibility benefits

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[12] Victoria Perk, "Land Use & Property Value Impacts of BRT" (5th National Bus Rapid Transit Conference, Las Vegas, NV, August 20, 2012), http://onlinepubs.trb.org/onlinepubs/conferences/2012/BRT/Perk.pdf.
[13] Victoria A. Perk, Martin Catalá, "Land Use Impacts of Bus Rapid Transit: Effects of BRT Station Proximity on Property Values along the Pittsburgh Martin Luther King, Jr. East Busway" (U.S. Department of Transportation Federal Transit Administration, Office of Research, Demonstration and Innovation (TRI), December 2009).
[14] United States Government Accountability Office, "BRT: Projects Improve Transit Service and Can Contribute to Economic Development," Report to the Committee on Banking, Housing, and Urban Affairs, U.S. Senate (United States Government Accountability Office, July 2012).
[15] Walter Hook, Stephanie Lotshaw, and Annie Weinstock, "More Development for Your Transit Dollar: An Analysis of 21 North American Transit Corridors" (Institute for Transportation & Development Policy, September 2013), http://www.itdp.org/documents/ITDP_MORE_DEVELOPMENT_924.pdf.
[16] Arthur C. Nelson and Joanna Ganning, "National Study of BRT Development Outcomes" (National Institute for Transportation and Communities, November 2015).

provided by rail systems, which typically operate at greater frequency and higher speeds, cover a larger geography, and increase transit capacity more than BRT.[17]

The Potential Use of Value Capture for BRT

The emerging literature on the property value and development benefits of BRT suggest that there is significant potential to use value capture tools to help pay for BRT projects. The literature and experience with other types of transit projects also indicate that value capture strategies are most likely to be successful for BRT projects that meet the following criteria:

- **Significant transportation benefits compared to existing bus service:** In general, transit improvements appear to have the greatest impact on property values and new development when the corridor or system provides frequent, high-quality service and significantly improves residents' access to employment and other important destinations. [18] BRT corridors that result in significant reductions in travel time to critical destinations may therefore be expected to generate the most value for property owners, allowing for the successful use of value capture. In contrast, system enhancements that are perceived as providing only a marginal improvement to existing bus service are less likely to create significant value.

- **Major development potential:** Because most value capture tools are designed to capture value from new development, they are most likely to be successful in locations with significant development opportunity. Studies have also shown that transit projects are most effective in attracting new development in locations with strong real estate markets, and when local governments implement local zoning and land use regulations that facilitate transit-oriented development (TOD).[19]

- **Limited geographic area and number of jurisdictions:** Many BRT projects pass through multiple jurisdictions. However, most value capture tools are designed to be deployed within a single jurisdiction, and in some cases only within relatively small districts or single projects. Reflecting this constraint, value capture strategies have been used most frequently to fund streetcars and infill stations that serve a geographically limited area within a single city, and that are perceived as having significant, local economic development benefits.

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[17] Hiroaki Suzuki, Jin Murakami, Yu-Hung Hong, and Beth Tamayose, "Financing Transit-Oriented Development with Land Values: Adapting Land Value Capture in Developing Countries", World Bank Group, 2015, https://openknowledge.worldbank.org/handle/10986/21286; Debrezion, Pels, and Rietveld, "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis"; Keith Wardrip, "Public Transit's Impact on Housing Costs: A Review of the Literature," Insights from Housing Policy Research (Center for Housing Policy, August 2011), http://www.nhc.org/media/documents/TransitImpactonHsgCostsfinal_-_Aug_10_20111.pdf.

[18] Wardrip, "Public Transit's Impact on Housing Costs: A Review of the Literature;" Nadine Fogarty and Mason Austin, "Rails to Real Estate: Development Patterns along Three New Transit Lines" (Center for Transit-Oriented Development, March 2011), http://www.ctod.org/portal/node/2302; Nadine Fogarty et al., "Downtowns, Greenfields, and Places in Between: Promoting Development Near Transit" (Center for Transit-Oriented Development, May 2013), http://ctod.org/pdfs/20130528_DntnsGreenfieldsEtc.FINAL.pdf.

[19] Ibid.

III. CONTEXT FOR VALUE CAPTURE IN MASSACHUSETTS

The previous chapter described the considerations that influence the use of value capture nationally. While the same considerations generally apply to Massachusetts, there are also specific fiscal and governance issues that shape the use of value capture in the Commonwealth including the respective roles of the state and local governments, the types of revenue available to cities and towns, and use of debt financing. These issues are discussed below.

Massachusetts includes a wide range of communities characterized by very different economic and fiscal conditions, as well as a wide variety of infrastructure needs. The Commonwealth's communities range from cities and towns in the Boston metro area that are experiencing rapid development and property value appreciation, to more economically challenged gateway cities and rural areas. As a result, value capture tools that may work well to fund a particular transportation project in one neighborhood or city within the Commonwealth will be of limited use for other projects or in other areas. In addition, while some communities already have extensive transit service, others are currently served only by limited local bus systems.

Compared to some other states, the state government plays a larger role in the direct provision and the funding and financing of infrastructure in Massachusetts, including in value capture implementation. In many other states, counties play an important role in providing and funding transit and other types of infrastructure. For example, counties often maintain some regional-serving highways, and sometimes administer sales tax measures that provide dedicated funding for local transportation projects. In Massachusetts, the Commonwealth performs many functions that would in other states be provided by counties or other regional agencies (such as metropolitan planning organizations or independent transit agencies).[20] For example, most numbered roads are maintained by MassDOT's Highway division, while municipalities maintain the non-state roads within their jurisdictions. The MBTA, which provides transit service to the Greater Boston metro area, is funded primarily by state sales tax revenue (although the system also receives local contributions – known as "assessments" – from municipalities, calculated on a per-capita basis).[21] The Commonwealth plays a direct role in providing and maintaining local- and regional-serving infrastructure and in some cases provides a match that enables federal funding. In addition, the Commonwealth plays a (more limited) role in funding and financing municipal infrastructure projects through the MassWorks Infrastructure Program and I-Cubed.

In the absence of a county system, implementing value capture to finance regional-serving infrastructure may be particularly challenging and will likely require the active involvement of the state. There is limited precedent in Massachusetts for entities that provide services to and collect taxes from properties in multiple jurisdictions, such as counties or special districts.[22] In the 2015-2016 legislative

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[20] Although there are 14 counties in the Commonwealth, most exist only as geographic boundaries. Most county governments were abolished in the late 1990s, and only a few now have active county offices funded by a separate budget. As county governments were abolished, many services that were previously provided by counties are not administered by state departments. Source: "Massachusetts County Government," *Secretary of the Commonwealth of Massachusetts*, accessed June 28, 2016, https://www.sec.state.ma.us/cis/cislevelsofgov/ciscounty.htm.

[21] The MBTA assessment is currently charged to the 175 communities that received MBTA service. Each municipality's contribution is based on a weighted share of the total population served by the authority.

[22] While there are many special districts in Massachusetts (for example, sewer or water districts), very few serve multiple jurisdictions.

session, the Commonwealth passed a bill enabling the creation of joint powers authorities – creating a potential tool for enhanced interjurisdictional cooperation on future projects.[23]

Cities and towns in Massachusetts are heavily dependent on property tax revenues to pay for local services and infrastructure. In the absence of any local sales or income taxes, cities and towns rely heavily on property tax revenues to fund local services including schools, parks, sidewalks and sewers. Proposition 2½ limits local governments' ability to increase property tax revenues, constraining local governments' ability to raise revenues to pay for services and facilities. The central role of property tax revenues in funding local services may limit the potential to expand the use of value capture tools that rely on property tax increment (such as DIF), as these mechanisms divert a portion of property tax revenues to a dedicated fund.

Municipalities require state legislative authorization in order to enact new taxes or fees. As in many states, cities and towns in Massachusetts are very limited in their ability to create new revenue sources without specific authorization by the state legislature. As a result, the Commonwealth plays a very important role in the types of value capture tools that are available at the municipal level.

Most municipal projects are financed with general obligation (rather than revenue) bonds. As discussed in the previous chapter, the ability to issue debt based on expected future revenues is critical to the success of many value capture tools, since infrastructure investments are often required upfront in order to enable increases in property values and development. In Massachusetts, cities and towns rarely issue revenue bonds (i.e., bonds that are backed solely by a special, dedicated funding stream, such as revenues from a tax increment financing or special assessment district). Instead, most municipal projects are financed with general obligation bonds, meaning they are backed by the full faith and credit of the city or town. However, the Commonwealth sometimes issues revenue bonds to assist with local infrastructure financing – for example, through the I-Cubed program.

[23] *An Act Modernizing Municipal Finance and Government,* Section 20, 2016, https://malegislature.gov/Bills/189/House/H4565/

Proposition 2½

Adopted by Massachusetts voters in 1980, Proposition 2½ limits both the total amount of property tax revenues that local governments can collect, and the amount that property tax revenues can increase from year to year. Specifically, Proposition 2½ imposes two main restrictions on the property tax levy, or the total amount of property tax revenues that a community may raise in any given year:

- **Levy limit:** The total amount of property tax revenues that a community can levy in a given year is known as the levy limit. The levy limit can increase from year to year as long as total revenues remain below the levy ceiling (defined below). The levy limit is calculated each year based on the following factors:
    - **Automatic 2.5 percent increase:** Each year, a community's levy limit automatically **increases by 2.5 percent**
    - **New growth: A community may increase its levy limit each year to reflect new growth in the tax base. New growth is calculated based on assessed value increases that are due to new development, new personal property, new subdivisions and condominium conversions, and/or tax-exempt properties that are returned to the tax roll.**
    - **Overrides: A community can permanently increase its levy limit if voters approve an override. Overrides are typically used to pay for municipal services.**
- **Levy ceiling:** The levy ceiling is a cap on the levy limit. Total property tax revenues, including revenues associated with new growth and overrides, may not exceed 2.5 percent of a community's total assessed property in any given year.

For a few limited purposes, communities may temporarily increase their property tax revenues above the levy ceiling. With a few exceptions, voter approval is required to exceed the levy ceiling. For example, voters may approve a temporary **exclusion** for the purpose of raising additional tax revenues to pay for capital projects, or to pay debt service costs to finance a capital project.

Note that Proposition 2½ only limits a community's total property tax revenues. The measure does not constrain municipalities' ability to raise revenues from other funding sources, including other property-based assessments and fees. Examples of property-based charges that are not considered property taxes for the purposes of Proposition 2½ include Local Infrastructure Development Program infrastructure assessments, Business Improvement District fees, betterments and special assessments, and Community Preservation Act surcharges.

For more information on Proposition 2½, see: Massachusetts Department of Revenue Division of Local Services, "Levy Limits: A Primer on Proposition 2 1/2," June 2007, http://www.mass.gov/dor/docs/dls/publ/misc/levylimits.pdf.

IV. EVALUATION OF MASSACHUSETTS VALUE CAPTURE TOOLS

This chapter provides a detailed evaluation of the value capture tools that are either currently available in Massachusetts, or have recently been considered by the state legislature (shown in Figure IV-1). The discussion of each tool includes the following topics:

- Major requirements for approval;
- Source of revenue;
- Potential for bond financing;
- Typical uses;
- Barriers to increasing use for transportation and TOD;
- Proposed legislative changes (where applicable); and
- Additional resources and examples.[24]

The chapter concludes with a matrix that summarizes the major strengths and weakness of each tool that is currently authorized by the Commonwealth.

Figure IV-1: Existing and Proposed Value Capture Tools in Massachusetts

Tax Increment Financing Tools
- District Improvement Financing
- Supplemental Infrastructure Financing for Transportation (Proposed)
- Infrastructure Investment Incentive Program (I-Cubed)[a]

Special Assessment Districts
- Local Infrastructure Development Program
- Business Improvement Districts
- Community Benefits Districts (Proposed)
- Betterments and Special Assessments

Developer Contributions
- Impact Fees
- Affordable Housing Linkage and In-Lieu Fees
- Density Bonuses
- Negotiated Developer Contributions

Public Sector Real Estate Transactions (Joint Development)

[a] Also includes a special assessment district component (the municipality and developer are required to help cover any shortfalls in projected state tax revenues through special assessments and a liquidity reserve).

[24] Note that in addition to the sources listed for each tool, many of the tool evaluations draw on findings from interviews with state and local officials, developers, and other stakeholders. Appendix B provides a complete list of interviews conducted for this analysis.

TAX INCREMENT FINANCING TOOLS

Tax increment financing tools are designed to capture incremental growth in tax revenues in order to pay for infrastructure improvements.[25] Existing tools in Massachusetts include District Improvement Financing and the Infrastructure Investments Incentives Act (I-Cubed). This section also includes a text box on the Supplemental Infrastructure Financing for Transportation tool, which was considered (but not ultimately passed) in the 2015-2016 legislative session.

District Improvement Financing (DIF)

District Improvement Financing (DIF) is designed to capture incremental growth in revenues from the existing municipal property tax. The DIF tool was authorized by the Massachusetts legislature in 2003, and amended in 2011 and 2012.[26] Fewer than ten DIF districts in Massachusetts have been established to date, including most recently the downtown Brockton DIF (discussed below). Several other municipalities around the state are also considering creating DIF districts.

Major Requirements for Approval

Municipalities establish a DIF district by majority approval from the City Council or Town Meeting. If the municipality intends to issue bonds, the City Council or Town Meeting must also approve a financing plan that includes projected revenues and costs.

Source of Revenue

DIF does not create a new tax or fee, or divert existing property tax revenues that currently flow to a municipality. Instead, the DIF tool allows municipalities to capture a share of the property tax increase, or tax increment, that results from property tax growth within a designated district after the DIF is established.

Potential for Bond Financing

Revenues captured via a DIF may be used on a pay-as-you-go basis, or pledged to support either general obligation bonds or special revenue bonds with up to a 30-year term. Either way, one advantage of DIF is that the bonds are not included in the municipality's debt limit. Approximately half of the DIF districts created to date have issued DIF bonds backed by a general obligation pledge; to date, no district has issued a bond backed solely by DIF or other special revenues.

Typical Uses

DIF revenues may be used to pay for a wide range of infrastructure improvements, including roadways, transit stations, and other transportation improvements, as well as land assembly, development, and services related to economic development (e.g., public safety, events, marketing and promotions). Typical uses have included connectivity and other infrastructure improvements intended to enable or incentivize specific development projects. For example, the Assembly Square DIF in Somerville is being used in conjunction with I-Cubed (discussed below) to pay for sewer, water, and roadway improvements to support mixed-use development adjacent to a new Orange Line Station. In downtown Worcester, DIF is being used to enable the redevelopment of a former mall by paying for demolition, brownfield cleanup, roadway construction, and an underground parking garage. The recently established DIF in downtown Brockton is primary

[25] As mentioned above, the term "tax increment financing" is typically used in Massachusetts to refer to tax abatements. The term is used here in the more general sense of an approach for capturing tax revenues to pay for infrastructure improvements.

[26] Note that DIF was administered at the state level until recently, but is now a local option program.

example to date of a DIF that has been implemented in a larger district that covers multiple properties with different owners. The Brockton DIF is intended to support the revitalization of downtown by paying for services (such as cleaning, security, marketing, and promotions), land acquisition, and roads and sidewalk, streetscape, parking, and other local infrastructure projects.

In general, DIF has the most potential to raise significant revenues in a strong real estate market where major new development – and thus, significant new property tax revenues – are expected. However, even in a weaker market where property tax revenues are expected to increase relatively slowly (such as a gateway city like Worcester or Brockton), a municipality may find it useful to create a DIF to facilitate a specific development project and signal the municipality's commitment to set aside money for a dedicated use within a specified area. In addition to providing some certainty to developers that the municipality will allocate revenues for specified improvements, a DIF can also signal to residents that improvements intended to serve new development will be funded solely with new revenues.

Barriers to Increasing Use for Transportation and TOD

There are several challenges involved in expanding the use of the DIF tool (as it works under currently law) in order to pay for transit, other transportation uses, and TOD. These are described below.

- **Limited precedent exists for a DIF district spanning multiple development projects or multiple jurisdictions.** Major transportation investments typically benefit many properties, often in several jurisdictions. With the exception of the downtown Brockton district (which was created in 2016), most existing DIF districts incorporate a single development project. The DIF enabling statute (Chapter 40Q of the General Laws) does not provide for multi-jurisdictional districts.
- **There is no established mechanism for using DIF revenues to fund state transportation investments.** To the extent that DIF is used in the future to help pay for state-funded transportation investments, municipalities may require assurances that the revenues will be dedicated to a specific project.
- **Local assessors and other municipal officials have expressed uncertainty about how to calculate and project DIF revenues.** In the 2015-2016 legislative session, the state legislature adopted changes to the DIF enabling legislation that more clearly defined the term "tax increment" to mean the property tax revenues generated by "new growth," as the latter term is used in Proposition 2½ (i.e., increases associated with new development and construction). This change is expected to simplify the process of calculating and projecting DIF revenues, because assessors regularly calculate new growth in order to meet the requirements of Proposition 2½.
- **Under Proposition 2½, it is challenging to capture property value increases that are not directly related to new development.** As discussed above, in the 2015-2016 legislative session, the state legislature clarified that DIF may only capture tax increment associated with new growth as defined under Proposition 2½. To the extent that properties increase in value without experiencing new development, this growth cannot be captured by DIF. Proposition 2½ also limits DIF revenues in other ways. For example, if a community's total tax revenues (excluding new growth) increase more than 2.5 percent in a year, or if a community reaches its levy ceiling (which caps total tax revenues at 2.5 percent of total assessed property value), the municipality may need to reduce its overall tax rate to keep the annual increase in property tax revenues from exceeding the 2.5 percent limit – thus reducing DIF revenues even if the DIF itself is performing well. Finally, assessors tend to be conservative is assessing property values, and they may not reflect the value of new transportation investments in their assessments – especially in the absence of new development.

While some of these constraints on the ability to capture property value increases are specific to Proposition 2½, it is important to note that tax increment financing districts across the country rely heavily on new development. New development typically accounts for most of the tax increment growth within a district, and conservative assessment practices are common and affect the use of tax increment financing in other states as well.

- **Compared to the way tax increment financing is used in some other states, the revenue sources available to DIF districts in Massachusetts are relatively limited.** In some other states, such as California, Georgia, Illinois, and Colorado, a variety of local government entities – such as cities, counties, special districts, and school districts – all levy property taxes. Depending on the state, some or all of these entities may agree to contribute property tax increment to a tax increment financing district. In addition, 16 states allow tax increment financing districts to capture sales tax revenues as well as property tax revenues; several states also allow districts to capture payment-in-lieu of taxes (PILOT), personal property, and/or other types of revenue sources.[27] Under current Massachusetts law, DIF districts may only capture property tax revenues. Moreover, because cities and towns are the primary entities with the authority to assess property taxes in Massachusetts, DIF districts only capture incremental growth in municipal property tax revenues, rather than from a number of different taxing entities.

- **Municipalities face many competing needs for property tax revenues, and may be reluctant to dedicate property tax increment to projects that are not traditionally funded by local governments.** DIF is intended to limit the impacts on a municipality's General Fund by only capturing incremental growth in tax revenues (most of which, as discussed above, is generated by new development). However, new development generates new municipal costs as well as revenues. Accommodating new growth requires providing additional services to residents and workers, including police and fire, ongoing maintenance of roads and facilities, local contribution to the schools, etc.[28] This may make it challenging to expand the use of DIF for projects that are not traditionally funded by local governments, such as transit or other regional-serving transportation projects.

- **Property tax abatements (TIF agreements) can limit DIF revenues.** Because DIF revenues are based on the property taxes collected within the DIF district, any property tax abatements (known as TIF agreements in Massachusetts) within the district will reduce the amount of revenues that can be collected. This is a particular challenge in gateway cities and other weaker markets where TIF agreements are frequently used to incentivize housing development and promote economic development.

Additional Resources and Examples

- Council of Development Finance Agencies (CDFA), "Tax Increment Finance: State by State Report; An Analysis of Trends in State TIF Statutes," 2015, http://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=201601-TIF-State-By-State.html.

- MassDevelopment, "Transformative Development Initiative (TDI) and District Improvement Financing (DIF)," February 4, 2016.

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[27] CDFA, "Tax Increment Finance: State by State Report; An Analysis of Trends in State TIF Statutes," 2015, http://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=201601-TIF-State-By-State.html.

[28] DIF revenues may be used to pay for administrative, training, organizational and other costs associated with time spent by city or town employees in connection with the implementation of a project plan, but not ongoing services.

- *District Improvement Financing*, *General Laws*, vol. Chapter 40Q, accessed June 22, 2016, https://malegislature.gov/Laws/GeneralLaws/PartI/TitleVII/Chapter40Q.
- Charles D. Baker, *An Act Modernizing Municipal Finance and Government*, 2016, https://malegislature.gov/Bills/189/House/H4565.

Boston Convention Center Finance District

As discussed above, DIF districts in Massachusetts are limited to capturing incremental growth in municipal property tax revenues. While not a DIF district, the Commonwealth's Convention Center Finance District provides a precedent for capturing other, state tax revenues generated within a district in order to pay for a major public project. The Commonwealth formed the Convention Center Finance District in 1997 in order to help finance the Boston Convention and Exhibition Center. The Finance District, which includes a number of blocks surrounding the convention center (roughly bounded by Atlantic Avenue on the west, the Boston Harbor on the north, Pappas Way on the east, and W. 1st Street on the south) is authorized to collect all state room occupancy excise tax revenues (i.e., hotel taxes) generated within the district, as well as retail sales and meal tax revenues generated within the district from businesses opening after 1997. In addition to these revenues, the convention center also received funding from other sources including special surcharges on Boston sightseeing tours and vehicle rentals, parking facilities in Boston Springfield, and Worcester, and hotel rentals in Boston, Cambridge, Springfield and Worcester.[1]

[1]The surcharges also contribute to financing construction and renovation of convention centers in Springfield, Worcester, Chicopee, and West Springfield.
Sources: Commonwealth of Massachusetts, *An Act Relative to the Construction and Financing of Convention and Exhibition Centers in the Commonwealth*, Session Laws, Acts (1997), Chapter 152, https://malegislature.gov/Laws/SessionLaws/Acts/1997/Chapter152; Massachusetts Department of Revenue, "Convention Center Financing Surcharges," http://www.mass.gov/dor/businesses/current-tax-info/guide-to-employer-tax-obligations/trustee-and-excise-taxes-requiring-registration/convention-center-financing-surcharges.html; Massachusetts Department of Revenue, "TIR 05-1: Convention Center Financing Surcharges," http://www.mass.gov/dor/businesses/help-and-resources/legal-library/tirs/tirs-by-years/2005-releases/tir-05-1-convention-center-financing-surcharges.html.

Infrastructure Investment Incentive Program (I-Cubed)

The Infrastructure Investment Incentive Program (I-Cubed**)** is a Commonwealth program that captures net new state tax revenues generated by a development project, in order to finance infrastructure improvements required to make the project possible, or to move ahead more quickly or at a higher level of density. The program was created in 2006 and then revised in 2008, with the objective of enabling large development projects that will stimulate economic development and attract new jobs to the Commonwealth.

Major Requirements for Approval

In order to receive I-Cubed funding, a developer and municipality must submit an application to the Executive Office for Administration and Finance (A&F) and MassDevelopment. The application must demonstrate that the jobs and state tax revenues associated with the development project are "net new" to the Commonwealth and would not happen "but for" the infrastructure investment supported by I-Cubed.[29] Meeting the "net new" requirement typically involves assessing the location decisions of individual tenants who plan to locate in the development. In addition to demonstrating that the project meets this requirement, the applicant must also show that the projected new state tax revenues will equal a minimum of 1.5 times the annual debt service on I-Cubed bonds, and that the development project is financially feasible. Staff from A&F, the Massachusetts Department of Revenue, MassDevelopment, and the Executive Office of

[29] Projects may also receive credit for retained jobs (jobs that would otherwise have moved outside of the state).

Housing and Economic Development (EOHED) are all involved in determining whether the project meets these requirements.

Source of Revenue

I-Cubed captures increases in state tax revenues (primarily from taxes on retail sales and income) that are generated by new development.

Potential for Bond Financing

If a project meets the application criteria, MassDevelopment issues general obligation bonds, to be repaid by the projected new state tax revenues. Revenues from the bond are used to finance the needed public infrastructure improvements. The municipality and developer are required to help cover any shortfalls in projected state tax revenues by creating a liquidity reserve and establishing a special assessment on the development project.

Typical Uses

The I-Cubed program is designed for larger development projects with public infrastructure costs between $5 and $50 million. I-Cubed has been used to pay for a wide range of infrastructure types, including many involving transit, connectivity, and other infrastructure improvements to support TOD. For example, I-Cubed contributed over $30 million to finance a commuter rail station and other infrastructure improvements to support the Boston Landing development in the Allston/Brighton area of Boston, which includes the new worldwide headquarters of New Balance. At Assembly Square in Somerville, I-Cubed financed $10 million in sewer, water, and roadway improvements. The majority of funded I-Cubed projects are located in the Boston metro area.

Barriers to Increasing Use for Transportation and TOD

Expanding the use of I-Cubed, especially for large-scale or regional-serving transportation projects, would require overcoming a number of challenges with the program as it currently exists. These challenges are discussed below.

- **The purpose of the I-Cubed program is to attract new jobs and economic growth, rather than to provide funds for state or local transportation projects.** Although I-Cubed has been used to pay for transit and other transportation infrastructure, it is primarily an economic development program intended to attract new jobs to the state. Demonstrating that projects create "net new" jobs that would not locate in the state "but for" the infrastructure investment supported by I-Cubed – a requirement that is intended to protect the Commonwealth from the risk that the promised economic development will not occur, or that the project will not generate sufficient revenues to cover debt service payments – creates a number of challenges for using the tool for transportation and TOD. These challenges are discussed in more detail below.
- **I-Cubed is designed to support individual development projects, rather than pay for transportation infrastructure serving a larger corridor or district.** While I-Cubed may pay for investments that serve a broader district (such as a new transit station), applications are tied to individual development projects. Meeting the "net new" requirement involves an analysis of the location decisions of individual tenants that would be difficult if not impossible to conduct for a corridor or district spanning multiple development projects, especially if some or all of the development is still in the planning phase and specific tenants have not yet been identified.
- **The program has limited funding capacity.** Total statewide investment is capped at $600 million. In the 2015-2016 legislative session, the legislature increased the number of projects that may be funded in any community from eight to ten.

- **Submitting an I-Cubed application requires significant capacity and resources on the part of the local governments, and demonstrating that projected jobs and tax revenues are "net new" to the state may be easier in fast-growing regions of the state.** Almost all of the successful applications have involved office-based jobs, and have been located in the City of Boston or the Boston metro area. According to staff from the Commonwealth departments and agencies involved in administering the program, the concentration of projects in the Boston area reflects both the difficulty of meeting the "net new" requirement in gateway cities and other slower-growing communities, as well as the level of time and resources required to submit a successful application.
- **Administering the program also requires significant time and staff resources on the part of the Commonwealth.** Significant Commonwealth resources are required to determine whether applications meet the "net new" requirement, as well as to issue bonds, administer funds, and monitor projects over time. As discussed above, multiple staff members from four departments (Staff from A&F, the Massachusetts Department of Revenue, MassDevelopment, and EOHED) are involved in administering the program.
- **Because of the need to identify specific tenants and the complexities of the application process, I-Cubed funding is often awarded relatively late in the development process, after some of the most critical infrastructure investments have already been made.** The fact that tenants must be identified before I-Cubed funding is awarded creates a relatively narrow window when the program can be considered as a funding source. Combined with the time-consuming application process, this can make it difficult to use the program for development projects that require significant upfront infrastructure investments in order to be feasible, unless other sources of funding are also available.

Additional Resources and Examples

- MassDevelopment, "Infrastructure Financing Programs," January 2016, http://www.mapc.org/sites/default/files/MassDevelopment%20Infrastructure%20Presentation%20January%202016.pdf
- Charles D. Baker, *An Act Relative to Job Creation and Workforce Development*, 2016, https://malegislature.gov/Laws/SessionLaws/Acts/2016/Chapter219 .

Proposed New Tool: Supplemental Infrastructure Financing for Transportation

In the 2015-2016 legislative session, the Massachusetts state legislature considered (but did not approve) a bill to create a new value capture mechanism called the Supplemental Infrastructure Financing for Transportation (SIFT) program (Chapter 40X of the General Laws). Like DIF, SIFT would capture incremental growth in property tax revenues from the existing municipal levy. However, SIFT revenues would be dedicated to state or regional transportation projects. In order to facilitate the use of property tax increment for transportation projects, the proposed legislation would create a process for collaboration between municipalities and the project sponsor – i.e., the Massachusetts Bay Transportation Authority (MBTA), a Regional Transit Authority (RTA), or the Massachusetts Department of Transportation (MassDOT).

Major Requirements for Approval

In order to establish a SIFT, MassDOT and a municipality would enter into an agreement (known as a SIFT agreement) that specifies the boundaries of the SIFT district, the transportation improvement to be funded, the percentage of tax increment that will be captured by the SIFT, and the projected SIFT revenues. The SIFT agreement would need to be approved by a majority of the City Council or Town Meeting, as well as by the secretary of MassDOT.

Source of Revenue

Like DIF, SIFT would capture a share of the increase in municipal property taxes, or tax increment, that results from property tax growth within a designated district after the district is established (i.e., the base year). The tool would allow for the creation of districts that include multiple properties located near transit stations. If desired, the base year could be set retroactively in order to capture tax revenues generated by development that occurred prior to the establishment of the SIFT.

Potential for Bond Financing

SIFT revenues would be placed in a special SIFT fund, administered by the MBTA or MassDOT. These revenues would be available for the payment of debt service on bonds issued by the MBTA or MassDOT to fund the transportation project identified in the SIFT district.

Potential Uses

SIFT would be used to help fund transportation projects sponsored by the MBTA, an RTA, or MassDOT, including construction, repair or enhancement of ways or bridges, on- or off-ramps, bikeways or multi-use paths, transit stations, passenger facilities, and rail projects and extensions. The specific transportation project for which SIFT revenues are designated must be identified in the SIFT agreement.

Continued on following page

Proposed Tool: Supplemental Infrastructure Financing for Transportation (Continued)

Barriers to Increasing Use for Transportation and TOD

Potential challenges associated with the SIFT tool are discussed below.

- **Municipalities face many competing needs for property tax revenues.** As discussed above, municipalities rely on property tax revenues to pay for ongoing services and local infrastructure, including the costs associated with serving new development. The share of tax increment that a municipality may reasonably be expected to contribute to a state transportation project will depend in part on the cost of providing municipal services to the new development within the district. In addition, significant new local infrastructure investments – such as improvements to roadways, sewers, stormwater systems, and pedestrian and bicycle connections – are often required in order to make new development possible, limiting the revenues that would be available for transit or other state transportation projects.
- **In general, SIFT can be expected to raise more revenue in areas with strong real estate markets where there is significant potential for new development.** In any tax increment financing district, new development generates the most property tax increment. Moreover, development projects in gateway cities and other slower-growth communities often require property tax abatements or other forms of municipal assistance in order to be feasible, limiting the property tax revenues that may be available to pay for transit. Finally, lower-income communities with high levels of social need may find it much more difficult than wealthier communities to contribute new local tax revenues to pay for the cost of transit.
- **Little precedent exists in Massachusetts for a tax increment financing district spanning multiple development projects or multiple jurisdictions.** The SIFT legislation is intended in part to capture value from properties located throughout a transit station area. As discussed above, most existing DIF districts incorporate a single development project.

Additional Resources and Examples

William M. Straus, *An Act Relative to Transportation Infrastructure Value Capture*, 2016, https://malegislature.gov/Bills/189/House/H4094.

SPECIAL ASSESSMENT AND TAXING DISTRICTS

This section evaluates value capture tools that rely on a special tax or assessment to raise revenue for infrastructure, including the Local Infrastructure Development Program, Business Improvement Districts, and betterments.

Local Infrastructure Development Program

The Local Infrastructure Development Program (also known as LIDP or Chapter 23L of the General Laws) enables property owners to agree to an assessment on their property, in order to finance public infrastructure improvements that support new development projects. LIDP is intended to shift the burden of paying for infrastructure to the private sector, by allowing private property owners to finance public-serving infrastructure with tax-exempt bonds issued by MassDevelopment.

Major Requirements for Approval

In order to establish an LIDP, the landowners and/or developers file a petition requesting municipal approval to create an improvement plan specifying the planned infrastructure projects to be funded within a designated development district. The petition may also include a request to levy an assessment on real estate[30] within the district to pay for the infrastructure project. The petition must include the written consent of 100 percent of property owners within the proposed district. The governing body of the municipality must approve the proposed assessment and improvement plan.

Revenue Source

LIDP raises revenue through a property-based assessment, which may be charged based on parcel frontage, square footage, property value, property type, distance from the improvement, or any other basis that relates the cost of the planned improvements to the benefits received by property owners. The assessment runs with the land, meaning that the assessment stays in place if the property is sold. LIDP may be used alone, or paired with DIF; if the two programs are used together, special assessments may be levied only as needed to cover any shortfalls in projected tax increment revenues.

Potential for Bond Financing

Chapter 23L authorizes MassDevelopment to issue tax-exempt bonds (with a term of up to 25 years) backed by LIDP assessment revenues, in order to finance public infrastructure improvements. The municipality that approves the LIDP is charged with collecting the assessment revenues and transmitting any debt service payments to MassDevelopment. One advantage of LIDP financing is that the assessments are the only source of debt service; the bonds are not backed by other state or municipal revenues.

If the LIDP is used in combination with DIF, MassDevelopment will issue the bonds for the DIF district. In this case, LIDP assessment revenues would be used to cover any shortfalls in debt service payments for the DIF bond in a given year.

Typical Uses

The program has never been implemented in Massachusetts, although staff at MassDevelopment have seen some interest from municipalities and developers in pursuing implementation for local infrastructure projects (such as sewers expansions and brownfield cleanup). Under Chapter 23L, LIDP may be used to pay for any public infrastructure owned by a municipality other public entity, including the Commonwealth.

[30] Or leasehold interests.

The owner of the infrastructure may elect to build the proposed infrastructure improvements and receive reimbursement from the assessment, or contract the improvements to a property owner, developer, or other private entity.

Barriers to Increasing Use for Transportation and TOD

As discussed above, there is no precedent for implementing the LIDP tool. Several factors appear to be hindering the use of the tool, not only for transportation and TOD projects, but also for other types of infrastructure.

- **The 100 percent property owner approval requirement will likely limit the use of the tool to large development projects that involve very few property owners who will directly benefit from the planned infrastructure investment.** Given the requirement that all property owners agree to the assessment, LIDP is most likely to be applicable in greenfield development contexts, or for very large redevelopment parcels under consolidated ownership. Furthermore, property owners are only likely to approve assessments for infrastructure projects that directly and primarily benefit their properties.
- **The LIDP tool is most likely to be used for connectivity and other infrastructure improvements required to make a specific development project possible.** In other states, tools with a similarly high approval threshold (i.e., 2/3 or higher) are typically used to fund sewer or water systems, local roads, brownfield cleanup, or other infrastructure and community facilities projects that are necessary to make development possible in a particular location (although in some cases these projects may serve the broader community as well as the development).
- **Developers and municipalities may be reluctant to impose a new assessment, especially if other infrastructure financing options are available.** LIDP is designed to benefit developers by providing them with access to long-term, tax-exempt, non-recourse financing, and to benefit municipalities by shifting the burden of providing infrastructure to the private sector. However, the assessment does represent an additional payment that future homeowners or other property owners would be required to make over time. From a developer's perspective, an assessment that runs with the land could make the development less appealing to future buyers, while municipal officials may be reluctant to be seen as approving new taxes.
- **Pioneering a new tool can be challenging for both developers and local officials.** In the absence of any precedent or regulatory guidelines, interpretation of the statute may require significant capacity and resources on the part of local officials. In addition, implementation will require the local assessor and other municipal officials to work closely with the landowner/developer, MassDevelopment, and the public entity that owns the infrastructure (if separate from the municipality). While administrative costs can be funded by the assessment, projects will need to be of sufficient scale and importance for economic development in order to justify the time and expense involved in establishing an LIDP, especially for early projects.

Additional Resources and Examples

- MassDevelopment, "Infrastructure Financing Programs"; *Local Infrastructure Development Program, General Laws*, vol. Chapter 23L, n.d., https://malegislature.gov/Laws/GeneralLaws/PartI/TitleII/Chapter23L.

Business Improvement Districts

A Business Improvement District (BID) is a type of special assessment district in which property owners within a designated district pay a fee in addition to their regular property tax bill, in order to fund supplemental services that support local businesses and economic development. The Massachusetts BID

program was established in 1994 by General Law Chapter 40O. As of 2012, seven BIDs had been established in Massachusetts. In the 2015-2016 legislative session, the state legislature passed legislation that would have created a related tool called a Community Benefit District (CBD); however, as discussed below, the governor vetoed the bill, citing concerns about the low threshold for property owner approval and the lack of exemptions for certain types of property that are otherwise tax-exempt or eligible for tax abatements.

Major Requirements for Approval

To establish a BID, property owners must submit a petition containing signatures of 60 percent of property owners, representing 51 percent of assessed value within the proposed district. The petition must describe the BID boundaries and include a proposed improvement plan, a budget, and rates for the fee. The proposed district must be a geographically contiguous area in which at least 75 percent of the land is zoned for commercial, industrial, or mixed uses. In addition to the petition, approval requires a public hearing and a vote by the municipal governing body. The district may be renewed after five years by a majority vote of property owners.

Revenue Source

BIDs are funded by an annual fee (also called an assessment) on real property. The fee may be based on property classification, the level of benefit that different properties receive from the proposed improvements, assessed valuation, square footage, street frontage, and/or another formula. Total fees assessed may not exceed 0.5 percent of the total assessed valuation of the real property owned by participating members in the BID district. Municipalities may choose to exempt owner-occupied residential property, agricultural land, and/or tax-exempt property owners in the district from paying BID fees.

Potential for Bond Financing

BIDs do not have the authority to issue bonds.

Typical Uses

BID revenues are typically used to fund minor capital improvements such as landscaping, lighting, wayfinding, and street furniture. BIDs may also be used to fund local services and maintenance of public space, such as street cleaning, public security offers, and visitor assistance. Finally, BIDs are often used for economic development activities, including marketing, events, and business recruitment and retention.

Several of the existing BIDs in Massachusetts are located in transit-oriented locations, such as Downtown Boston and Downtown Springfield (near the city's Amtrak station). To date, seven BIDs have been created in the Commonwealth, located in Springfield, Amherst, Westfield (since dissolved), Hyannis, Northampton, Boston, and Taunton.

Barriers to Increasing Use for Transportation and TOD

- **BIDs are not used to pay for major capital projects.** BIDs may be used to support successful TOD by paying for minor street improvements and local services related to economic development. However, BIDs are not used to pay for major infrastructure projects, both because the improvements must directly benefit businesses and commercial property owners, and because BIDs do not issue bonds. These constraints apply not only in Massachusetts, but also in most other states where BIDs are used.

- **It is unclear whether BIDs may be used to pay for transit services.** In other states, BIDs are sometimes used to pay for transit services that support local economic development, such as shuttles. Massachusetts' BID statute does not specify whether this is a permitted use.

Proposed Legislative Changes (2015-2016 Session): Community Benefit Districts

As mentioned above, the state legislature passed a bill enabling the creation of CBDs in the 2015-2016 session; however, it was subsequently vetoed by the governor. Under House Bill 4569 ("An Act Relative to Job Creation and Workforce Development"), CBDs would be similar to BIDs, but would have several distinctive features including:

- **Lower property owner approval threshold:** In order to establish a CBD, property owners would be required to submit a petition containing signatures of property owners representing 40 percent of assessed value within proposed district (with no single property owner representing more than 20 percent of total value).
- **Additional uses, including transit operations:** The CBD legislation would allow for the tool to be used for the same purposes as a BID, in addition to "owning and managing parks, public spaces and community facilities; engaging in placemaking, programming, and event management within the district; soliciting donations, sponsorships, and grants; and operating transit services."
- **More flexible geographic boundaries:** CBDs could be established in any area regardless of zoning, and districts would not need to be geographically contiguous.
- **Fewer exemptions:** All property owners would be required to pay the CBD fee, unless they applied individually for a waiver demonstrating financial hardship.
- **Permanent until dissolution:** Unlike BIDs, CBDs would not need to be renewed every five years.

In his veto message, the governor cited support for reforming BIDs, but disapproved the section of House Bill 4569 that would have authorized the creation of CBDs over concerns that 1) the bill presumed that all tax-exempt entities, as well as residential property owners otherwise entitled to tax abatements (such as the elderly, blind, and qualifying veterans), would pay assessments; 2) the bill required approval by less than simple majority of affected property owners in order to create a district. As a result of the governor's veto, the proposed CBD legislation may change in the next legislative session to address concerns about the low threshold for property owner approval and the lack of exemptions for otherwise tax-exempt entities.

Additional Resources and Examples

- Margaret Keaveny, *A Guidebook of Massachusetts' Public Financing Programs for Infrastructure Investment*, n.d., http://www.mbta.com/uploadedfiles/About_the_T/Panel/EOHEDGuidebookonPublicFinanceforInfrastructure.pdf.
- Massachusetts Smart Growth Alliance, "BIDs and CBDs Side by Side," March 30, 2015, http://ma-smartgrowth.org/wp-content/uploads/BIDs-and-CBDs-side-by-side-3.30.2015.docx.
- Brendan P. Crighton, *An Act Relative to Community Benefit Districts*, 2015, https://malegislature.gov/Bills/189/House/H144/.

Betterments and Special Assessments

Various Massachusetts laws authorize the Commonwealth, municipalities, and districts to impose special property taxes in order to fund specified types of public improvements such as sewer and water systems. These special property taxes are known as betterments or special assessments, and are only

permitted in cases where properties within a designated area receive a "special benefit" from the construction of the public improvement.

Major Requirements for Approval

The Commonwealth, a municipality, or a district must have the statutory authority to impose a betterment or special assessment for a specific type of public improvement (see discussion of project types under "Typical Uses," below). In addition, the project must provide a "special benefit" to the assessed properties, defined as "an enhancement of the value or use of property due to the construction of the improvement,"[31] as distinct from the general benefit received by the community as a whole. For projects that meet these requirements, the governing body of the Commonwealth, municipality, or district may impose a betterment or special assessment district by a majority vote.

Revenue Source

Betterments and special assessments use special property tax revenues to fund public improvements. These special taxes are charged above and beyond the regular property tax. The cost of paying for the public improvement must be apportioned to individual properties based on the special benefit that each property receives from the improvement. Depending on the specific statute, the special benefit that each property receives could be determined based on frontage, parcel area, real estate market value, or another reasonable formula.

Potential for Bond Financing

Improvements that are funded by a betterment or special assessment district are typically financed using general obligation bonds. Betterments and special assessments are not used to back revenue bonds.

Typical Uses

Betterments and special assessments are authorized for the following types of uses, and for specific government entities only:

- **Projects involving eminent domain takings, such as new streets**: The Commonwealth, a county, city, town or district may assess some or all of the cost of improvements involving eminent domain takings, such as street layouts.
- **Water distribution systems:** Cities, towns and districts may assess some or all of the cost of installing water distribution systems, including the cost of pipes, other materials, and labor.
- **Sewer systems**: Cities and towns may assess some or all of the cost of installing sewer systems and facilities, including pumping stations and sewer mains.
- **Sidewalk construction:** Cities or towns may assess no more than 50 percent of the cost of sidewalk construction, or the reconstruction of existing sidewalks with more permanent materials.

Information on how often these tools are used in Massachusetts was not available. However, in some communities, betterments are created on a case-by-case basis to finance specific improvements. Other municipalities have ordinances or bylaws in place requiring the use of betterments to fund improvements in certain situations, such as whenever the municipality extends a sewer system into a new area.

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[31] Massachusetts Department of Revenue Division of Local Services, "Betterments and Special Assessments: Assessment and Collection Procedures," April 2001, http://www.mass.gov/dor/docs/dls/publ/misc/betterments.pdf.

Barriers to Increasing Use for Transportation and TOD

- **Statutory authority is required for a municipality or district to create a betterment or special assessment for a specific type of infrastructure project.** State legislation would be required to expand the use of betterments and special assessments for additional types of projects.
- **The "special benefit" requirement would be difficult to meet for transit and most other transportation projects (with the exception of new streets and sidewalks).** Most transit projects and other major transportation projects provide significant, general benefits to a community and/or region as a whole. Betterments and special assessments may only be used where properties within a designated area receive a "special benefit" from the construction of the public improvement, distinct from the general benefit received by the community as a whole.

Additional Resources and Examples

- Massachusetts Department of Revenue Division of Local Services, "Betterments and Special Assessments: Assessment and Collection Procedures," April 2001, http://www.mass.gov/dor/docs/dls/publ/misc/betterments.pdf.

DEVELOPER CONTRIBUTIONS

Developers in Massachusetts may be asked to contribute directly to the provision of infrastructure and community facilities through impact fees, affordable housing linkage and in-lieu fees, density bonuses, and negotiated development agreements.

Impact Fees

Impact fees are one-time fees assessed on development within a jurisdiction as a means to defray the cost to the jurisdiction of expanding and extending infrastructure and community facilities to serve the new development. Massachusetts courts have adopted a conservative approach to analyzing the constitutionality of impact fees, limiting the potential to use this tool for transportation infrastructure.

Note that the term "impact fee" is also sometimes used to refer to a payment negotiated as part of a development agreement (as opposed to fees imposed on all new development in a jurisdiction, by ordinance or bylaw). This type of negotiated financial contribution is discussed below, under negotiated developer contributions.

Major Requirements for Approval

In order for an impact fee to be constitutional in Massachusetts, it must meet the following three criteria established by the Supreme Judicial Court (known as the "three-pronged Emerson test"):

1. The fee must be charged based on the cost of providing the service;
2. The services received must benefit only the party paying the fee, rather than the general public; and
3. The fee must be paid voluntarily (i.e., the party paying the fee must have the option of not using the public service and thereby avoiding the fee).[32]

[32] This test was established in *Emerson College v. City of Boston* (1984). For more information, see Executive Office for Administration and Finance, "Procedures for Setting Fees (ANF 6)," June 25, 2008, http://www.mass.gov/anf/budget-taxes-and-procurement/admin-bulletins/procedures-for-setting-fees-anf-6.html.

Revenue Source

Impact fees are one-time fees on new development.

Potential for Bond Financing

Impact fees are not consistent or predictable enough to serve as security for the issuance of bonds because they are dependent on new development projects.

Typical Uses

Using the three-pronged Emerson test, the courts have upheld impact fees to pay for sewer and electrical service hook-ups for new development. These fees were upheld because the service only benefited new customers (existing customers of the utility systems were unaffected), the fees were based on the cost of providing the service, and developers and customers were not compelled to use the services. However, the courts have struck down a school impact fee intended to expand classroom space to serve projected municipal growth, as well as an affordable housing impact fee on residential development, because the entire community – not just the fee payers – benefits from expanded schools and affordable housing.[33]

Barriers to Increasing Use for Transportation and TOD

- **Under the existing legal framework, Massachusetts courts are unlikely to uphold the use of impact fees for transit or other regional-serving transportation facilities.** These facilities provide significant benefit to the general public and therefore would not meet the Emerson test described above.

Proposed Legislative Changes (2015-2016 Session)

In the 2015-2016 session, the state legislature is considered – but did not pass – a zoning reform bill that would, among other provisions, have specifically authorized municipalities to impose impact fees by ordinance or bylaw. Under the proposed law, the impact fee would need to have a "rational nexus" to the impacts created by the development.[34] Impact fees could be charged in order to mitigate the impact of development on a range of specified public facilities, including roads, intersections, traffic improvements, public transportation, and pedestrian ways and bicycle paths. However, even if similar legislation is passed and signed into law in the future, it may be challenged in the courts as it appears to apply a different constitutional test ("rational nexus") than the test that has previously been applied by Massachusetts courts (the "three-pronged Emerson test").

Additional Resources and Examples

- Executive Office for Administration and Finance, "Procedures for Setting Fees (ANF 6)," June 25, 2008, http://www.mass.gov/anf/budget-taxes-and-procurement/admin-bulletins/procedures-for-setting-fees-anf-6.html.

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[33] Lawrence Friedman and Eric W. Wodlinger, "Municipal Impact Fees in Massachusetts," *Massachusetts Law Review* 88, no. 3 (Winter 2004), http://www.massbar.org/publications/massachusetts-law-review/2004/v88-n3/municipal-impact-fees-in-massachusetts.

[34] The "rational nexus test" is used in other states to determine the constitutionality of a municipal impact fee; in contrast to the more conservative three-pronged Emerson test, establishing a rational nexus requires determining whether there is a reasonable relationship between the new development paying the fee, the use of the fee, and the size of the fee. Ibid.

- Lawrence Friedman and Eric W. Wodlinger, "Municipal Impact Fees in Massachusetts," *Massachusetts Law Review* 88, no. 3 (Winter 2004), http://www.massbar.org/publications/massachusetts-law-review/2004/v88-n3/municipal-impact-fees-in-massachusetts.
- Senate Committee on Ways and Means, *An Act Promoting Housing and Sustainable Development*, 2016, https://malegislature.gov/Bills/189/Senate/S2311.

Affordable Housing Linkage and In-Lieu Fees

Linkage and in-lieu fees are a special type of fee on new development, used to fund affordable housing.

Major Requirements for Approval

In Massachusetts, a special act of the legislature is required to enable a city or town to enact a linkage fee. In addition, cities and towns with the authority to charge a linkage fee must set the fee based on a nexus study that quantifies the impact of commercial development on the need for affordable housing, and demonstrates the relationship between the new development paying the fee, the use of the fee, and the size of the fee. Municipalities with existing linkage fees include Boston, Somerville, and Cambridge.

In-lieu fees may be implemented as part of a community's inclusionary zoning ordinance or bylaw. Inclusionary zoning policies require residential developers to make some portion (e.g., 10 or 15 percent) of the units in a project affordable to low- or moderate-income households. A community may allow a developer to build the units either on-site or off-site, or to pay a fee "in-lieu" of building the units directly.

Revenue Source

Linkage and in-lieu fees are one-time fees imposed, respectively, on new commercial and residential development.

Potential for Bond Financing

Linkage and in-lieu fees are not predictable enough to serve as security for the issuance of bonds because they are dependent on new development projects.

Typical Uses

Linkage and in-lieu fees may be used to pay for affordable housing. Fee revenues are typically used to fund a municipality's Affordable Housing Trust Fund, which provides funding for the production and/or preservation of affordable housing within the community.

Barriers to Increasing Use for Transportation and TOD

- **Linkage and in-lieu fee revenues may only be used to pay for affordable housing.** See the section on impact fees, above, for a discussion of the use of fees to pay for other types of infrastructure.
- **State legislation would be required in order to expand the use of linkage fees to new communities.** Only a few municipalities, including Boston, Cambridge and Somerville, are currently authorized to charge linkage fees.

Additional Resources and Examples

- Executive Office of Energy and Environmental Affairs, "Inclusionary Zoning," *Smart Growth / Smart Energy Toolkit*, accessed June 22, 2016, http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-iz.html.
- Karl F. Seidman Consulting Services and ConsultEcon, Inc., "Somerville Linkage Fee Nexus Study" (City of Somerville Office of Strategic Planning and Community Development, March 2013), http://www.somervillebydesign.com/wp-content/uploads/2015/04/Citywide-2013-Linkage-Nexus-Study.pdf.
- Senate Committee on Ways and Means, *An Act Promoting Housing and Sustainable Development*.

Density Bonuses

Density bonus programs permit developers to build more density, height, or floor area than is allowed as-of-right in exchange for providing a defined public benefit such as affordable housing or open space. In contrast to inclusionary zoning, which requires the provision of affordable housing as a condition of receiving entitlements, density bonuses are voluntary incentives and are sometimes referred to as "incentive zoning."

Major Requirements for Approval

Municipalities may enact density bonuses as part of their zoning ordinances or bylaws.

Revenue Source

Density bonus programs rely on voluntary contributions made by private developers in exchange for increased density or height. Depending on the program, contributions may take the form of the direct provision of public benefits (selected from a list of improvements), or payments made at a pre-determined, per-square-foot price (which the city uses to pay for district-wide improvements).

Potential for Bond Financing

Density bonus payments are not predictable enough to serve as security for the issuance of bonds because they are dependent on new development projects.

Typical Uses

Density bonuses are typically used to incentivize the provision of public benefits such as affordable or workforce housing, open space, affordable commercial, streetscape improvements, or other community facilities. For example, the Boston Planning and Development Agency (BPDA) is considering implementing a density bonus program in the Dorchester Avenue corridor that would allow developers to build above the as-of-right-height, in exchange for providing civic/cultural space, open space, new streets, rental housing for households with incomes up to 100 percent of area median income, and/or condos for households making up to 120 percent of area median income. The exact formula to be used to determine the extent of the density bonus will be determined through a financial feasibility study.

Barriers to Increased Use for Transportation and TOD

- **The magnitude of the public benefits that can be expected from a density bonus program varies depending on the strength of the local real estate market, as well as other factors that affect the value of the bonus density to developers.** Increased density or height may or may not result in greater developer returns. The actual value of the increased floor area or height depends

on a range of factors, including the relative profitability of the base density, construction costs for different building types, and strength of the real estate market. If the bonus density offered by the program provides a substantial economic incentive, developers are more likely to participate, resulting in the provision of more significant public benefits.

- **Density bonuses are generally used to incentivize the provision of local-serving infrastructure, amenities, and affordable housing, rather than regional-serving transportation projects.** Because participation in a density bonus program is voluntary, communities have flexibility in the types of improvements and levels of contribution specified. In general, however, communities have structured programs to provide local-serving benefits that are seen by the surrounding community as offsetting the local impacts of new development.

Additional Resources and Examples

- Boston Redevelopment Authority, "PLAN South Boston Dorchester Ave: Placemaking & Mobility Workshop," January 27, 2016, http://www.bostonplans.org/getattachment/3fb8bdd0-cb46-4bd9-abed-0af29d3b8cf3.
- Boston Planning and Development Agency, "PLAN: South Boston Dorchester Ave (Draft)," December 14, 2016, http://www.bostonplans.org/getattachment/8eee6e07-ab07-4b94-9016-fe7ab4436102.
- Executive Office of Energy and Environmental Affairs, "Inclusionary Zoning," *Smart Growth / Smart Energy Toolkit*, accessed June 22, 2016, http://www.mass.gov/envir/smart_growth_toolkit/pages/mod-iz.html.

Negotiated Developer Contributions

In some cases, cities or other government entities may choose to negotiate directly with developers in order to obtain desired improvements in exchange for development rights. Compared to a pre-defined density bonus program, project-by-project negotiations provide municipalities with flexibility to respond to current market conditions and the conditions of a specific project. However, relying on negotiated agreements also creates more uncertainty for both municipalities and developers about the entitlement process and the level and type of community benefits that are expected.

Major Requirements for Approval

Developer contributions are negotiated between a public agency and a developer, often as part of the entitlement process. Depending on the project and the jurisdiction, contributions may be negotiated as part of a formal development agreement (a contract between a developer and a municipality, redevelopment authority, or other public agency).

Revenue Source

Contributions are made by developers. Depending on the outcome of a negotiation, a developer contribution may take the form of an in-kind improvement built and paid for directly by the developer, or a financial contribution to a project that the city or county is constructing. (Note that municipalities may also agree to make contributions to a development project as part of a development agreement, for example by contributing to or reimbursing the developer for the provision of infrastructure.)

Potential for Bond Financing

Depending on the agreement, the developer may be asked to finance improvements privately, or the public entity may agree to participate in financing by issuing bonds. A developer and municipality may also agree to partner in the pursuit of funding and financing sources, such as I-Cubed.

Typical Uses

Whatever form the contribution takes (whether an in-kind improvement or payment), typical uses include the provision of infrastructure improvements required to serve or mitigate the impacts of new development, and/or public benefits that will serve the broader community such as investments in affordable housing, parks and public open space, community facilities, or expanded infrastructure.

In several recent cases in Massachusetts, developers have been asked to contribute to transit or transit-related improvements as part of a negotiated agreement. For example, the City of Cambridge, Cambridge Redevelopment Authority, MassDOT, and the MBTA are negotiating with Boston Properties to establish a fund to pay for station modernization, connectivity enhancements such as sidewalks, and other improvements at the MBTA Red Line Kendall Station. Under the proposed agreement, which is still being negotiated, Boston Properties would contribute to the fund in exchange for entitlements to build an additional 1 million square feet of commercial floor area at Kendall Square.

The MBTA has also directly negotiated contributions from developers. For example, New Balance is paying for construction of the new Boston Landing commuter rail station, and will also maintain the facility for two decades. (Note that this project was supported in part by I-Cubed.) Wynn Resorts, which is planning to build a casino in Everett, is working with MBTA to provide an operating subsidy to increase service on the Orange Line. The MBTA has also begun preliminary discussions with some of the major property owners and developers in the Green Line Extension station areas about contributing to station improvements. These contributions would likely come in the form of improvements provided in-kind by the developer or one-time payments for specific project components.

Barriers to Increased Use for Transportation and TOD

- **The extent to which a development project contributes to the provision of infrastructure or other public improvements depends on the results of the negotiation, and is affected by the projected profitability of the development project.** The profitability of a development project depends on construction costs, market prices, lot size and configuration, parking requirements, etc. Development projects in weaker market areas or places with significant local infrastructure needs may have limited capacity to contribute to transit or affordable housing.
- **Negotiating on a project-by-project basis allows a city to retain flexibility to respond to changing market conditions and site-specific conditions, but is generally only practical for major development projects and the overall scale of revenue generated is likely to be limited.** Project-by-project negotiations can require significant time and staff resources on the part of the public agency. As a result of the need to negotiate each project individually, the overall scale of revenue that can be generated will vary and may be limited, especially compared to a district- or jurisdiction-wide value capture tool.
- **The potential to pay for major, regional-serving transportation projects with negotiated contributions may be limited.** Negotiating with multiple developers along a long transit corridor may be impractical. Moreover, developers may be reluctant to contribute to transit or other major infrastructure projects that serve an entire community or region, unless they receive some assurance that other property owners and developers who benefit from a major, regional-serving project will

also be asked to contribute. Anticipating the scale and timing of future contributions from a corridor or district spanning multiple development projects is also challenging. Finally, to the extent that contributions come in the form of in-kind improvements or one-time payments for specific project components, it is difficult to use development contributions as an up-front funding source for a major investment or as security for the issuance of debt.

Additional Resources and Examples

- Edward J. Collins, Jr. Center for Public Management at the University of Massachusetts Boston, "Understanding & Crafting Development Agreements in Massachusetts" (Massachusetts Gaming Commission, May 21, 2013), http://www.umb.edu/editor_uploads/images/centers_institutes/center_collins_mgmt/Understanding__Crafting_Development_Agreements_in_Massachusetts.pdf.
- Marc D. Draisen to Matthew A. Beaton, "Kendall Square Urban Renewal Project Amendment No. 10, MEPA #1891," November 19, 2015.

PUBLIC SECTOR REAL ESTATE TRANSACTIONS

Public sector real estate strategies include a variety of transaction types involving publicly-owned land or facilities. Joint development, one type of real estate strategy, generally refers to a real estate development project that involves a cooperative arrangement between a private entity and a transit agency. Other ways that transit agencies and other public agencies can leverage their real estate assets include concessions (i.e., negotiating deals with private vendors to operate on public land) and advertising. Note that joint development and other public sector real estate strategies often involve negotiations in which developers or other private sector entities are asked to contribute to public improvements; however, these transactions are distinguished from the "negotiated developer contributions" described above in that the negotiation takes place between a developer and a public land owner (which may or may not the same agency with the authority to issue entitlements).

Major Requirements for Approval

Public sector real estate transactions require a negotiated agreement by the public land owner and private development partner. Depending on the project and the landowner, there may be limitations on the disposition of land, or on the use of revenues from a sale or lease. For example, in cases where transit agencies used federal funds to purchase land, the Federal Transit Administration often places restrictions on how the proceeds from a ground lease or land sale may be used.

Revenue Source

Public sector real estate transactions raise revenue from the sale or ground lease of publicly owned land or air rights to a private entity. Alternatively, a developer may agree to construct and/or maintain a transit station or other public facility in exchange for the right to develop on agency-owned land.

Potential for Bond Financing

Public sector real estate transactions do not typically involve the issuance of bonds (although public agencies may use bond financing to pay for some public improvements related to the transaction). The developer may agree to finance improvements privately.

Typical Uses

The MBTA has had an extensive joint development program for many years, and is in the process of developing a formal policy to guide future projects. In exchange for the right to develop on MBTA-owned land, developers have entered into station maintenance agreements; contributed to the construction of new stations, station improvements, or related facilities; and/or made payments for the sale or ground lease of land. These transactions range in size from large-scale development projects at some of the agency's flagship stations, to smaller-scale projects at more local-serving stations. Some examples include the following:

- **South Station in Boston:** MBTA entered into a ground lease with Beacon Properties in 1987 for the historic renovation and redevelopment of the South Station Train head house; the station is currently owned and managed by Equity Office Properties and is self-supporting. More recently, the agency entered into an air rights agreement with Hines Interests, in which Hines will construct a major expansion of the South Station bus terminal in exchange for the right to build a 1.8 million square foot mixed-use project.
- **Woodland Station in Newton:** MBTA entered into a ground-lease agreement with National Development to build 180 rental apartment units, of which 25 percent were required to be affordable. The developer prepaid $4.3 million in ground lease payments, allowing for the construction of a new structured parking garage, a new entrance road, and station improvements.
- **Assembly Square in Somerville:** Federal Realty Investment Trust committed $15 million toward the design and construction of a new Orange Line station as part of an exchange of property rights with the MBTA.

In other cases, revenues from a sale or ground lease of property have gone to support the MBTA's general operating budget.

In addition to the agency's joint development program, the MBTA also generates revenue from in-station concessions, outdoor advertising, and telecom and utility operations on agency-owned real estate.

MassDOT also has a smaller joint development program, with most activities focused on parcels formerly occupied by the Central Artery in Boston. However, the agency is also examining opportunities in other parts of the state, such as the use of land underneath highway ramps and overpasses to provide parking or otherwise support new development.

Barriers to Increased Use for Transportation and TOD

- **As with a negotiated development contribution, the level of contribution that a public agency can expect from a real estate transaction will depend on the projected profitability of the development project.** Projects in strong real estate markets, such as Downtown Boston, have the potential to generate significantly greater revenues than projects in weaker market locations.
- **Real estate transactions require significant capacity on the part of the public land owner.** For example, MBTA contracts with a private asset manager, Massachusetts Realty Group, to identify and manage leasing, licensing, sale, and easement transactions. Regional Transit Agencies in other parts of the state do not have the same level of experience or capacity for managing complex transactions.
- **The scale of revenues that can be generated from public sector real estate transactions varies, but is generally limited.** Transit agencies only own a limited number of development sites, and each transaction requires significant time and staffing capacity to negotiate.

Additional Resources and Examples

- Massachusetts Realty Group, "Transit Oriented Development," accessed June 23, 2016, https://www.mbtarealty.com/transit-oriented-development/.
- Massachusetts Bay Transportation Authority, "MBTA Real Estate Department," accessed June 23, 2016, http://www.mbta.com/business_center/real_estate/.
- Massachusetts Bay Transportation Authority Real Estate/Development Department, "Public-Private Partnerships," n.d.

SUMMARY: STRENGTHS AND WEAKNESSES OF THE TOOLS

Figure IV-2, beginning on the following page, summarizes the revenue sources, administering entities, typical uses, and key strengths and weaknesses for funding transportation and TOD for each tool that is currently authorized by the Massachusetts legislature.

Figure IV-2: Strengths and Weaknesses of Massachusetts Value Capture Tools

	Mechanism	Revenue Source	Administering Entities	Typical Uses	Key Strengths for Funding Transportation & TOD[a]	Key Weaknesses for Funding Transportation & TOD[a]
TAX INCREMENT FINANCING	**District Improvement Financing (DIF)**	Future increases in revenue from the existing municipal property tax levy	Municipality[b]	Public works and infrastructure projects to enable or incentivize development, including transportation projects; land assembly; development; economic development activities	• Works well for improvements to support individual TOD projects • Can be used at the district level (although precedents are limited) • No new taxes levied • DIF bonds not included in municipality's debt limit	• Only generates revenues if new development occurs • Uncertainty among local assessors around implementation • Available revenue limited by Proposition 2½ • Municipalities face many competing needs for property tax revenues
	Infrastructure Investment Incentive Program (I-Cubed)	New state tax revenues, backed by special assessment on development and municipal liquidity reserve	A&F, DOR, MassDevelopment, EOHED[c]	Public infrastructure to incentivize new jobs and economic development; may include transportation facilities	• Has been used to raise state contributions for transit and other infrastructure to support TOD • No new taxes levied	• Designed to support individual development projects, not transportation infrastructure serving a larger corridor or district • Application and administration require significant state staff time • Majority of funded projects in Boston Metro Area; limited use in slower-growing regions • Funding often awarded late in development process, after critical infrastructure investments already made

Figure IV-2, cont'd.

	Mechanism	Revenue Source	Administering Entities	Typical Uses	Key Strengths for Funding Transportation & TOD[a]	Key Weaknesses for Funding Transportation & TOD[a]
SPECIAL ASSESSMENT AND TAXING DISTRICTS	**Local Infrastructure Development Program (LIDP)**	Assessment on property	Municipality and MassDevelopment	Has never been implemented in Massachusetts; permitted uses include public infrastructure, including transportation facilities	• Shifts burden of paying for infrastructure to the private sector; bonds not included in municipality's or Commonwealth's debt limit • Provides private developer with access to tax-exempt financing • Flexibility in setting assessment rates and determining uses	• 100 percent of property owners must agree to assessment, likely limiting the tool to infrastructure that will directly benefit developments involving few property owners • Developers may be reluctant to request a new assessment if other financing options are available
	Business Improvement District (BID)	Assessment on property	BID Board of Directors designated by property owners, under oversight of municipal governing body	Business retention and recruitment, marketing, landscaping, public space maintenance and security, parking management, minor capital improvements to support economic development	• May be used to support successful TOD by funding minor capital improvements, services and maintenance of public space, and economic development activities	• Not used to pay for major capital projects (may not issue debt) • Unclear whether BIDs may be used to pay for transit service
	Betterments and Special Assessments	Assessment on property	Commonwealth, municipality, or special district	Projects involving eminent domain takings, such as new streets; water and sewer systems; sidewalk construction	• May be used in limited cases to support infrastructure to serve new development projects • Do not require property owner approval (though subject to stringent "special benefit" requirement)	• Not authorized for use for transit or other transportation projects (except local streets and roads) • "Special benefit" requirement would be difficult to meet for most transportation projects

Figure IV-2, cont'd.

	Mechanism	Revenue Source	Administering Entities	Typical Uses	Key Strengths for Funding Transportation & TOD[a]	Key Weaknesses for Funding Transportation & TOD[a]
DEVELOPER CONTRIBUTIONS	**Impact Fees**	One-time fee on new development	Municipality	Sewer and electrical service hook-ups; other services that benefit only the party paying the fee	• May be used in limited cases to support infrastructure to serve new development projects	• Under the existing legal framework, Massachusetts courts are unlikely to uphold the use of impact fees for transit or other regional- or district-serving projects
	Affordable Housing Linkage and In-Lieu Fees	One-time fee on new development	Municipality	Affordable housing	• Provides funding for production or preservation of affordable housing • In-lieu fees may be implemented as part of a community's inclusionary zoning ordinance or bylaw	• May only be used to pay for affordable housing • State legislation would be required in order to expand the use of linkage fees to new communities
	Density Bonuses	Contribution from developer (in-kind or payment)	Municipality	Affordable or workforce housing, open space, affordable commercial, streetscape improvements, or other community facilities.	• Compared to individual negotiations, provides municipality and developer with more certainty about scale and type of required contribution	• Magnitude of the public benefits varies depending on the strength of the local real estate market and other factors that affect the value of the bonus density to developers • Typically used to incentivize the provision of district-serving infrastructure, amenities, and affordable housing, not regional-serving transportation projects
	Negotiated Developer Contributions	Contribution from developer (in-kind or payment)	Municipality or other public agency	Local-serving infrastructure, affordable housing, parks and public open space, community facilities	• Compared to density bonuses, provides municipality and developer with more flexibility to determine appropriate scale and type of contribution	• Magnitude of contributions varies depending on the strength of the local real estate market and other factors that affect project profitability • Most practical for large development projects • Scale of overall value captured is usually limited • Limited potential to pay for regional-serving projects

Figure IV-2, cont'd.

	Mechanism	Revenue Source	Administering Entities	Typical Uses	Key Strengths for Funding Transportation & TOD[a]	Key Weaknesses for Funding Transportation & TOD[a]
REAL ESTATE TRANSACTIONS	**Public Sector Real Estate Transaction**	Sale, ground lease, joint development, or concession on publicly owned land, facility, or air rights	Transit agency, municipality, or other public land owner	Construction of new transit stations, station improvements, or related facilities; proceeds from sale, ground lease, or concession may also be used to support an agency's operating budget	• In most cases, public sector real estate transactions are the only value capture mechanism available to transit agencies • Contributions are flexible; may be used to fund operations and maintenance as well as capital improvements	• Magnitude of contributions varies depending on the strength of the local real estate market and other factors that affect project profitability • Scale of overall value captured is usually limited • Requires significant capacity on the part of the public land owner

[a] For a more detailed discussion of strengths and weaknesses, see the detailed tool evaluations provided above.
[b] If a municipality used DIF in concert with LDP, MassDevelopment would issue the bonds.
[c] Acronyms: A&F: Executive Office of Administration & Finance; DOR: Department of Revenue; EOHED: Executive Office of Housing and Economic Development
Source: Strategic Economics, 2016

V. VALUE CAPTURE CASE STUDIES

This chapter presents four case studies of transportation and TOD projects that are currently planned or underway in Massachusetts, including the Allston Interchange, South Boston Waterfront, South Coast Rail, and MBTA Red Line. A fifth case study, of the Green Line Extension project, is briefly summarized below and presented in full in Appendix A. The case studies explore the opportunities and challenges associated with using value capture tools in a variety of different contexts.

CASE STUDY APPROACH

In order to ensure that the case studies reflect the wide variety of contexts in which value capture might be considered in Massachusetts, Strategic Economics worked closely with MAPC to select projects that represent a range of scales, locations, market strengths, and infrastructure needs (summarized in Figure V-1, below). Each case study includes the following components:

- **Case Study Context:** Provides an overview of the project, location, and property owners and municipalities involved. The case studies range in scale from a site controlled by one property owner (Allston Interchange), to a development district involving multiple property owners (South Boston Waterfront), to transit corridors that involve both multiple property owners and multiple jurisdictions (South Coast Rail and Red Line). Three of the four case study projects are in the MAPC region (metropolitan Boston); the fourth (South Coast Rail) would serve three gateway cities as well as a number of suburban and semi-rural communities along the South Coast.
- **Infrastructure Needs**: Describes the components of each infrastructure project. As shown in Figure V-1, Each of the case studies involves many different types of complex infrastructure investments, ranging from local infrastructure to support specific development projects, to district- or regional-serving connectivity improvements such as shuttles, buses, rail, and highway interchanges. While three of the four case studies focus on major new capital projects, the Red Line case study addresses the potential use of value capture for state of good repair needs and improvements to increase the capacity of an existing transit line.
- **Land Use and Development:** Describes existing land uses in the case study area, local real estate market conditions, and the potential for new development. Both the Allston Interchange project and South Boston Waterfront districts are located in strong real estate markets where significant development is already occurring or anticipated. South Coast Rail serves much weaker real estate markets that have attracted limited development in recent years. The Red Line connects fast-growing centers in Cambridge, Somerville, Downtown Boston, and Downtown Quincy, with established residential neighborhoods in South Boston and the southern suburbs.
- **Value Capture Opportunity:** Discusses the opportunities and challenges for using value capture to pay for needed improvements, including (where available) the magnitude of value that is expected to be created, the timing of the infrastructure needs vis-à-vis development, and other issues.
- **Potential Tools:** An evaluation of the types of value capture tools that are most likely to be applicable to each case study. The tools identified for each case study (shown in Figure V-1) include those that are authorized for use in Massachusetts and, where appropriate, tools that were proposed during the 2015-2016 legislative session (in particular, Supplemental Infrastructure Financing for Transportation, or SIFT) or that may be used in other states but are not currently available in the Commonwealth.

Limitations of the Analysis

The case studies are in various phases of planning and development. However, each case study is currently subject to significant uncertainty about both the costs and phasing of the needed infrastructure improvements, and the timing and extent of planned development. Where possible, the case studies include order-of-magnitude cost projections and estimates of the potential value associated with new development. These estimates are based on the best information that is currently available, but additional information and analysis will be required to inform more precise estimates of potential value capture revenues that could be used for financing purposes. Project implementation will ultimately require detailed financing strategies that draw on variety of funding sources (including but not limited to value capture).

Figure V-1: Case Study Summary

Case Study	Project Scale	Property Owners and Municipalities	Location	Development Potential	Infrastructure Needs	Value Capture Tools Considered
Allston Interchange	TOD Site	• One Property Owner • One Municipality	Boston Metro Area	Significant	• Highway interchange and viaduct • Commuter rail station • Local investments to support TOD (e.g., street network, additional bicycle and pedestrian connections, shuttles and buses)	• Negotiated developer contributions • LIDP • DIF • I-Cubed
South Boston Waterfront	TOD District	• Multiple Property Owners • One Municipality	Boston Metro Area	Significant	• Regional connectivity improvements (e.g., enhanced bus to North Station, Silver Line improvements) • District connectivity improvements (e.g., shuttles, bicycle and pedestrian connections) • Other local investments to support TOD (e.g., local streets, streetscapes, open space)	• Negotiated developer contributions • Density bonus program • Impact fee • Special assessment • DIF
South Coast Rail	Transit Corridor	• Multiple Property Owners • Multiple Municipalities	South Coast suburbs and gateway cities	Limited	• New commuter rail line, stations • Local investments to support TOD	• SIFT • DIF
Red Line	Transit Corridor	• Multiple Property Owners • Multiple Municipalities	Boston Metro Area	Varies	• State of good repair improvements • Capacity improvements to existing transit system	• Negotiated contributions • Special assessment • Impact fee • Other form of municipal contribution
Green Line Extension (Appendix A)	Transit Corridor	• Multiple Property Owners • Multiple Municipalities	Boston Metro Area	Varies	• New rapid transit line, stations • Local investments to support TOD	• Negotiated contributions • SIFT • DIF

Source: Strategic Economics, 2016.

The Green Line Extension Case Study

The Green Line Extension (GLX) project would extend MBTA Green Line service into Somerville, Cambridge, and Medford. Appendix A provides a detailed analysis of the property value and fiscal benefits of the GLX, the opportunities and challenges associated with using value capture to help pay for the project, and order-of-magnitude estimates of the revenues that could be generated. In addition to contributing to the findings and recommendations in this study, the GLX case study helped inform negotiations among MassDOT and the cities of Somerville and Cambridge over an appropriate local financial contribution to support completion of the project.

Some of the key findings from the GLX case study include:

- **The GLX is spurring major new development in the future station areas.** Significant development has already occurred around many of the future stations, in anticipation of the new transit service. Over the next thirty years (2017-2047), an additional 5,400 new residential units, 4.6 million square feet of office, 615,000 square feet of retail, and 210 hotel rooms are expected to be built within a quarter mile of the stations. A high proportion of this planned development is contingent on the completion of the GLX as originally planned.
- **The GLX will generate significant tax revenues for the cities and the Commonwealth.** New development that is directly associated with the GLX (and is unlikely to occur in the absence of the transit project) is expected to generate $250 to $280 million in combined property tax revenues for Somerville, Cambridge and Medford, and $399 to $431 million in state tax revenues over thirty years. However, it is important to note that the projected growth will come with fiscal costs as well as benefits, especially for local governments.
- **There may be an opportunity to capture a share of incremental growth in property tax revenues associated with planned new development.** While most of Massachusetts' existing tools would be challenging to apply directly to financing the GLX, there could be some potential to use a tool such as DIF or SIFT (if enabled through legislation) to capture some of the incremental growth in property tax revenues from the existing municipal levy in order to help pay for the project. The case study estimated the potential magnitude of revenues that could be raised by dedicating a share of the incremental growth in local property tax revenues to the project at $67 to $158 million over thirty years.
- **Negotiated development contributions are a likely mechanism for providing some of the local-serving infrastructure needs associated with the Green Line Extension, such as bicycle and pedestrian connections to the stations.** The MBTA has already begun preliminary discussions with some of the major property owners and developers in the GLX station areas. These contributions would likely come in the form of improvements provided in-kind by the developer or one-time payments for specific project components, and would thus be difficult to use as an up-front funding source for transit. However, if another funding source were identified, developer contributions could conceivably help contribute to debt service or recover other costs over time. The case study estimated the potential value of negotiated development contributions to pay for local-serving infrastructure at $9.7 to $20.7 million over thirty years.

ALLSTON INTERCHANGE

MassDOT is developing a plan to replace and reconfigure the existing Allston interchange and viaduct on I-90 (the Massachusetts Turnpike), and to build a new commuter rail station to serve the area. This transportation project will open up major opportunities for new development, creating significant value for Harvard University, which owns the land currently occupied by the interchange. This case study explores the potential to capture some of this value to help create a new, high-quality, urban district in Boston's Allston neighborhood.

CASE STUDY CONTEXT

The Allston Interchange study area (also known as Allston Landing South)[35] consists of a triangle bounded by Cambridge Street on the northwest, Soldiers Field Road on the east, and freight and commuter rail lines to the south. As shown in Figure V-2, surrounding uses include:

- Harvard's Allston campus, home to the university's athletic facilities and business school.
- Allston Landing North, an area owned by Harvard where the university is planning to build two new districts: (1) an extension of the existing campus that will be known as the Science and Enterprise District, and will be anchored by new facilities for the School of Engineering and Applied Sciences; and (2) an Enterprise Research Campus that is envisioned as a non-institutional, mixed-use center for businesses, social enterprises, and research and development.
- Boston University athletic facilities.
- Charles River recreational facilities.
- Existing residential neighborhoods.

The study area is currently occupied by major transportation facilities including the interchange, viaduct, and Beacon Park Yard, a former freight loading railyard operated by CSX Transportation (CSXT). The existing interchange and viaduct were built in 1964-1965, and designed to curve to the north in order to avoid Beacon Park Yard.[36] Harvard University purchased the property comprising Allston Landing North and Allston Landing South at auction from the Massachusetts Turnpike Authority (now MassDOT) in the early 2000s, in a transaction that allowed MassDOT and CSXT to continue their operations indefinitely through the establishment of permanent easements.[37]

The viaduct is now functionally obsolete and structurally deficient, and several recent events have created an opportunity to not only replace, but also significantly redesign, the entire facility. In the years subsequent to purchases in the early 2000s, Harvard and CSXT engaged in negotiations resulting in an agreement on terms under which CSXT would relocate their business in Allston Landing to alternative locations to the West. This process, which requires removal of all structures, environmental testing and, as necessary,

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[35] The study area used for this analysis, also known as Allston Landing South, was defined both by MassDOT for the purposes of the I-90 Allston Interchange Improvement Project and the Boston Planning and Development Agency for the I-90 Allston Interchange Placemaking Study.

[36] MassDOT, "Allston Interchange Project Fact Sheet," https://www.massdot.state.ma.us/Portals/8/docs/HighlightedProjects/AllstonInterchange/Allston_I-90_FactSheet.pdf, accessed July 2016.

[37] Harvard University, Presentation to the I-90 Allston Interchange Task Force Meeting, August 19, 2015, https://www.massdot.state.ma.us/Portals/8/docs/HighlightedProjects/AllstonInterchange/PresentationHarvard_081915.pdf.

remediation, is currently underway. Under the plan, Harvard has taken full control of parcels located in Allston Landing North and expects to do likewise in Allston Landing South in a timeline consistent with the MassDOT I-90 plan. Second, MassDOT's ongoing implementation of All Electronic Tolling on I-90 will allow the agency to significantly reduce the footprint of the toll plaza on the interchange. Together, these changes will enable MassDOT to straighten the curving alignment of the interchange and build a new commuter station (West Station) on the existing Framingham/Worcester line, in the former Beacon Park Yard loading area (see Figure V-3, below).[38]

MassDOT is still in the process of finalizing plans for the new interchange and commuter rail facilities, and Harvard has not announced any plans for the future development of the study area. However, the University has signed a Letter of Intent with MassDOT that lays out the key elements of a land swap wherein MassDOT will relocate the Allston Interchange to the former Beacon Park Yard to the south, with a goal of freeing up approximately 50 acres of developable land for Harvard where MassDOT's facilities are currently located.[39] Meanwhile, the BPDA is conducting a Placemaking Study that will result in guidelines for a multi-modal street network, additional bicycle and pedestrian connections, open space improvements, local-serving transit (e.g., shuttles and buses), and the design of future development in the study area.[40]

INFRASTRUCTURE NEEDS

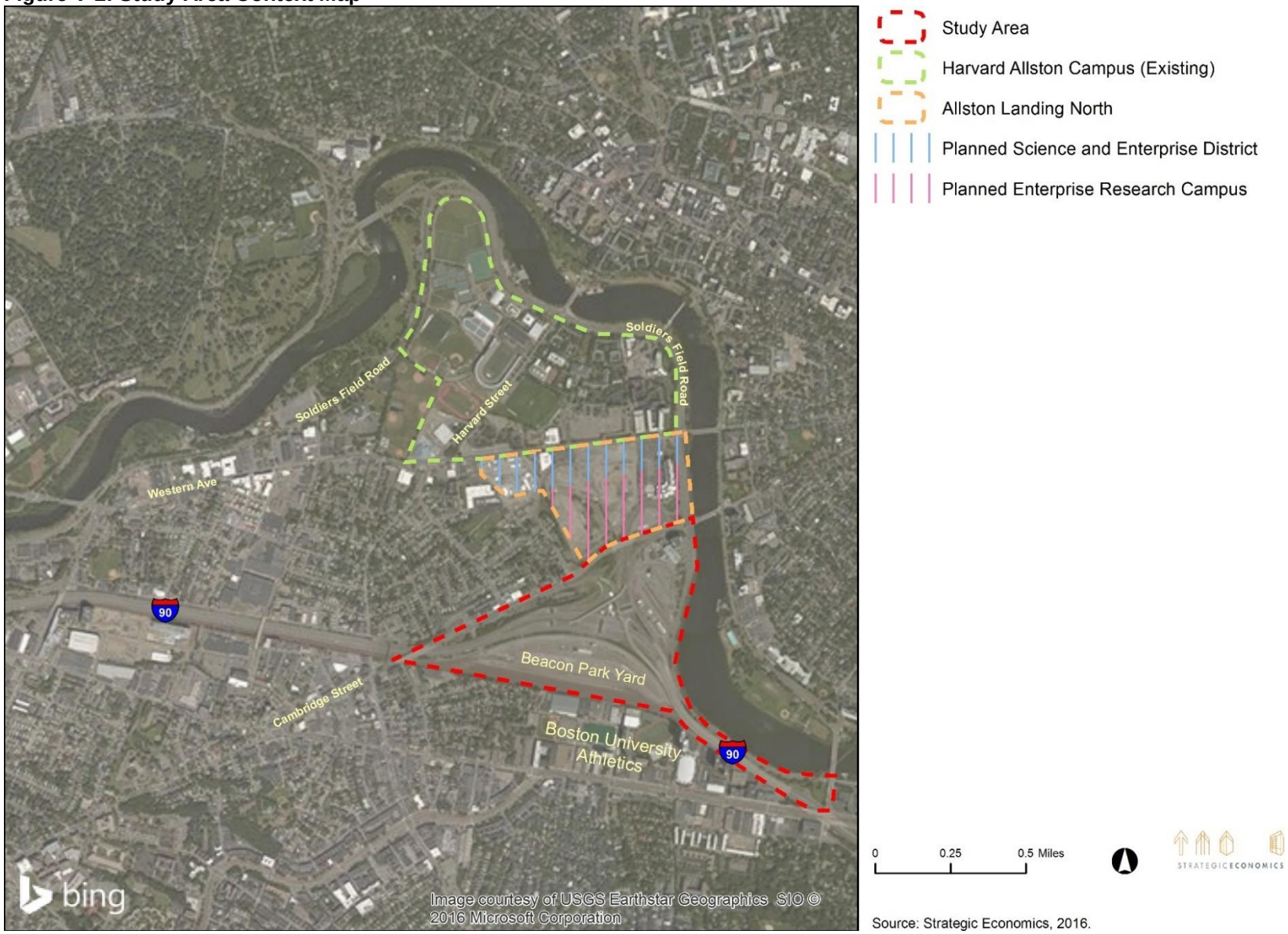
Figure V-3 shows a simplified version of the infrastructure plan as currently being studied by MassDOT and the BPDA. The transportation improvements that are being considered for the study area generally fall into three categories:

- **Relocated highway interchange and viaduct**;
- **New commuter rail station**; and
- **Local investments to support TOD**, including a local street network, bicycle and pedestrian connections, and local-serving transit such as shuttles and buses.

The plans are still extremely preliminary, and no cost estimates are currently available. While MassDOT will be responsible for relocating the highway interchange and viaduct and building the new commuter rail station, it remains unclear which entity will pay for and build the local connectivity improvements. The interchange will need to be relocated before any other infrastructure investments (or new development) can occur; however, the timing for the relocation and redesign of the interchange is not yet known.

[38] MassDOT, "Allston Interchange Project Fact Sheet."
[39] Harvard University, Presentation to the I-90 Allston Interchange Task Force Meeting.
[40] The Cecil Group/Harriman, "I-90 Allston Interchange Project Placemaking Study: List of Standards for Placemaking," prepared for the City of Boston, June 27, 2016, http://www.bostonredevelopmentauthority.org/planning/planning-initiatives/i-90-allston-interchange.

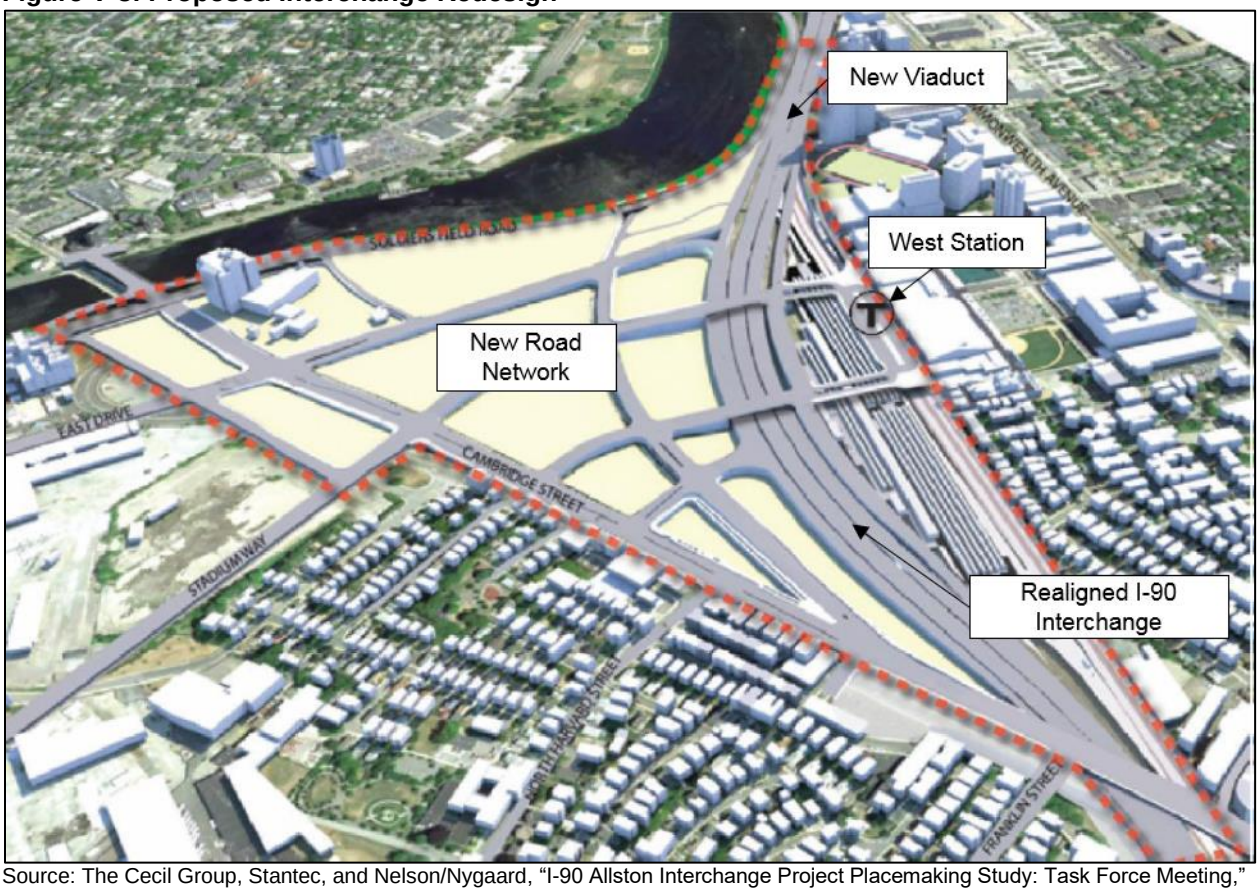
Figure V-2: Study Area Context Map



Source: Strategic Economics, 2016.

Note: The Study Area is also known as Allston Landing South.

Figure V-3: Proposed Interchange Redesign



Source: The Cecil Group, Stantec, and Nelson/Nygaard, "I-90 Allston Interchange Project Placemaking Study: Task Force Meeting," prepared for the City of Boston, June 27, 2016, https://www.massdot.state.ma.us/Portals/8/docs/HighlightedProjects/AllstonInterchange/6-27-16_Presentation.pdf; Strategic Economics, 2016.

LAND USE AND DEVELOPMENT

Harvard has not announced plans for the future development of the study area. Any development in the area is contingent on the relocation of the interchange, and public documents suggest that the university does not expect development in the study area to begin for at least ten years.[41]

However, the Central Transportation Planning Staff (CTPS) has estimated that the study area could accommodate four million square feet of new development by 2035.[42] This estimate assumes that Harvard would build out the study area at a similar density and with similar uses as the existing campus and Allston Landing North area. This is intended to be a conservative estimate for transportation planning purposes, and staff at BPDA generally expect that development in the study area will be of significantly higher intensity.

[41] Harvard University, Presentation to the I-90 Allston Interchange Task Force Meeting.

[42] CTPS is the staff to the Boston Region Metropolitan Planning Organization. This estimate is based on information provided by Harvard University to CTPS for inclusion in the 2035 regional transportation model that will be used for analysis of the Allston Interchange project. For more information on the assumptions underlying the development estimate, see: Memorandum from Joe Beggan (Harvard University) to Scott Peterson (CTPS), "2035 Employment and Population estimates for TAZs 238, 244, and 245," July 8, 2014.

Staff and stakeholder discussions as part of the BPDA Placemaking Study have focused on the potential for the study area to accommodate non-institutional, mixed-use development, with a focus on the type of business, social enterprise, and research and development (R&D) uses envisioned for the Enterprise Research Campus. Indeed, the study area's proximity to the existing Harvard campus, the future Enterprise Research Campus, and MIT and Boston University – as well as strong demand for office and R&D/lab uses in the area – suggest that this could be an excellent location for additional office and R&D uses in the future. A high-quality urban environment and excellent transit access could further support the eventual expansion of Harvard's Enterprise Research Campus or other, similar uses into the study area.

VALUE CAPTURE OPPORTUNITY

By relocating its transportation facilities, MassDOT is creating significant value for Harvard University. The Letter of Intent between MassDOT and Harvard has not been made public, so there is some uncertainty about both the details of the agreement and the extent to which it is binding. However, development in the study area will not be possible until and unless MassDOT relocates the interchange. Based on publicly available information, it appears that MassDOT has also agreed add a new commuter rail station and build a ramping system and connecting roads that support the introduction of an urban street grid.[43] These improvements will further support development in the study area.

Harvard has made a significant financial commitment to the project by extinguishing the CSXT easement. As a result of Harvard's purchase from the Mass Turnpike Authority and the University's subsequent ability to provide financial incentives for CSXT to vacate the property, the parcel has largely been cleared and the Commonwealth need only deal with a single land owner for the transaction necessary to accommodate the new project. In addition, the realigned portion of the Turnpike, which will be coming to grade in Allston Landing South, can be constructed with less disruption to the existing viaduct and will benefit from adjacent areas that can be used for construction staging.

Based on existing real estate market conditions and the conservative development projection, the total value of new development in the study area could reach as much as $2 billion. Strategic Economics estimated the order-of-magnitude value of the projected development using current market values for office space in the Allston area.[44] Assuming that the agency could capture one to two percent of this value, Harvard could potentially contribute $20 to $40 million to transportation or other improvements. However, as discussed above, Harvard has not announced plans for the area, and it is unclear what types of uses will eventually be built or when development will occur. The value that Harvard can contribute will ultimately depend on real estate market conditions and construction costs at the time development actually occurs, as well as other factors affecting project profitability such as fees required by the City of Boston and the length of the entitlements process.

MassDOT is expected to capture significant value through the easement swap agreement that the agency will negotiate with Harvard and Harvard's financial commitment to West Stations. Since the Letter of Intent between MassDOT and Harvard has not been made public, it is not possible to determine how much value MassDOT is likely to capture through this agreement. However, it is important to note that while MassDOT is creating value for Harvard by redesigning and relocating its facilities and adding a transit station, Harvard is enabling MassDOT's infrastructure project by providing the land required to build

[43] Harvard University, Presentation to the I-90 Allston Interchange Task Force Meeting.
[44] Including market rents of $40 per square foot, a 5% vacancy rate, operating expenses of 20%, and a capitalization rate (or ratio of net operating income for the property owner to sale value) of 6.5%.

the agency's new facilities (Beacon Park Yard). Moreover, Harvard has reportedly agreed to make a financial contribution to MassDOT for the construction of a commuter rail station that is fully accessible to motor vehicles, pedestrians, and bicycles.

Given that the framework for the land swap is already in place and significant in scope, there may be limited potential for MassDOT to extract additional contributions for the highway project. Although the agreement between Harvard and MassDOT may be refined over time, the Letter of Intent appears to have generally established how Harvard will contribute to the highway project.

However, when Harvard seeks entitlements for development in the study area, there may be potential for the BPDA to capture additional value for local connectivity improvements or other community benefits. Under Article 80 of the Boston Zoning Code, the BPDA is required to review the design of large real estate developments and work with developers to mitigate project impacts on the environment, traffic and parking, neighborhood character, and local infrastructure systems. If Harvard eventually develops the study area with institutional uses, the area would be subject to the Institutional Master Plan Review process under Article 80. Either way, the BPDA will likely negotiate a number of developer contributions and mitigations as a condition for issuing entitlements.

A formal agreement or partnership among all the project stakeholders could help facilitate ongoing coordination. There may be a benefit to bringing together all of the key players – including MassDOT, Harvard, and BPDA – to agree to an overarching vision, implementation strategy, and financing plan for the project.

POTENTIAL TOOLS

As described above, MassDOT has already captured significant value for the new interchange and commuter rail station. However, as part of the entitlement process, there may be opportunities to implement value capture tools in order to pay for local connectivity improvements or other community benefits. Additional information on the timing, scale, and type of Harvard's development plans will be required in order to develop a detailed value capture strategy. However, based on the information that is currently available, the most likely value capture tools include negotiated development contributions, the Local Infrastructure Development Program (LIDP), District Improvement Financing (DIF), and/or the Infrastructure Investment Incentive Program (I-Cubed). The potential to use each of these tools to help pay for local connectivity improvements is discussed below.

Negotiated Development Contributions

- **The BPDA and Harvard will likely negotiate a number of developer contributions and mitigations as part of the entitlement process.**
- **These contributions could take the form of improvements made in-kind or monetary contributions to a fund.** For example, depending on the outcome of the negotiations, Harvard may be required to build streets and other public infrastructure and convey ownership to the City. Alternatively, Harvard could be asked to contributing funding for the City (or MassDOT or the MBTA) to build needed infrastructure. The negotiated agreement could also include provisions for Harvard to establish a special assessment under the LIDP program, for the City of Boston to form a DIF, and/or for Harvard and the City to jointly submit an I-Cubed application to the state.

Local Infrastructure Development Program

- **The Allston Interchange project could be a potential candidate for piloting the LIDP program, since it involves major public-serving infrastructure improvements and one major**

property owner. LIDP is intended to shift the burden of paying for infrastructure to the private sector, by allowing private property owners to finance public-serving infrastructure with tax-exempt bonds issued by MassDevelopment. Although LIDP has not been implemented to date – in part because 100 percent property owner approval is required for implementation – special taxing or assessment districts such as LIDP are often used in other states to pay for local-serving infrastructure that will enable major development projects.

- **However, Harvard may have a limited incentive to participate in the program**. Assuming that Harvard is responsible for building (or at least funding a significant portion of) local streets and connectivity improvements, the university could potentially benefit from establishing an LIDP. This tool would provide the university with access to long-term, tax-exempt financing, and the ability to pass the cost of paying back the bonds to future property owners (since the assessment runs with the land). However, the university may have access to other financing sources with lower transaction costs (including self-financing). Moreover, if the university retains ownership of the land and negotiates ground leases with private developers (a typical transaction structure for Harvard), the ability to pass the assessment on to future owners may be of limited benefit. These factors will need to be considered to determine whether an LIDP is an appropriate tool in this case.

District Improvement Financing

- **Assuming that future development in the study area is non-institutional, it will generate substantial new property tax revenues for the City of Boston.**[45] For example, if total new development were valued at $2 billion, it could generate more than $50 million a year (at full build-out) in new property tax revenues based on the City's current tax rate for commercial properties.[46] The City could consider dedicating some share of this future property tax increment to building local connectivity improvements by establishing a DIF.
- **A DIF would have the benefit of assuring community members that public improvements will be funded solely by new revenues generated from within the area.**
- **In addition, a DIF could serve as an incentive to Harvard to form a LIDP or otherwise make significant contributions to community-serving infrastructure**. By effectively guaranteeing that the City would dedicate a share of incremental property tax revenues to local investments, a DIF could help the City negotiate contributions from Harvard. From the City's perspective, LIDP assessment revenues could be used to cover any shortfalls in debt service payments from a DIF bond.

Infrastructure Investment Incentive Program

- **Depending on the type of development that occurs, the Allston Interchange could be eligible for the I-Cubed program.** I-Cubed captures net new state tax revenues generated by a development project, in order to finance local infrastructure improvements required to make the project possible. In order to receive I-Cubed funding, a developer and municipality must demonstrate that the jobs and state tax revenues associated with the development project are "net new" to the state and would not happen "but for" the infrastructure investment supported by I-Cubed. Meeting the "net new" requirement typically involves assessing the location decisions of individual tenants who plan to locate in the development. If the Allston Interchange development

[45] For institutional uses, Harvard has an agreement in place with the City of Boston to provide Payment in Lieu of Taxes (PILOT).

[46] The City's current (2016) tax rate for commercial, industrial, personal property is $26.81 per $1,000 of assessed value.

attracts employers who would not otherwise locate in the state, the project could be eligible for funding in the range of $5 to $50 million for the transit station or other local infrastructure required to make the development possible. This funding could be used in combination with other value capture tools such as LIDP or DIF.

SOUTH BOSTON WATERFRONT

The South Boston Waterfront is one of the fastest growing urban areas in the Commonwealth. Since approximately 2000, the district (formerly known as the Boston Seaport) has been transformed from a primarily industrial waterfront dominated by warehouses, manufacturing, and parking, to a mixed-use district with a range of office, residential, hotel, and convention uses as well as a continued industrial/maritime presence. As part of the entitlement process for the development projects that have already been completed or are underway, the BPDA has already negotiated significant local infrastructure improvements and other public benefits. This case study examines the potential to implement more systematic, district-based value capture tools to help fund the significant connectivity improvements that are required to both address existing congestion and mobility challenges in the South Boston Waterfront, and to ensure that the transportation system can accommodate additional growth.

CASE STUDY CONTEXT

The South Waterfront is located southeast of Downtown Boston, and across the Boston Harbor from East Boston and Boston Logan International Airport. The district offers the largest supply of centrally located, undeveloped land in the City of Boston, and its proximity to Downtown and excellent access to highways, the airport, and the Boston Harbor make it a particularly attractive location for employment and residential growth (see Figure V-4, below).

The rapid pace of development in the district was made possible by a series of major public infrastructure investments that began in the late 1990s, including the Boston Harbor Project, Central Artery/Tunnel Project, the South Boston Bypass Road, and construction of the Silver Line Tunnel from South Station. Additional public sector investment in a new Federal Courthouse and the Boston Convention and Exhibition Center also helped catalyze new development. Beginning with the 1999 Seaport Public Realm Plan and the 2000 South Boston Transportation Study, the BPDA and City of Boston have also played a critical role in coordinating new private development with the public realm and local transportation improvements required to support growth.

Few changes have been made to the transportation network since the completion of the Central Artery/Tunnel and Silver Line Tunnel projects in the early 2000s, despite the rapid pace of development since that time. The two tunnel projects serve as important regional connections and helped open up the district to new development, but also serve as barriers for pedestrians and bicyclists. The roadways completed as part of the Central Artery/Tunnel project were focused primarily on providing access to the new highway infrastructure, and the sidewalk and bicycle network within the district is limited.

It is expected that over the next two decades, there will be an increasing need for transportation service to this area to meet the growing demands of workers and residents. The MBTA's Silver Line service is currently operating over capacity during the peak hours. Also, a number of employers run private shuttles. While these add significant capacity (providing as much total peak hour capacity as MBTA bus service), the routes are redundant and inefficient.[47]

[47] Massachusetts Convention Center Authority (MCCA), Massachusetts Port Authority (Massport), Massachusetts Department of Transportation (MassDOT), the City of Boston, and A Better City, "South Boston Waterfront Sustainable Transportation Plan," January 2015, https://www.massdot.state.ma.us/Portals/17/docs/Studies/SBostonWaterfrontFullReport_jan2015.pdf.

Figure V-4: Study Area Context Map

Study Area

0 0.5 1 Miles

STRATEGIC ECONOMICS

Source: Strategic Economics, 2016.

INFRASTRUCTURE NEEDS

In January 2015, a multi-agency collaboration called the South Boston Waterfront Sustainable Transportation Committee – comprised of the Massachusetts Convention Center Authority (MCCA), Massachusetts Port Authority (Massport), Massachusetts Department of Transportation (MassDOT), the City of Boston, and A Better City – released the South Boston Waterfront Sustainable Transportation Plan. The Sustainable Transportation Plan provides a framework for the transportation system improvements that will be required to both address existing challenges and support future development over the next 20 years. The plan is organized around six objectives, each of which are broken out into dozens of specific short, medium, and long term actions for individual agencies and other stakeholders. For the purposes of this analysis, the action items can be summarized into three general categories:

- **Regional connectivity improvements:** This category includes transit and other transportation projects needed to improve access from the South Boston Waterfront to Downtown and other neighborhoods to the north and south. Most of these projects would serve not only the Waterfront, but also the surrounding districts. For example, the plan calls for improving connections to Boston's North Station by adding bus priority lanes in Downtown, improving Silver Line service and expanding capacity at South Station, expanding water shuttle service, enhancing the capacity of the arterials that connect the Waterfront to Downtown, and improving operations at the I-90 on- and off-ramps.
- **District connectivity improvements:** This category includes projects that would facilitate enhanced mobility and access within the Waterfront district itself. Examples include improvements to district arterials and intersections, new and enhanced bicycle and pedestrian connections, consolidating the private shuttle systems, and providing an internal transit circulator.
- **Other local investments to support TOD:** These improvements include the local streets, streetscapes, and open space required to serve individual development projects. In general, private developers have provided these types of improvements as part of individual master planned development projects. While local infrastructure is not the focus of the Sustainable Transportation Plan, the plan does call for defining a more consistent street hierarchy and public realm design standards in order to integrate the various master planned projects.

The plan does not include cost estimates,[48] and notes that significant further review and planning will be required in order to advance many of the capital projects identified. The Sustainable Transportation Committee partners have begun implementation on a number of the short-term action items included in the plan, such as including improving signal timing for the Silver Line, adding new wayfinding signage, making pedestrian improvements, adding Hubway bike sharing stations, and working with employers to consolidate private shuttle services.[49]

[48] The one exception is state of good repair needs; the plan estimates that maintaining the transportation assets to a state of good repair should cost roughly $41.2 million a year, of which less than half is currently funded annually.
[49] MassDOT, "MassDOT, City of Boston, Partner Agencies Begin Implementation of South Boston Waterfront Sustainable Transportation Plan," Press Release, August 25, 2015, https://blog.mass.gov/transportation/uncategorized/south-boston-waterfront-sustainable-transportation-plan.

LAND USE AND DEVELOPMENT

While there are many property owners in the South Boston Waterfront, a few large owners have consolidated significant land holdings. Major private property owners in the South Boston Waterfront district include Boston Global Investors and The Fallon Company (the developers of Seaport Square and Fan Pier, respectively), as well as the P&G/Gilette Manufacturing Company, which has maintained major research, development, and manufacturing facilities in the South Boston Waterfront since the early 1900s.[50]

Nearly three-quarters of the land area in the district is currently owned by tax-exempt public agencies.[51] Major public land owners include the Port Authority, Convention Center Authority, federal government, Commonwealth, MBTA, and City of Boston.

The South Boston Waterfront added 10 million square feet of new development between 2000 and 2013 – representing a 70 percent increase in building area – and is projected to add another 26 million square feet over time. Figure V-5, below, summarizes recent development and the development projections included in the Sustainable Transportation Plan.

The majority of the development to date has occurred in master planned development projects that are already largely entitled. For example, major projects that are already underway include:

- **Seaport Square:** A 23-acre, 20-block mixed-use neighborhood that will eventually include 6.3 million square feet of development including 2,500 new residential units, office, research and development facilities, retail shops, restaurants, hotels, and cultural institutions. As of June 2016, ten of the blocks were either complete or under construction.
- **Fan Pier:** A 21-acre site that will ultimately include 3 million square feet of luxury condominium towers, office and research and development buildings, dining and shopping, and open space. As of June 2016, six of the nine planned buildings were completed or under construction.
- **Pier Four:** A five-acre site which will include three buildings totaling just under one million square feet and offering luxury office, residences, retail, and cultural and civic space. Phase I (a residential tower) was completed in 2014, while Phase II (office building) is under construction.
- **Fort Point District**: A 100-acre district that is primarily occupied by surface parking lots owned by P&G/Gilette and a USPS facility. The BPDA released a land use plan for the district in 2007 that envisions a mixed-use neighborhood with over 11 acres of new public open space and almost 5.9 million square feet of development. Although development in this area has been somewhat slow to date, General Electric recently announced plans to move its headquarters to Fort Point.[52]

[50] City of Boston, 2014; RKG Associates, 2016.
[51] Calculation by RKG Associates, 2016, based on 2014 data from the City of Boston and MassGIS.
[52] BRA and the City of Boston, "South Boston Waterfront District Municipal Harbor Plan Renewal and Amendment," June 15, 2016, http://www.bostonredevelopmentauthority.org/planning/planning-initiatives/south-boston-waterfront-district-municipal-har-(1).

Figure V-5: Recent and Projected Development in the South Boston Waterfront

	Total Development (Sq. Ft.)			Change, 2000-2013 (Actual)		Change, 2013-Build Out (Projected)	
	2000	2013	Full Build Out (Projected)*	Sq. Ft.	%	Sq. Ft.	%
Office	3,607,300	10,156,800	19,329,800	6,549,500	182%	9,173,000	90%
Retail	318,000	545,500	2,376,900	227,500	72%	1,831,400	336%
Medical/Lab	0	657,700	657,700	657,700	N/A	0	0%
Cultural/Recreational/Educational	527,000	488,300	777,000	-38,700	-7%	288,700	59%
Industrial/Manufacturing/Maritime	9,100,000	7,905,700	8,361,700	-1,194,300	-13%	456,000	6%
Hotel	289,000	1,638,200	6,037,600	1,349,200	467%	4,399,400	269%
Residential	118,300	1,473,300	10,637,900	1,355,000	1145%	9,164,600	622%
Convention	0	1,228,400	2,328,400	1,228,400	N/A	1,100,000	90%
Total	**13,959,600**	**24,093,900**	**50,507,000**	**10,134,300**	**73%**	**26,413,100**	**110%**

*Full build-out is expected to occur after 2035.
Sources: South Boston Waterfront Sustainable Transportation Plan, January 2015; Strategic Economics, 2016.

VALUE CAPTURE OPPORTUNITY

The future development projected for the South Boston Waterfront will create significant value. Excluding cultural, recreational, educational, and convention space, the new development projected to occur in the district between 2013 and full build-out could be worth as much as $17.5 billion. Strategic Economics estimated this order-of-magnitude estimate based on the development projections in the Sustainable Transportation Plan, using current market values for commercial and residential space in the South Boston Waterfront area.[53] Assuming the public sector could capture one to two percent of this value, the total potential for value capture could be in the range of $175 to $350 million. Note that this estimate does not take into account the timing of new development; in actuality, new development – and the potential for value capture – will occur incrementally and the value of development will depend on real estate market conditions and construction costs at the time development occurs.

In general, private developers have built the local streets and other infrastructure required to serve their projects. As mentioned above, private developers have generally built the local infrastructure (streets, traffic signals, streetscape improvements, open space, etc.) needed to serve individual master planned development projects.

As part of the entitlement process for each master planned development, the BPDA has also negotiated major public benefits contributions including some district- and regional-serving connectivity improvements. Developer contributions include the provision of arts and cultural facilities, a harbor walk, and other open space and recreational facilities. Developers are also making monetary contributions to support expanded water shuttle service, and the BPDA and developers of Seaport Square are in negotiations to pay for a new Silver Line station house.[54] Although the scale of these contributions is significant, it is not possible to quantify the total value that has already been captured because most of the improvements have been made in-kind. As development proceeds, there may also be opportunities to leverage incremental transportation and access improvements via individual transportation access plan agreements; however these agreements are unlikely to generate the scale of improvements that are necessary for the district as a whole. In the absence of needed district-level improvements, the expected value of future projects may be compromised.

In addition to continuing negotiations with individual developers, there may be an opportunity to implement more systematic, district-based financing tools to help pay for the district connectivity improvements identified in the Sustainable Transportation Plan. The specific value capture tools that could be used to finance these types of improvements are discussed in the following section.

However, district-based financing tools are unlikely to contribute to needed regional connectivity improvements. While the BPDA has had some success in negotiating contributions for regional project such as water shuttles, district-based financing tools are generally only designed to pay for improvements that directly benefit the property owners or developers who are paying into the district. Improvements such as bus priority lanes to Boston's North Station or system-wide enhancements to the Silver Line would serve

[53] Estimate based on using information on current rents, vacancies, and capitalization rates for different product types from published broker reports.

[54] The BPDA has negotiated these contributions under Article 80 of the Boston Zoning Code, and developers are required to mitigate project impacts on the environment, traffic and parking, neighborhood character, and local infrastructure systems in order to receive entitlements. In addition to Article 80, properties in the South Boston Waterfront are also subject to the Massachusetts Public Waterfront Act (General Law Chapter 91) which requires that developers provide public access to the waterfront.

the whole of Downtown, and will be challenging to pay for using district-based value capture tools in the South Boston Waterfront.

POTENTIAL TOOLS

As discussed above, the BPDA has already had significant success in negotiating contributions through agreements with individual developers. This section explores the potential to implement more systematic and/or district-based tools, specifically to pay for connectivity improvements required to serve the district as a whole. As described below, changes to Massachusetts law may be required in order to implement some of the tools.

Density Bonus Program

- **Compared to project-by-project negotiations, a formal density bonus program could provide more certainty for developers and the City about the likely scale of contributions**. In addition, if community benefits took the form of monetary contributions to a fund, a formal program could generate a more consistent funding source that could be dedicated to building out a defined improvement program over time.
- **At the same time, density bonus programs may result in lower contributions from individual development projects**. Density bonus programs must be designed to apply to a broader range of projects and accommodate fluctuating market conditions. Individual negotiations may therefore be more appropriate for the large, complex master planned developments that have typified development in the South Waterfront to date.
- **However, to the extent that future development includes smaller, infill development projects, a density bonus program may have some advantages over project-by-project negotiations.** A formal program could reduce the BPDA staff time spent on individual projects, and help contribute not only to the local infrastructure required to serve each development, but also to district-serving connectivity improvements (for example, through the establishment of a community benefits fund).

Impact Fees

- **Under current Massachusetts law, impact fees may not be used to pay for district-wide transportation improvements**. Massachusetts courts have ruled that impact fees may not be used for projects that benefit the general public as well as the property owners subject to the fee – a category that would likely include most if not all of the connectivity improvements required to serve the South Boston Waterfront.
- **However, changes to the law could enable impact fees to be used to mitigate the impacts of future growth.** Past state legislation has sought to expand the use of impact fees to a broader range of projects. If new legislation were enacted and upheld by the state courts, a transportation impact fee could be used to help pay for capital improvements that are needed to mitigate the impacts of future growth within the district, such as improvements to arterials and intersections and new and enhanced bicycle and pedestrian connections. Note that even if the state law is changed to permit the broader use of this tool, impact fees may only be used to mitigate the impacts of new development; another funding source must be used to pay for any portion of a project that addresses existing infrastructure deficiencies.

Special Assessment District

- **A special assessment district could have several advantages for funding district-serving improvements in the Waterfront.** First, unlike a density bonus program or impact fee, special assessments typically apply to all properties that will benefit from a public investment – rather than

just to new development. Second, depending on the type of district, assessments may often be used to finance capital costs and/or ongoing operating costs.

- **Current Massachusetts law provides limited options for establishing a special assessment to pay for major capital projects.** LIDP (a form of special assessment district) can be used for major capital projects, but requires 100 percent property owner approval. In order for the tool to be feasible in a district with a large number of property owners, the state legislature would need to reduce this property owner approval threshold.
- **There may be potential to establish a special assessment district to pay for minor capital projects and services such as a district circulator.** A Business Improvement District (BID) has a much lower approval threshold, and could be used to fund minor capital improvements that do not require bond financing, such as landscaping, lighting, wayfinding, and street furniture, as well as local services and maintenance of public space. In other states, BIDs have been used to pay for operating district circulators, one of the projects called for in the Sustainable Transportation Plan (see Emery-Go-Round case study, below). While Massachusetts' BID legislation does not specify whether the tool may be used for transit operations, the Community Benefits District (CBD) tool considered by the state legislature in the 2015-2016 session explicitly called out transit operations as an allowed use. Unlike a BID, the proposed CBD tool would also have assessed tax-exempt properties, which account for nearly three-quarters of the land in the South Boston Waterfront.

Emery-Go-Round Property and Business Improvement District: Emeryville, California

The Emery-Go-Round is a free local circulator system that shuttles 1.5 million commuters and residents between Emeryville and Bay Area Rapid Transit (BART) a year. The shuttle service represents the culmination of what began in the mid-1990s as a partnership formed between the City of Emeryville and local businesses.

In 1994, Emeryville enacted an ordinance requiring all new commercial and manufacturing properties to provide shuttle service for employees. The City then approached major employers – many of whom already operated private shuttles – about the potential of starting a publicly accessible, high-capacity shuttle system to further mitigate congestion. Approximately two years later, the Emery-Go-Round began operations. In 2001, property owners established a citywide Property and Business Improvement District (PBID) – a form of special assessment authorized under California law – to fund the Emery-Go-Round. While the PBID is citywide, only parcels located within a quarter mile of shuttle stops are subject to the assessment. Assessment rates vary according to land use and to whether the stop receives service five or seven days a week.

The system is managed by a Transportation Management Association (TMA) comprised of representatives from the local business community. Although the project was initially proposed and planned by City staff, the City's role in funding and operation was largely phased out in the first three years of operations. Currently, PBID assessments make up about 90 percent of the TMA's $3.9 million annual budget. Other revenues include contributions from the City's General Fund, grants, donations, fees for service, contributions from tax-exempt properties within the Emery-Go-Round service area, and in-kind donations.

Sources: Emeryville Transportation Management Association, Board of Directors Meeting, Agenda Packet, June 18th 2015, http://www.emerygoround.com/assets/jun182015_agenda-packet.pdf; City of Emeryville, Citywide Property and Business Improvement District, Engineer's Report, June 2015, http://www.ci.emeryville.ca.us/DocumentCenter/View/8009.

District Improvement Financing

- **The continued development of the South Boston Waterfront is likely to generate significant property tax revenues for the City of Boston**. At full build-out, the development projected for the South Boston Waterfront could generate approximately $475 million in new property tax revenues a year for the City of Boston (in today's dollars). This projection is based on Strategic Economics' order-of-magnitude estimate of development value, described above, and does not take into account project phasing.
- **By dedicating a share of future property tax increases to district-wide transportation improvements through a DIF, the City could provide an incentive for property owners and developers to agree to match the contribution** (for example through the establishment of a special assessment district or impact fee). Note that in order to determine the appropriate share of property tax increment to dedicate to a DIF, the City would need to consider the costs of providing municipal services to meet the needs of the district's rapidly expanding population and employment base, especially given the high share of land that is currently tax exempt.
- **To the extent that planned projects will benefit the Commonwealth, there may be an opportunity to also devote state tax revenues to the DIF, similar to the finance district used to fund the new Boston Convention and Exhibition Center.** The Commonwealth is a major landowner in the district, and many of the needed improvements will support regional economic development. The Convention Center Finance District (discussed in a text box in Chapter IV) provides a potential precedent for capturing state tax revenues (specifically, hotel and sales tax revenues) generated within a geographic district in order to contribute to financing a major public improvement (the Convention and Exhibition Center).

SOUTH COAST RAIL

MassDOT is considering extending commuter rail service to Massachusetts' South Coast. The project, which has been under review since 1994, would restore transit access to Boston for the gateway cities of Taunton, New Bedford, and Fall River – the only three major communities within 50 miles of Boston that cannot currently access the city by rail.[55] Although there is significant uncertainty about the alignment and timing of construction, the number of jurisdictions involved and the relatively weak real estate market in many of the station areas may limit the potential to use value capture to help pay for the rail project. Nevertheless, the reintroduction of commuter rail to the South Coast could have significant benefits for both local communities and the Commonwealth as a whole; the project is expected to attract economic development and generate environmental and quality of life benefits in a region that has experienced limited growth in recent years.

CASE STUDY CONTEXT

Currently, the MBTA provides commuter rail service from Boston's South Station to Stoughton (Figure V-6). As originally envisioned, the South Coast Rail project proposes to extend this line to Fall River and New Bedford by building or upgrading 75 miles of tracks and 10 new stations. In addition to Fall River and New Bedford, this proposed route (known as the "Stoughton alignment") would provide new service to the communities of Easton, Raynham, Taunton, Berkley, Lakeville, and Freetown. The project would also include renovating two existing stations in the towns of Canton and Stoughton. Other components of the project include the acquisition of new electrified locomotives and building 45 grade crossings, two overnight layover facilities, 30 railroad bridges, and six highway bridges. Service from New Bedford and Fall River to Boston's South Station would take 77 minutes and 75 minutes, respectively.[56]

In June 2016, MassDOT estimated total project costs for the Stoughton alignment at between $3.31 and $3.42 billion, and projected that it could be built in 14 to 16 years. This represents a significant increase from previous estimates, which placed the likely project cost at $2.23 billion and estimated a 10-year build-out. In response to the increased cost and extended schedule, MassDOT has proposed an alternative route through Middleborough. This alternative would entail the extension of an existing commuter line (the Middleborough/Lakeview line) and the construction of fewer stations than the Stoughton route. While this alternative could be quicker and cheaper to build, it would result in longer travel times between the newly served communities and Boston than in the main scenario (approximately 90 minutes from New Bedford to Boston instead of 77), allow for much less frequent service (a maximum of 4 trains during peak periods), and would not serve the Back Bay and Route 128 stations, two major destinations.[57]

Over the course of the project's long history, the Commonwealth has funded project design, environmental review, construction of a number of railroad bridges and grade crossings, and technical assistance for communities to conduct land use planning and rezoning in the station areas along the Stoughton alignment. The federal government also contributed TIGER grant funds for several of the bridges. However, with daily ridership for the Stoughton alignment projected at 4,570, the project is not expected to reach the ridership threshold for New Starts transit funding. No other sources of funding at the federal or at the local levels have been identified to date.

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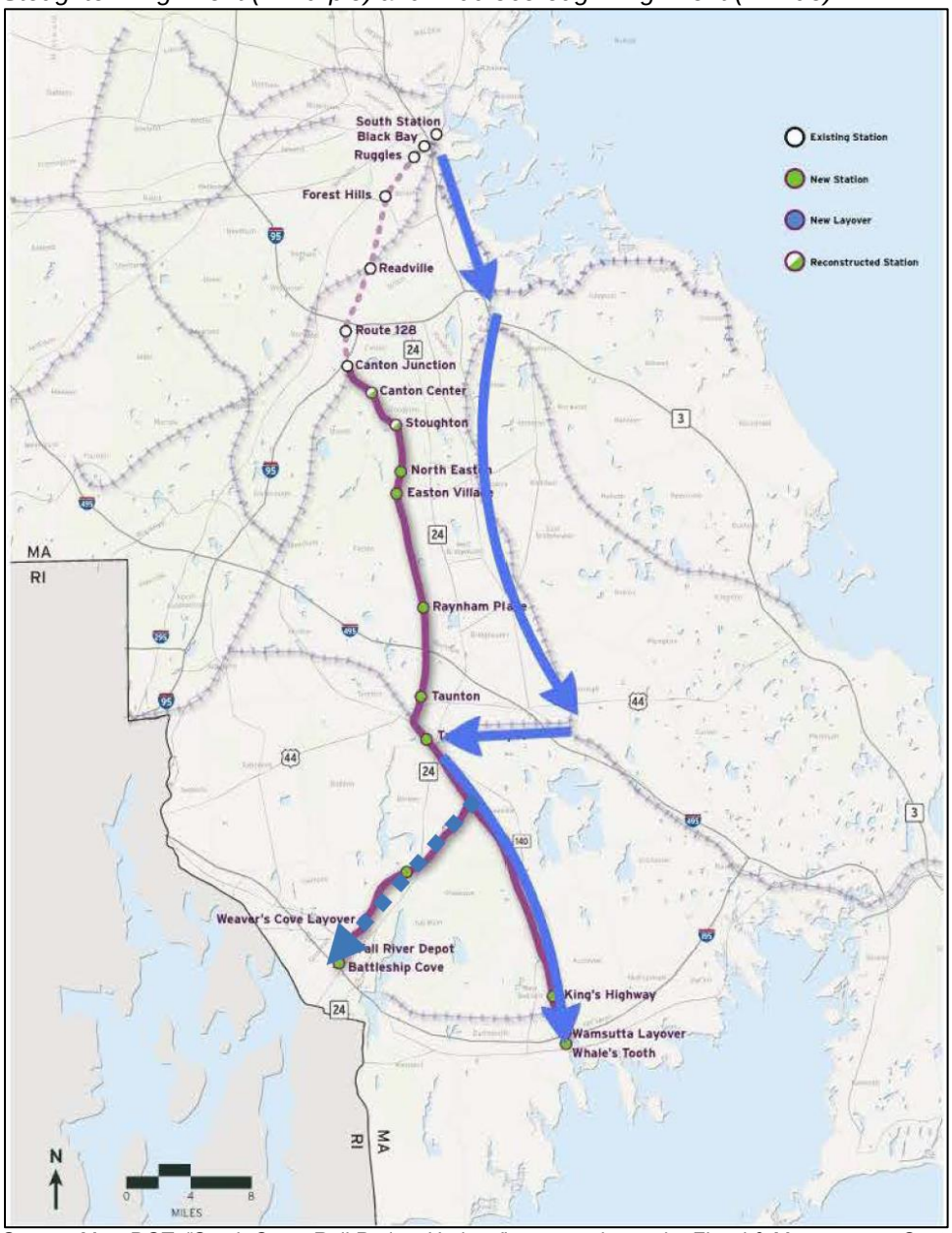
[55] MassDOT, "South Coast Rail Project Overview," http://www.massdot.state.ma.us/southcoastrail/Home.aspx.
[56] MassDOT, South Coast Rail Project Update, Presentation to the Fiscal & Management Control Board, June 27 2016, http://www.mbta.com/uploadedfiles/About_the_T/Board_Meetings/SouthCoastRailBriefingforBoard06272016.pdf.
[57] Ibid.

INFRASTRUCTURE NEEDS

Infrastructure needs associated with the South Coast Rail project include:

- **New commuter rail line, including tracks, bridges, and stations:** As described above, the scope, schedule, and cost of the project may vary depending on the ultimate alignment.
- **Local investments to support TOD:** As most recently envisioned, the stations will consist of a simple platform and parking. Additional pedestrian, bicycle, and transit connections as well as other infrastructure improvements may be required in order to enhance station access and support new development. However, these improvements have not yet been identified.

Figure V-6: Proposed South Coast Rail Project
Stoughton Alignment (in Purple) and Middleborough Alignment (in Blue)



Source: MassDOT, "South Coast Rail Project Update," presentation to the Fiscal & Management Control Board, June 27, 2016.

LAND USE AND DEVELOPMENT

In general, the South Coast has experienced relatively slow population and economic growth in recent decades. The new commuter line will serve largely low-density, suburban and semi-rural communities with the exception of the more urban areas of Taunton, Fall River, and New Bedford. While Taunton and some of the suburban and semi-rural communities along the alignment did attract population growth between 1990 and 2006, New Bedford experienced a population decline of about 5 percent and Fall River's population was flat during this period.[58]

There is significant uncertainty around the timing and scale of future development. The most recent analysis of land use and development potential for the South Coast Rail station areas was conducted in 2009, as part of the South Coast Rail Economic Development and Land Use Corridor Plan.[59] Overall, the plan projected 5.0 to 5.3 million square feet of commercial development and 6,500 to 11,500 new housing units could be added within one mile of the Stoughton alignment stations by 2030. However, these projections were largely based on development capacity, and did not take into account real estate market conditions in any systematic way. Moreover, the projections assumed that much of this growth would be redistributed from other parts of the South Coast region, rather than the result of net new population or employment growth. Because the Middleborough alternative was proposed so recently, there are no development projections available for this alignment. The Southeastern Regional Planning and Economic Development District (SRPEDD) has proposed to conduct a new development analysis that would more closely examine development potential and result in new projections.

The station areas that are served by existing commuter rail service have attracted some TOD. A number of mixed-use projects have been built in Stoughton and Canton near the existing commuter rail stations, and several others have recently been approved or are under review. In Canton, a former copper mill is being redeveloped with several hundred condos and a museum in the old rolling mill. In Stoughton, development proposals include several three-story residential and mixed-use buildings. The existing Middleborough/Lakeview station – located at the far southern end of the existing Middleborough/Lakeview commuter rail alignment – has attracted a 300-unit TOD project.

However, little to no new development is currently planned near the proposed new stations. In the years since the 2009 plan was completed, many of the communities have advanced zoning changes near the proposed stations, in anticipation of future development that the arrival of train service could spur. However, with few exceptions (such as the conversion of a historical building adjacent to the Village Station in Easton to condominiums, and two distribution facilities near the Freetown station), no significant development near the proposed new stations has been completed or planned.

VALUE CAPTURE OPPORTUNITY

The proposed Stoughton alignment is expected to generate significant economic and environmental benefits for the communities receiving service. According to the 2009 South Coast Rail Economic

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[58] Commonwealth of Massachusetts, South Coast Rail Economic Development and Land Use Corridor Plan, June 2009, http://www.massdot.state.ma.us/Portals/41/Docs/programs/CorridorLowRes.pdf.

[59] In 2013, the three regional planning agencies that serve the South Coast Rail communities (MAPC, the Southeastern Regional Planning and Economic Development District, and the Old Colony Planning Council) revisited the growth projections in the 2009 Plan. However, the updated projections were developed at an aggregate level for all of the region's 250 Priority Development Areas, rather than for individual communities or station areas. As part of this update, the communities also revisited their PDA and Priority Protection Area (PPA) designations. Source: MassDOT, South Coast Rail Corridor Plan Update, Community Priority Areas of Regional Significance, December 2013, http://www.srpedd.org/scr-update.

Development and Land Use Corridor Plan, new development around the Stoughton alignment could be worth as much as $2.9 to $3.6 billion in 2007 dollars, and generate $62 to $77 million in annual property tax revenues. The project is also expected to result in reduced greenhouse gas emissions, improved air quality, increased rail efficiency, improved auto safety, reduced congestion, and significant job growth in the region (3,500 new long-term jobs and 6,800 construction jobs). Note that, as discussed above, these estimates are based primarily on development capacity rather than market conditions, and have not been updated since 2009.

However, the large number of jurisdictions and weak real estate market along the corridor will create challenges for any value capture strategy. These challenges are discussed in more detail in the following section.

Although no analysis of the Middleborough alignment's economic impact has been performed, this alternative is likely to generate less value for property owners and the affected communities given the reduced level of service. The increased travel time and decreased frequency associated with the Middleborough alternative suggest that the service would result in reduced economic benefits for the communities that would receive new service.

POTENTIAL TOOLS

Given the fact that the South Coast Rail communities are relatively slow growing, any new assessment, fee, or other form of contribution from new development is likely to generate limited revenues and may serve as a disincentive for new investment. Accordingly, this section examines the potential to use a tax increment financing tool such as Supplemental Infrastructure Financing for Transportation (SIFT) to pay for the new commuter rail line, or District Improvement Financing (DIF) to help pay for local connectivity improvements and other infrastructure needed to serve new development.

Supplemental Infrastructure Financing for Transportation

- **Implementing a SIFT district around the South Coast Rail stations could help demonstrate municipalities' commitment to the commuter rail project.** As proposed in the 2015-2016 legislative session, the SIFT tool would capture incremental growth in property tax revenues from the existing municipal levy, in order to help pay for specific state or regional transportation projects.
- **However, SIFT would likely generate a very small amount of revenue, especially given that cities and towns will face many competing needs for any new property tax revenues.** Tax increment tools such as SIFT rely on new development to generate revenue. Although reliable, up-to-date development projections are not available, it seems likely that development around the stations will occur slowly. Some projects may receive property tax abatements, further limiting the available increment. Moreover, municipalities rely on property tax revenues to pay for ongoing services and local infrastructure, and significant municipal investments – such as improvements to roadways, sewers, stormwater systems, and pedestrian and bicycle connections – may be required to make new development possible at the stations.
- **Gaining approval from all the affected jurisdictions and determining an appropriate level of contribution from each city and town may be challenging and raise concerns about equity.** The Stoughton alignment would serve ten cities and towns, each with distinctive land use contexts, service and infrastructure needs, and other local concerns. A SIFT would require individual approval by each jurisdiction, and building consensus among all of the affected cities and towns may be challenging. In addition, determining the appropriate level of contribution from each city and town may be difficult and raise concerns about social equity, since some municipalities may benefit from the transit service more than others depending on the local land use and market

context. Moreover, lower-income communities with high levels of social need may find it much more difficult than wealthier communities to contribute to the cost of building transit.

- **Dedicating incremental state tax revenues (as well as local property tax revenues) generated within the district could help generate additional funding for the project.** The Boston Convention Center Finance District (discussed in a text box in Chapter IV) provides a potential precedent for capturing state tax revenues generated within a geographic district, in order to contribute to financing a major public improvement that will support regional economic development.

District Improvement Financing

- **By establishing individual DIF districts to pay for local-serving infrastructure, jurisdictions could help enable new development.** Even in a weaker market where property tax revenues are expected to increase relatively slowly, a municipality may find it useful to create a DIF to facilitate a specific development project and signal the municipality's commitment to set aside money for a dedicated use. In addition to providing some certainty to developers that the municipality will allocate revenues for specified improvements, a DIF can also signal to residents that improvements intended to serve new development will be funded solely with new revenues. This approach could also result in offsetting some of the station improvement costs that might eventually be included as part of the larger South Coast Rail projects.

MBTA RED LINE

This case study examines the potential to use value capture to fund needed state of good repair improvements and/or improvements to expand capacity on the Red Line.

CASE STUDY CONTEXT

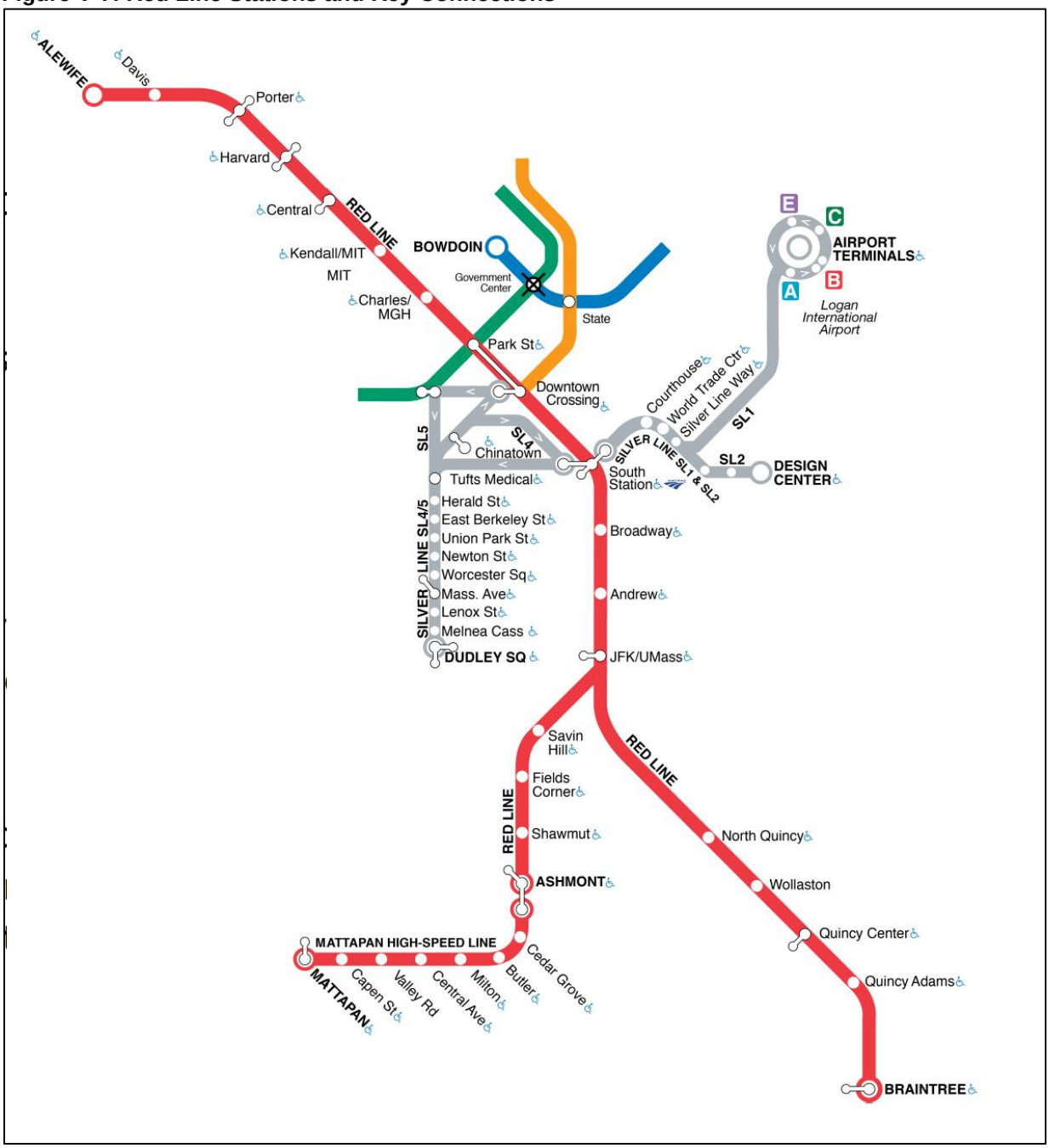
The Red Line connects mixed-use and residential neighborhoods in Boston, Cambridge, Somerville, Arlington, Milton, Quincy, and Braintree to key destinations throughout the region, including the Financial District, Kendall Square, Mass General Hospital, a number of major universities and tourist destinations, and (via connections with the Silver Line) the South Boston Waterfront and Logan International Airport (Figure V-7).

The Red Line is the MBTA's busiest rapid transit line, with weekday ridership exceeding 280,000 trips per day – accounting for about 22 percent of MBTA's total daily ridership.[60] Large-scale system failures experienced in the winter of 2015 highlighted both the critical importance of the Red Line to the region's economy, and the maintenance challenges associated with operating a rapidly aging system. Record-breaking snowfall cause outdoor segments of the Red (and Green) Line tracks to close for as long as two weeks, leading to major economic losses for workers, employers, and retailers. The central portions of the Red Line track date back to before World War I, and approximately a third of the vehicle fleet was purchased in 1969 and is long past the expected service life of 25-30 years. Reflecting the aging infrastructure, only about 72 percent of trains operate within 60 seconds of their scheduled headway.[61]

At the same time, many Red Line station areas – from Alewife to Quincy – are experiencing significant infill development and attracting new economic activity. As shown in Figure V-8, actual ridership at peak commute hours now meets or exceeds capacity at many stations. The lack of capacity on the Red Line poses a challenge for developers considering projects near the stations, as well as more generally for economic development in the cities along the alignment. For example, Cambridge's 2013 Kendall Square Central Square (K2C2) Planning Study showed that while there was sufficient peak hour capacity on the Red Line to accommodate the K2C2 development projections for 2030, anticipated growth throughout the region was expected to create worsening congestion problems and create a challenge for additional development over time.

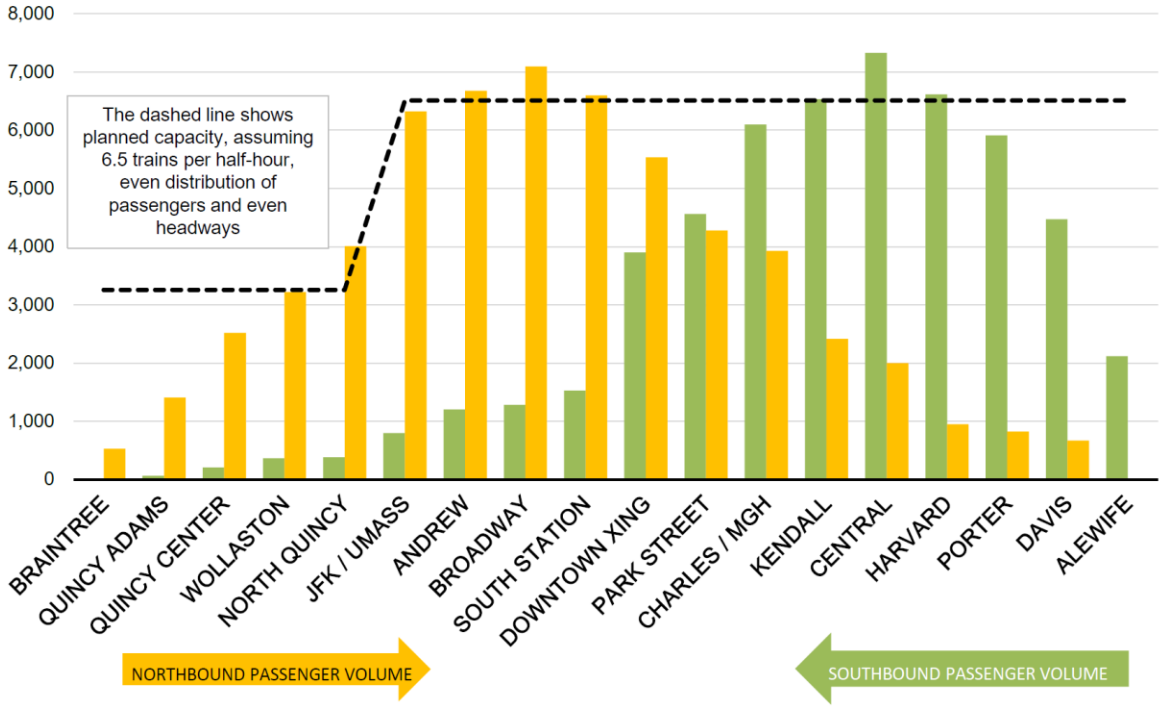
[60] MBTA, "State of the Service: Red Line Heavy Rail," presentation to MassDOT Fiscal Management & Control Board, January 25, 2015, http://www.mbta.com/uploadedfiles/About_the_T/Board_Meetings/StateOfTheRedLine01252016.pdf.
[61] Ibid.

Figure V-7: Red Line Stations and Key Connections



Note that the Mattapan High Speed Line was excluded from the analysis because it uses a separate transit technology (grade separate light rail) and different vehicle fleet (streetcars) than the rest of the Red Line.
Map excerpted from: MBTA, "State of the Service: Red Line Heavy Rail," presentation to MassDOT Fiscal Management & Control Board, January 25, 2015.

Figure V-8: Red Line Planned v. Actual Capacity
Peak Morning Hours (8-8:30 a.m.), March and April 2015 (Braintree Branch)



Excerpted from: MBTA, "State of the Service: Red Line Heavy Rail," presentation to MassDOT Fiscal Management & Control Board, January 25, 2015.

INFRASTRUCTURE NEEDS

This case study focuses on two types of infrastructure needs:

- **State of Good Repair needs:** This category includes replacements, maintenance, or overhauls of existing assets required to bring those assets into a state of good repair, defined as a state wherein all capital assets are functioning at their ideal capacity within their design life. The MBTA maintains a State of Good Repair Database, which rates each of the agency's assets on a scale from one to five, with five representing a new asset and one representing a non-functional asset. Assets that score 2.5 or lower are considered to fall below a state of good repair.[62] According to the MBTA's most recent estimates, the average score for assets associated with the Red Line is 2.27. The agency estimates the total cost of bringing all Red Line assets into a state of good repair at approximately $1.5 billion, compared to a total asset value for the line of $2.2 billion.[63]

  The Commonwealth of Massachusetts' capital investment plan contains funding supported by the 2013 increase in the state's gasoline tax to replace the oldest vehicles in the Red Line fleet (74 vehicles that date from 1969), as well invest in track, signal, and bridge improvements. MassDOT is currently overseeing a contract with rail car maker CRRC MA to replace all Red Line vehicles

[62] MBTA, "Capital Investment Program," FY 2016, http://www.mbta.com/uploadedfiles/About_the_T/Financials/FY16CIP.pdf.
[63] MBTA, "State of the Service: Red Line Heavy Rail." Note that this estimate was developed by MBTA's engineers based on the best available cost information, but that actual costs may vary as individual projects are put out to bid.

by 2024.[64] While these improvements are expected to improve the line's reliability, they are only a small first step in addressing the larger state of good repair challenge.[65]

- **Capacity improvements:** As described above, Red Line capacity constraints are considered a potential constraint on regional and local economic development. In the long-term, improvements such as longer trains and platforms may be required to enable continued growth. However, the MBTA has not studied the need for capacity expansions, and there are no specific plans or cost estimates available at this time.

LAND USE AND DEVELOPMENT

For the purposes of characterizing the land use and development context, this case study focuses on the half-mile radii around the stations (the "station areas") and groups the station areas into four segments, each characterized by a distinct land use mix. Figure V-9 summarizes the station areas, municipalities, and major land uses in each segment. Figure V-10 shows some of the key characteristics of properties in the station areas, including the number of parcels, existing land and building area, the percent of land that is tax exempt, and assessed value (total and per square foot of building area). Figure V-11 shows the amount of development that has been recently completed, is under construction, or is planned or projected for each segment.

The half-mile station areas include more than 35,000 parcels and 7,800 acres of land. Although a count of total property owners was not available, the number is likely in the tens of thousands given the number of properties (Figure V-10).

In total, tax-exempt properties account for approximately 36 percent of total land area in the corridor. This reflects the many cultural, educational, non-profit, and governmental institutions located throughout the corridor (Figure V-10).

Some segments of the corridor have much stronger real estate markets than others. As shown in Figure V-10, buildings are assessed at an average of $325 per square foot in Segment 1 (Alewife to Downtown Crossing), $240 per square foot in Segment 2 (South Station to JFK/UMass), and $100-$105 per square foot in Segments 3 and 4 (the Ashmont and Braintree branches, respectively).

Similarly, new development is highly concentrated in some segments and station areas along the corridor. Segment 1 and Segment 2 have thousands of housing units and millions of square feet of commercial development in the works (Figure V-11). In Segment 1 (Alewife to Downtown Crossing), nearly half of the commercial projects are related to educational uses (and may therefore be tax exempt), but there is also significant office and R&D development underway. The development in Segment 2 (South Station to JFK/UMass) includes a number of major Downtown office and hotel projects. In contrast, development activity in Segment 3 (Ashmont branch) is very limited, and consists of a small amount of neighborhood-retail and very small office development. The development in Segment 4 (Braintree branch) is concentrated at the Downtown Quincy redevelopment project and the Crown Colony Office Park at the Quincy Adams station.

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[64] MassDOT Integrated Fleet Plan, http://www.mbta.com/uploadedfiles/About_the_T/Board_Meetings/FINAL%20Fleet%20Plan%20Board%20Presentation%20-%20Updated%20Version%20RevF-Final.pdf

[65] In total, the recently approved CIP contains a budget plan that would close the state of good repair backlog estimated at $7.3 billion. over a 25 year schedule, but this plan does not budgetary increases that would adjust for construction inflation, so the timeline is likely longer than twenty five years.

Figure V-9: Red Line Segments: Station Areas, Municipalities, and Major Land Uses

Corridor Segment	Station Areas*	Municipalities	Major Land Uses
Segment 1 (Alewife to Downtown Crossing)	Alewife, Davis Square, Porter Square, Harvard Square, Central Square, Kendall/MIT, Charles/MGH, Park Street, Downtown Crossing	Arlington,** Cambridge, Somerville, Boston	Major institutions; regional and local commercial centers of Cambridge, Somerville, and Boston; mixed-use neighborhoods
Segment 2 (South Station to JFK/UMass)	South Station, Broadway, Andrew, JFK/UMass	Boston	Downtown Boston; older industrial areas and mixed-use neighborhoods to the south
Segment 3 (Ashmont branch)	Savin Hill, Fields Corner, Shawmut, Ashmont	Boston, Milton	Residential neighborhoods
Segment 4 (Braintree branch)	North Quincy, Wallaston, Quincy Center, Quincy Adams, Braintree	Quincy, Braintree	Residential neighborhoods, Downtown Quincy

*For the purposes of analyzing land use and development context, the station areas were defined as half-mile radii around the MBTA stations.
**Alewife is located in Cambridge, but a portion of the half-mile station area is located in Arlington.
Sources: RKG Associates, Inc. and Strategic Economics, 2016.

Figure V-10: Red Line Segments: Existing Property Characteristics

Corridor Segment	Parcels	Land Area (Acres)	Building Area (Gross Sq. Ft.)	Total Assessed Value (Billions)	Average AV/ Building Sq. Ft.	% Tax Exempt (Land)
Segment 1 (Alewife to Downtown Crossing)	12,505	2,315	102,918,130	$33.44	$325	40%
Segment 2 (South Station to JFK/UMass)	4,643	1,327	76,311,922	$18.28	$240	57%
Segment 3 (Ashmont branch)	11,861	2,292	51,940,576	$5.44	$105	31%
Segment 4 (Braintree branch)	6,863	1,869	38,204,702	$3.81	$100	24%
Total	35,872	7,803	269,375,330	$60.98	$226	36%

Sources: MassGIS and City of Boston (data from 2012 for Milton and Somerville; 2013 for Arlington, Cambridge and Braintree; 2014 for City of Boston, 2015 for Quincy); RKG Associates, 2016.

Figure V-11: Red Line Segments: Development

	Housing Units					Commercial Building Sq. Ft.				
Corridor Segment	**Completed**	**Under Construction**	**Planned**	**Projected**	**Total**	**Completed**	**Under Construction**	**Planned**	**Projected**	**Total**
Segment 1 (Alewife to Downtown Crossing)	1,761	1,498	1,712	917	5,888	4,497,807	1,634,882	308,155	1,172,600	7,613,444
Segment 2 (South Station to JFK/UMass)	1,967	1,168	2,265	2,674	8,074	2,342,678	1,421,086	5,318,475	3,316,364	12,398,603
Segment 3 (Ashmont branch)	222	228	199	114	763	11,000	31,950	3,850	3,200	50,000
Segment 4 (Braintree branch)	180	30	1,992	632	2,834	187,000	0	2,960,000	0	3,147,000

”Planned” projects are generally in the entitlement review process; “projected” projects are in a more conceptual phase of planning.
Source: MAPC, 2016; RKG Associates, 2016.

VALUE CAPTURE OPPORTUNITY

There is limited precedent for using value capture to pay for state of good repair or improvements to the efficiency or capacity of existing systems. Specific challenges associated with using value capture for these types of projects include:

- **Mismatch between systemwide improvements and project- or district-based tools:** Many state of good repair improvements and other enhancements to expand the capacity or efficiency of existing transit lines benefit the system as a whole, rather than individual stations. For example, for a system that is at full capacity, running longer trains may require expanding platforms at all the stations on the line and procuring more vehicles. Adding a longer platform at just one station may not actually expand capacity. In contrast, value capture tools are typically local in nature, applying to a specific development project or defined geographic district.
- **Limitations on the use of value capture for operations and maintenance:** In many states, value capture tools such as tax increment financing districts, impact fees, and some forms of special assessment districts are explicitly restricted to paying for major capital projects, and may not be used to pay for ongoing operations and maintenance. (In Massachusetts, this is true of I-Cubed, impact fees, and betterments; DIF and LIDP also appear to be restricted primarily to capital uses, although the extent to which revenues may be used to pay for operations and maintenance is somewhat unclear in the state statutes.) While some state of good repair projects and other enhancements to existing transit facilities (such as buying new cars or extending station platforms) may be considered major capital projects, others (such as track and signal repairs) may be considered maintenance expenses.
- **Difficulty in demonstrating a special benefit (or nexus) for adjacent properties or developers:** Tools such as impact fees and special assessment districts require that properties or developers paying the fee or assessment receive a clear, special benefit (or nexus), distinct from the benefits received by the general public. As discussed above, state of good repair improvements and other enhancements to existing systems often benefit the transit line or system as a whole. As a result, establishing a relationship between the improvement and specific property owners or developers can be challenging.
- **Difficulty in demonstrating a clear value proposition:** Even tools that do not require a special benefit or nexus may require approval by property owners or developers, who may be reluctant to pay for systemwide improvements – especially when those improvements are perceived as addressing long-standing challenges that are the result of insufficient investments in maintenance and repair over time.

However, Red Line service plays such a critical role in enabling investment and economic growth that property owners and developers may see a clear value proposition in investing in state of good repair and/or enhancements to existing transit facilities. For example, developers at Kendall Square have agreed to make contributions to a transportation enhancement fund that may (among other uses) contribute to improvements to the Red Line.[66]

Although a significant amount of development is planned along the Red Line corridor, both planned development and existing value are unevenly distributed. As a result, some municipalities (or station areas) may receive greater benefits from – and be in a stronger position to contribute to – system-wide improvements than others.

[66] Kendall Square Transit Enhancement Program Draft Memorandum of Understanding, June 28, 2016.

MBTA already capturing value from assets at the Red Line stations, but the potential to expand these revenues is limited. MBTA receives an estimated $14 million in annual income from parking fees at Red Line stations, as well as more than $1.1 million in annual income from active concessions and leases.[67] In addition, the agency receives revenues from joint development projects at various stations (such as South Station). In general, these types of revenues flow into the agency's general operating funds. Because the agency owns very little surplus land along the corridor, the potential for additional joint development projects is limited to projects on surface parking lots or air rights over existing MBTA facilities.

POTENTIAL TOOLS

This section discusses the potential to use value capture tools – including developer negotiations or some form of local contribution, such as an assessment or fee – to fund state of good repair and/or capacity improvements on the Red Line.

Negotiated Developer Contributions

- **The opportunity to fund meaningful, system-wide improvements with contributions from individual developers is limited.** Despite the Kendall Square example, developers and property owners may have limited appetite for contributing to system-wide improvements, especially if such contributions are only required in isolated cases or in some station areas but not others. Moreover, municipalities are generally in the best position to negotiate contributions from developers (as part of the entitlement process), and in many cases will face an incentive to prioritize local infrastructure over MBTA projects. Finally, the scale of individual developer contributions would likely be insignificant compared to the cost of addressing the state of good repair backlog or meaningfully expanding the line's capacity.

Special Assessment, Impact Fee, or Other Form of Local Contribution

- **Traditional special assessment districts cannot be used to fund state of good repair improvements or system-wide improvements.** Special assessment districts are generally designed to pay for projects that provide direct, special benefits to property owners paying the assessment, over and above any general benefit received by the public. Moreover, most special assessment districts require approval by a majority (or super majority) of property owners – a threshold that would be difficult to achieve for improvements that are perceived as benefitting transit riders, and arguably municipalities (or even the region) as a whole.
- **The Commonwealth could consider creating a corridor-wide impact fee on new development to pay for enhancements to the Red Line.** This program could be modeled after San Francisco's Transportation Sustainability Fee (discussed in Chapter II) which is intended to mitigate the impact of new development on the city's transit system by paying for improvements required to serve development. (Note that additional funding will be required for the portion of any project required to address existing deficiencies or serve existing users.) However, Massachusetts courts have ruled that impact fees may not be used for projects that benefit the general public as well as the property owners subject to the fee. Any law expanding the use of impact fees may therefore be challenged in court.
- **Alternatively, the Commonwealth could consider requiring or incentivizing municipalities along the corridor to contribute additional funds to needed Red Line improvements.** Although

[67] MBTA, "State of the Service: Red Line Heavy Rail."

this is not a traditional form of value capture, the level of contributions could potentially be related to the assessed value or the amount of development occurring in each municipality. The contribution could take the form of an increased annual MBTA assessment,[68] city- or corridor-wide DIF districts (to capture tax increment from new development), or other mechanism. This type of contribution would be equitable in the sense that benefits from any system-wide improvements are likely to accrue to the general public. On the other hand, to the extent that any contribution would require a municipality to "opt in," it may be challenging to establish appropriate incentives and allocate revenues fairly – especially to the extent that state of good repair and other improvements benefit the entire system, as opposed to individual stations or corridor segments.

CONCLUSIONS

The case studies illustrate the opportunities and challenges associated with expanding the use of value capture to pay for transportation and TOD projects in Massachusetts.

Public investments that create significant value for specific property owners have the greatest potential for value capture. The Allston Interchange project is a good example of an infrastructure project that creates value for the private sector (in this case, by freeing up land that would not otherwise be available for development, in a location where the market is likely to support significant development activity), involves a single property owner (Harvard University), and a relatively limited number of public agencies (the City of Boston and MassDOT). Reflecting these conditions, MassDOT is already capturing some value through the land swap agreement that the agency has negotiated with Harvard, and it seems likely that the BPDA will extract further value as part of the entitlement process for future development.

Implementing a value capture strategy is much more challenging in areas with weaker real estate markets, or for projects that involve multiple property owners. In locations where the real estate market is not very strong (such as the South Coast Rail communities), major public investments or economic development incentives may be required in order to attract private sector interest in the first place, limiting the potential for value capture. Moreover, implementing a value capture strategy for projects that involve multiple property owners (like the South Boston Waterfront) and/or many municipalities (South Coast Rail, the Red Line, and the Green Line Extension) requires much more complex coordination among the different stakeholders, and individual property owners and municipalities may not see a clear value proposition in contributing to projects needed to serve an entire district or region.

Projects with limited value capture potential may still offer significant benefits for local communities and for the Commonwealth as a whole. For example, while a project like the South Coast Rail may have limited potential for value capture, the transportation, economic development, and environmental justice benefits of reestablishing commuter rail service to the South Coast are nevertheless significant.

Massachusetts' existing value capture tools are designed to capture value from individual development projects, instead of broader districts or corridors. A number of existing mechanisms (including negotiated developer contributions, DIF, and I-Cubed) can be used to finance the infrastructure needed to serve specific TOD projects like the Allston Interchange, or the individual master planned developments within the South Boston Waterfront district. However, most of the existing value capture tools authorized by the Commonwealth are not well-suited to capturing value from multiple development projects to pay for infrastructure to serve a broader district (such as a shuttle or other district connectivity

[68] The MBTA assessment is currently charged to the 175 communities that received MBTA service. Each municipality's contribution is based on a weighted share of the total population served by the authority.

improvements needed in the South Boston Waterfront), let alone from a corridor spanning multiple jurisdictions (such as the Red Line improvements, the Green Line Extension, or South Coast Rail).

Value capture is more challenging to use as a source of funds for state of good repair or improvements to existing transit systems. As discussed in the Red Line case study, many state of good repair improvements enhance the overall transit system, which may serve multiple jurisdictions and encompass a variety of real estate market contexts. Property owners and developers in one station area or district may be reluctant to pay for system-wide improvements, especially in the absence of a strategy for extracting contributions from other project beneficiaries. Moreover, some state of good repair projects and other improvements to existing systems may be considered maintenance. Under existing state statute, some Massachusetts tools may only be used to pay for major capital (as opposed to operating and maintenance) expenses.

For most of the case studies, there is significant uncertainty about the amount of value that could be captured. For the Allston Interchange and South Boston Waterfront case studies, it was possible to develop order-of-magnitude projections of future value based on land use planning studies and conceptual designs. However, developing a detailed value capture strategy requires a significant amount of information about both the planned infrastructure improvement (including project costs and timing) and expected future development (including market-based development projections and an associated absorption schedule) that was not available at this time for any of the case studies except the Green Line Extension.

The case studies also demonstrate some important relationships between the timing of land use planning and development, and the implementation of different value capture tools. Some tools, such as density bonuses, impact fees (to the extent they may be utilized in Massachusetts), and DIF, can capture the greatest value if they are set up during the land use planning process, but before significant development has occurred. It may be too late to generate significant revenues from these tools after much or most of the planned development has already been entitled or is under construction (as in many of the Green Line Extension station areas). Other tools are also tied to specific moments in time: joint development and other public real estate deals requires a land transaction (such as the land swap between Harvard and MassDOT), while municipalities generally have the most leverage to negotiate a development agreement during the entitlement phase (for example, as part of the City of Boston's Article 80 design review process). Because of the need to identify specific tenants and the complexities of navigating the application process, I-Cubed funding is generally awarded relatively late in the development process. Special assessments are the most flexible tool, because they typically apply to all the properties located within a district rather than to new development only.

VI. RECOMMENDATIONS

The Commonwealth, MassDOT, the MBTA, and local governments in Massachusetts are already using value capture to pay for transit, other transportation projects, and TOD-supportive infrastructure. Some of the most common tools used for these purposes include negotiated developer contributions, joint development, the Infrastructure Investment Incentive Program (I-Cubed), and District Improvement Financing (DIF).

However, the research in this report points to a number of opportunities to expand the use of value capture in the Commonwealth. In particular, the analysis has identified four recommendations for changing Massachusetts laws, regulations, and policies to enable broader use of value capture for transportation and TOD infrastructure. These include:

1. Clarify existing tools to facilitate their use for transit, transportation, and TOD.
2. Create new tools or adjust existing tools to enable expanded use of value capture at the local district level.
3. Explore the use of value capture to fund transportation improvements that serve multiple jurisdictions.
4. Consider specifying modernization improvements as a permitted use for certain value capture tools.

Each of these recommendations is discussed in detail below, including specific regulatory and legislative changes that the Commonwealth could consider. It is important to note that while these recommendations could help facilitate the wider use of value capture in Massachusetts, value capture is not a "silver bullet" strategy that can be applied to every transportation or TOD project. As discussed throughout this report, evaluating the potential use of value capture for any given project requires assessing factors such as local real estate market conditions, development potential, and the value that an investment creates for individual property owners, as well as weighing potential tradeoffs such as social equity concerns and competing needs for funding.

Recommendation 1: Clarify existing tools to facilitate their use for transit, transportation, and TOD.

Uncertainty about how some of Massachusetts' existing tools may be used is one factor limiting the broader use of value capture for transit, transportation, and TOD-supporting infrastructure. Changes to state legislation, guidelines, or training could help resolve outstanding questions and facilitate the wider use of tools such as DIF, impact fees, and Business Improvement Districts (BIDs). Specific changes that the Commonwealth could consider to clarify and streamline the use of existing tools are discussed below.

- **1A: Consider issuing guidelines and providing training for local assessors on the use of DIF, especially as DIF relates to Proposition 2½.**

  Local assessors and other municipal officials have expressed uncertainty about how to calculate DIF revenues. In the 2015-2016 legislative session, the state legislature adopted changes to the DIF enabling legislation that more clearly defined the term "tax increment" to mean the property tax revenues generated by "new growth," as the latter term is used in Proposition 2½ (i.e., increases associated with new development and construction). This change is expected to simplify the process of calculating and projecting DIF revenues, because assessors regularly calculate new growth in order to meet the requirements of Proposition 2½. Providing local assessors with additional information or guidelines on how to implement this change and other aspects of the DIF statue could help facilitate wider use of the tool and ensure that it is being implemented consistently across the state. Guidelines and training could be provided by the Department of Revenues' Division of Local Services or another state office.

- **1B: Clarify the authority that cities and towns have to impose impact fees.**

  Cities and towns in Massachusetts do not have the authority to establish new taxes without legislative approval, and Massachusetts General Law is unclear about what constitutes a new tax versus a fee. Given the uncertainty in state statute, the Massachusetts Supreme Judicial Court adopted a conservative approach to analyzing the constitutionality of impact fees in its decision in *Emerson College v. City of Boston*. In distinguishing the difference between a tax and a fee, the Court has applied a rationale known as the "three-prong Emerson test." Under this test, an impact fee must meet the following three criteria in order to be constitutional:

  - The fee must be charged based on the cost of providing the service;
  - The services received must benefit only the party paying the fee, rather than the general public; and
  - The fee must be paid voluntarily (i.e., the party paying the fee must have the option of not using the public service and thereby avoiding the fee).

  Impact fees for transit and other transportation facilities typically provide significant benefit to the general public in addition to the benefits received by the new development that would be subject to the fee. As a result, under current case law, Massachusetts courts are unlikely to uphold the use of impact fees for transit or other transportation facilities. However, if the legislature were to adopt a statute laying out clearer authority for the collection and use of impact fees, it is possible the courts would defer to the judgment of the legislature and modify the standards in effect going forward.

  In the 2015-2016 session, the legislature considered (but did not pass) a zoning reform bill that would have applied less stringent criteria to how impact fees may be charged, and explicitly allowed impact fees to be used for public transit and other transportation facilities. In the meantime, some local officials remain uncertain about how impact fees may currently be used in the wake of *Emerson* and a wide array of subsequent court cases. Providing additional education to local officials and state legislators about the way Massachusetts courts have historically approached impact fees, and how future legislation might make impact fees more widely useful, could help to clarify outstanding questions and might lead to more effective legislation. This information and training could be provided by the Department of Revenues' Division of Local Services, by Regional Planning Agencies, or by other public entities.

Recommendation 2: Create new tools or adjust existing tools to enable expanded use of value capture at the local district level.

Massachusetts already has a number of tools that are used to pay for infrastructure needed to serve individual development projects, including negotiated contributions, I-Cubed, and DIF. However, the Commonwealth does not currently have tools that are well-suited to paying for improvements that serve multiple properties within a larger planning area or district, a common use for value capture in other parts of the country. In order to fill this gap, the Commonwealth can draw on examples from how other states use special assessment districts and tax increment financing tools, and/or consider expanding on the existing I-Cubed program so that it can be used at the district level.

- **2A: Reduce the property owner approval threshold for the Local Infrastructure Development Program (LIDP), or create a new form of special assessment district that is subject to majority approval by property owners.**

  The Commonwealth does not currently have a special assessment tool that can be used to assist in funding major transportation improvements within a defined geographic district that includes multiple property owners and development projects. LIDP is subject to a 100 percent property owner approval requirement that will likely limit the use of the tool to use in specific contexts (such as large development projects that involve very few property owners). Finally, while Massachusetts law

authorizes the Commonwealth, municipalities, and districts to impose betterments and special assessments, these can only be used to fund very specific types of public improvements (such as sewer and water) and are only permitted in narrow cases where the project provides a special benefit to the assessed properties that does not accrue to the community as a whole.

Other states, such as Virginia and California, authorize municipalities to create special assessment districts for major capital projects, subject to approval by the local legislative body and/or a majority (50 percent plus one) or supermajority (two-thirds) of either property owners, or voters (see text box, below). Depending on the state and the type of tool, there may also be a requirement to establish some level of direct benefit to the assessed property owners (although the project may still provide some general benefit to the community). The Commonwealth could enable this type of financing tool in Massachusetts by either lowering the property owner approval threshold for LIDP, or creating a new form of special assessment district that allows a majority of property owners within a designated district to vote to impose an assessment to fund specified improvements.

- **2B: Create a new Community Benefit District tool that may be used to fund transit operations and/or clarify that Business Improvement Districts may be used for this purpose.**

  Massachusetts law already permits municipalities to create BIDs, a form of special assessment that is used to fund local services such as street cleaning and public security, marketing and other economic development activities, and minor capital improvements such as lighting, landscaping, and streetscape improvements. BIDs require approval by 60 percent of property owners (representing 51 percent of assessed value within the proposed district). Although this tool has not been used extensively in Massachusetts to date, it is one of the only tools that is commonly used to pay for district-wide improvements. As is typical in most states, BIDs can only be used for local services, economic development, and minor capital improvements. In other states, BIDs are sometimes also used to fund transit operations (such as shuttles) that serve properties and businesses within the district. New regulatory guidance or legislation may be needed to clarify whether BIDs can be used to fund transit operations in Massachusetts. Alternatively, the Commonwealth could create a new form of business improvement district (such as the CBD tool considered in the 2015-2016 legislative session) to be used for this purpose. Notably, the recent Municipal Modernization Act enables communities to create Parking Benefit Districts, within which parking meter revenues can be reinvested to pay for a variety of transportation-related improvements, including transit operations. It should also be noted that some of Massachusetts' robust Transit Management Agencies that provide shuttle services could partner with BIDs or CBDs for transit operations.

Special Assessment Districts in Other States

A special assessment district is an area within which a special tax[1] is levied on properties that will benefit from a public investment. Comprehensive information on the use of special assessment districts across the country is not available. However, California and Virginia – which each authorize local governments to establish at least two different types of special assessment or taxing districts – offer examples of the wide range of ways in which this type of tool may be structured. As shown in the table below, the requirements for approval vary, from no property owner approval requirement in the case of Virginia's Service Districts, to two-thirds approval by property owners (or registered voters[2]) in the case of California's Community Facilities Districts (CFDs). Each tool may be used to finance different types of capital costs and/or ongoing operating costs, as specified in the state enabling legislation. State statutes also specify whether the assessment may be set on an *ad valorem* basis (i.e. based on property value, as in the case of the Virginia tools), based on the size of the benefits received by property owners (as with California's Special Assessment Districts), or on any reasonable basis determined by the local legislative body (as with CFDs). In California, CFD and special assessment district revenues are often used to issue revenue bonds. In Virginia, assessment districts may not issue revenue bonds, although revenues be allocated to debt service for general obligation bonds or bonds backed by other sources.

State	Tool	Approval Requirements	Permitted Uses	Basis for Assessment	Potential for Revenue Bond Financing
California	Community Facilities District (CFD)	2/3 of property owners or registered voters[2]	Construction or acquisition of public facilities (e.g., transit, parks, schools, libraries). May also fund some ongoing services (e.g., fire, police, lighting).	May be set on any reasonable basis determined by the local legislative body (except that the assessment cannot be *ad valorem*)	Yes
California	Special Assessment District	50% plus one of property owners (weighted by financial obligation of each property under proposed assessment)	Depending on the specific type of district, may include lighting, landscaping, parking, transit, economic development.	Size of assessment must be proportional to benefits received by property owners; uses must directly benefit assessed properties	Yes (for most types of districts)
Virginia	Transportation Improvement Districts (TID)	Petition by 51% of owners (weighted by property area or assessed value) of the proposed district	Construction, maintenance or operations of any type of transportation improvement, including transit	*Ad valorem* assessment set by city or county legislative body	No (but revenues may be allocated to debt service for bonds backed by other sources)
Virginia	Service Districts	Established by city or county; requires public hearing but does not require property owner approval	Construction, maintenance, or operations of specified improvements that benefit properties within the district (e.g., public transportation, water, sewer, street lights, garbage removal, economic development)	*Ad valorem* assessment set by city or county legislative body	No (but revenues may be allocated to debt service for bonds backed by other sources)

[1] For the purposes of this discussion, "special assessment" and "special tax" are used interchangeably; however, some states assign distinct meanings to these terms.

[2] CFDs may be approved by a two-thirds majority of property owners in the proposed district, so long as there are no more than 12 registered voters living within the proposed boundary. If there are more than 12 registered voters living within the boundary, two-thirds approval by voters living within the district is required.

Sources: "Fairfax County, VA Transportation Funding Sources," Presentation to the FTA - Value Capture Roundtable, June 6, 2013; Virginia Code, § 15.2-24, http://law.lis.virginia.gov/vacodefull/title15.2/chapter24/; William Nusbaum, "Financing Tools Available to Virginia Localities to Facilitate Economic Development and Redevelopment", http://www.cpe.vt.edu/vida/presentations/05.21.1000am-BNusbaum.pdf; Strategic Economics, 2016.

- **2C: Consider amending the District Improvement Financing tool to allow the districts to capture incremental state tax revenues as well as local tax revenues for certain projects.**

  In order to increase the incentive for municipalities to create DIFs encompassing multiple properties, the Commonwealth could expand the range of revenue sources available for the districts to capture. For example, DIF districts could capture a share of incremental growth in local option hotel taxes and local meal taxes.[69] At the state's discretion, the Commonwealth could also choose to dedicate some share of new state sales tax revenues generated within the district. Currently, 16 states allow tax increment financing districts to capture incremental growth in sales tax revenues as well as property tax revenues; several states also allow districts to capture personal property, income tax, and other sources.[70] Authorizing DIF districts to capture a share of state sales tax revenues (with state approval) could be politically challenging, but this could serve as an incentive for municipalities to use DIF revenues to pay for state-sponsored transportation improvements. While not a DIF district, the Convention Center Financing District – created by the Commonwealth in 1997 to help finance the construction of the Boston Convention and Exhibition Center – provides a potential precedent for capturing state tax revenues (specifically, hotel and sales tax revenues) generated within a geographic district in order to help finance a major public improvement.[71]

- **2D: Monitor the downtown Brockton DIF to determine whether other changes to state law could help expand the use of this tool for district-based financing.**

  The downtown Brockton DIF district created in 2016 is the only example of the tool being used in a district that includes multiple properties.[72] MAPC and/or the Commonwealth should track the implementation of the downtown Brockton DIF to determine whether there are other changes to state law that could help facilitate the use of the tool at the district level.

- **2E: Consider changing the I-Cubed application process to make funding for TOD projects available earlier in the development process, and to expand use of the tool to larger districts**.

  I-Cubed funding is restricted to individual development projects, requiring the developer to both co-sponsor the application (with the municipality) and to help cover any shortfalls in projected state tax revenues by agreeing to fund a liquidity reserve fund and pay a special assessment to cover funding gaps if needed. In addition, as part of the approvals process for the I-Cubed program, the Commonwealth must find that the jobs associated with a development project are "net new" to the state, and that the project would not achieve the contemplated level of development, jobs, or other economic activity "but for" the infrastructure investment supported by the state's I-Cubed investment.

  The I-Cubed program reflects the program's primary focus on economic development (attracting new jobs to the state). Although I-Cubed has been used to pay for transit projects that primarily serve one major employer (for example, New Balance) and for infrastructure to support TOD (such as at Assembly Square), this is not the program's main goal, and the application process creates significant challenges for support transportation and TOD investments. These challenges include:

  - Demonstrating that jobs are "net new" to the Commonwealth requires an evaluation of individual tenants that would be difficult if not impossible to conduct for a district spanning multiple development projects, especially if some or all of the development is still in the planning phase and specific tenants have not yet been identified.

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[69] A district might also capture payments-in-lieu of taxes (PILOTs).

[70] CDFA, "Tax Increment Finance: State by State Report; An Analysis of Trends in State TIF Statutes," 2015, http://www.cdfa.net/cdfa/cdfaweb.nsf/ordredirect.html?open&id=201601-TIF-State-By-State.html.

[71] More information on the Convention Center Finance District is provided in a text box in Chapter IV.

[72] More information on the Brockton DIF is provided in Chapter IV, Tax Increment Financing.

- Because of the need to identify specific tenants and the complexities of the application process, I-Cubed funding is typically awarded relatively late in the development process – after some of the most critical infrastructure investments have already been made.

The state could revisit some aspects of the program in order to expand the use of the tool to better support TOD and help fund district- or even regional-serving transportation projects. The I-Cubed program is highly complex, and any proposed changes will require significant study to ensure that they are administratively implementable, that projects will be able to access bond financing, and that the Commonwealth, municipalities, developers, and property owners are protected from undue risk. Potential changes include allowing municipalities to apply on behalf of transit-oriented districts, and relaxing the "net new" and "but for" requirements so that analysis of individual tenant location decisions is not required. Relaxing the "net new" analysis (at least in certain circumstances, such as for TOD districts) would also help streamline the application process, allowing for funds to be available earlier in the development process.

Recommendation 3: Explore the use of value capture to fund regional-serving transportation improvements.

In Massachusetts, there is growing interest in using value capture to help fund regional-serving transit projects such as the South Coast Rail, Green Line Extension, or improvements to the Red Line. These types of improvements are generally funded, built, and operated by the Commonwealth and serve multiple different neighborhoods with a wide range of real estate market conditions – and in many cases, multiple cities and towns.

The Dulles Corridor Metrorail Project (Silver Line Extension) in Northern Virginia is an example of a regional-serving project funded in part by value capture (see text box, below). Value capture has also been used to fund infill stations or other targeted improvements along a regional-serving rail line. One example is the Boston Landing Station on the Framingham/Worcester commuter rail line, which was partially funded by I-Cubed. In Washington D.C., property owners contributed to a special assessment district that funded 23 percent of the NoMA Gallaudet University Metrorail station, an infill station added to an existing transit line.

Despite these examples, there are several challenges to using value capture at the corridor scale. Value capture tools are generally designed to be implemented within just one jurisdiction, and often within a small district or for an individual development project. Moreover, regional-serving transit investments often create more value in some station areas and jurisdictions than in others, making it challenging to determine an appropriate level of contribution from different communities. Additionally, not all local jurisdictions start the process with the same level of resources. Lower-income communities with high levels of social need may find it much more difficult than wealthier communities to contribute new local revenues to pay for the cost of transit. Finally, projects with limited value capture potential may still have significant transportation, economic development, and environmental justice benefits for both local communities and the Commonwealth as a whole.

Given these challenges, the Commonwealth will need to explore innovative new ways to use value capture to fund regional-serving transportation projects. In designing a tool (or tools) for this use, the Commonwealth will need to consider the appropriate source of revenue, the mechanism for municipal contribution, the incentives that municipalities will face in deciding whether to participate, and the potential risks associated with using value capture tools to finance major state projects. Each of these considerations is discussed below.

- **Sources of Revenue:** Potential revenue sources could include property tax increment, local special assessment districts, or a citywide special assessment or tax. Advantages and disadvantages of several potential sources are discussed below.

- **Tax increment financing districts:** Local governments could agree to dedicate a share of incremental property tax growth within designated districts to regional projects. This tool would build on the existing DIF program, and could be similar in structure to the Supplemental Infrastructure Financing for Transportation (SIFT) tool proposed by Representative William Straus in the 2015-2016 legislative session. Dedicating property tax increment to a regional-serving project would not involve imposing a new tax or fee on property. However, it is important to note that local governments rely on property taxes to pay for other local services and infrastructure, including schools, parks, sidewalks and sewers. It should be noted, however, that revenues from tax increment financing could be used on station area improvements or other local improvements (housing, streetscaping, parks, etc.) besides transit.
- **Local special assessment districts:** Similar to the Silver Line example in Virginia, the Commonwealth could enable local governments to impose a new tax or assessment on properties located within specified districts, subject to property owner approval (see the discussion of special assessment districts in Recommendation 2A, above). This would involve the imposition of a new assessment on property, and it would create a new funding source rather than diverting a share of property tax revenues that local governments rely on to fund other services. In places with weaker real estate markets, however, a new special assessment could have negative consequences for existing property owners and businesses and/or create a disincentive for new investment. The need to obtain property owner approval for a special assessment could also limit the use of this tool.
- **Citywide special assessment or tax:** Alternatively, communities could be allowed to vote to establish surcharges on real property throughout their municipality for the purposes of funding transportation improvements. The size of the assessment or tax could be related to benefits that different properties within the city receive from the proposed transportation improvement. A citywide special assessment or tax would have similar advantages and disadvantages as a local assessment, but may be a more appropriate way to pay for transportation projects that generate significant benefits for the general public as a whole, not just for adjacent property owners (such as improvements to a widely used system such as the Red Line). The state legislature recently considered legislation that would allow for transportation ballot initiatives at the municipal scale. The proposed legislation would also enable abutting municipalities to work together to form a broader district to help pay for regional transportation projects using a variety of taxes such as sales tax, property tax, or payroll taxes.

- **Mechanism for Municipal Contribution:** The Commonwealth will need to create a new mechanism for municipalities to contribute to state transportation projects. The SIFT legislation considered in the 2015-2016 legislative session could serve as an effective model; this legislation would have allowed a municipality to enter into an agreement with MassDOT to dedicate a share of incremental property tax revenues generated within a geographic boundary to fund a specified state transportation improvement. In addition to creating a specific mechanism for municipalities to contribute funds, the Commonwealth should also consider creating a transparent process for overseeing how the funds are used over time.
- **Incentive for Municipalities to Participate:** Historically, the Commonwealth has provided the funding for regional-serving transportation projects (sometimes with assistance from federal programs). In order to change this long-standing practice, the Commonwealth will need to create clear requirements or incentives for cities and towns to contribute to state projects. In addition, any policy related to a local contribution should acknowledge that (as discussed above) different cities and towns will have varying levels of ability to raise funds, as well as competing needs for increased property tax revenues, and that projects with limited value capture potential may still result in significant state and local benefits.
- **Financing Capacity and Risk:** Value capture revenues are tied to property value appreciation and new development, and are therefore subject to the risk that the real estate market may not perform as well

as expected. If expected development does not occur, or is delayed, value capture revenue may be insufficient to meet the obligations of debt financing. In order to finance projects, the Commonwealth may need to take on the risk that value capture will not raise as much revenue as originally projected by issuing debt backed by other sources, to be paid back with local value capture revenue as it becomes available.

Dulles Corridor Metrorail/Silver Line Extension: Fairfax and Loudoun Counties, Virginia

The Dulles Corridor Metrorail project (also known as the Silver Line) is a 23-mile extension of Washington D.C.'s existing Metrorail System that will expand service from downtown Washington into Fairfax and Loudoun Counties in Virginia. It is being built in two phases by the Metropolitan Washington Airports Authority (MWAA). When completed, it will be operated by the Washington Metropolitan Area Transit Authority (WMATA). Phase 1 of the new line opened on July 2014, providing service to Tysons Corner and Reston (Virginia's largest employment centers, both in Fairfax County). Phase 2, which is currently under construction, will extend from Reston to Dulles International Airport and into eastern Loudoun County. The total project cost for both phases is approximately $5.7 billion. Funding for the projects is being provided from federal and state sources, the counties of Fairfax and Loudoun, and the airport authority. Toll revenues from the Dulles Toll Road are expected to contribute nearly half of total project costs.

Fairfax County's share for the entire Silver Line project (estimated to be between $900 and $965 million) will be paid for by two special tax districts, known as the Phase I and Phase II Dulles Rail Transportation Improvement Districts (TID). The funds collected from the special tax districts are to be used for the transportation improvements and debt service on bonds issued by the state. In the Phase I TID, landowners agreed to pay up to a total of $400 million, and in the Phase II TID, property owners agreed to contribute up to $330 million. To establish the TID, a vote of property owners representing a majority (51 percent) of the assessed value within the district boundaries was required. In fiscal year 2014, the tax rate was of 21 cents per $100 and 20 cents per $100 of assessed value on commercial and industrial zoned property for Phase I and Phase II, respectively. Fairfax County has also established Service Districts (another form of special taxing district that require public hearing but do not require formal property owner approval) to help pay for local-serving infrastructure around the stations.

Loudoun County did not fund its share of the Silver Line using TIDs. Instead, the Loudoun County Board of Supervisors adopted Service Districts, designed to help fund Phase II of the Metrorail Silver Line extension into Loudoun County, as well as ongoing operating costs. The Service Districts are located in the areas surrounding the three planned Metro stations in the county. The tax rate in these districts will be set every year, with the maximum rate not to exceed $0.20 per $100 of assessed property value. Loudoun County also obtained a low-interest loan through the U.S. Department of Transportation's Infrastructure Finance and Innovation Act (TIFIA) to help finance the project.

Sources: Dulles Corridor Metrorail Project, FAQs. http://www.dullesmetro.com/faqs; Fairfax County, "Fairfax County Board of Supervisors Approves Final Bonds for Dulles Rail Phase One Tax District," 2012; http://www.fairfaxcounty.gov/news/2012/updates/fairfax-board-approves-final-bonds-dulles-rail-phase1.htm; Fairfax County, "Fund 40110: Dulles Rail Phase I Transportation Improvement District," FY 2016 Fairfax County Advertised Budget Plan (Vol. 2), http://www.fairfaxcounty.gov/dmb/fy2016/advertised/volume2/40110.pdf; Fairfax County "Fund 40120: Dulles Rail Phase II Transportation Improvement District," , FY 2016 Fairfax County Advertised Budget Plan (Vol. 2), http://www.fairfaxcounty.gov/dmb/fy2016/adopted/volume2/40120.pdf; Loudain County, "Dulles Rail Service Districts," https://www.loudoun.gov/index.aspx?NID=2639; Loudain County, "An Update on Transportation Projects in Loudain County, October 2015, https://www.loudoun.gov/DocumentCenter/View/116494.

Recommendation 4: Consider specifying modernization improvements as a permitted use for certain value capture tools.

Investing in the modernization of existing transportation systems is a high priority for the Commonwealth. Although there are limited examples of value capture tools being used for this purpose in the US, the growing consensus around the importance of reinvesting in Massachusetts' transit and highway systems suggests that there may be opportunities to use value capture tools for this purpose. However, the Commonwealth's existing legislation does not make it clear whether tools such as DIF and LIDP may be used for improvements to existing facilities. The state legislature should consider specifying modernization as a permitted use for these existing value capture tools, as well as for any new tools that are developed in the future. This will enable additional investment by local jurisdictions, property owners and developers. For example, Chapter V of this report describes how, in the case of the Red Line, developers at Kendall Square are willing to contribute to a transportation enhancement fund; this fund could, among other uses, support improvements to the transit line. As Massachusetts proceeds with other transit modernization efforts, other situations may arise where there is an opportunity to leverage private investment through the use of value capture tools.

APPENDIX A: GREEN LINE EXTENSION CASE STUDY

This appendix provides an analysis of the economic and fiscal benefits associated with the planned extension of Green Line into Somerville, Cambridge, and Medford, and the potential to use value capture tools to help finance the project. This analysis was completed in the spring of 2016 and was originally presented in a stand-alone memorandum that helped inform the Massachusetts Department of Transportation's (MassDOT's) review of the Green Line Extension (GLX) project, including negotiations among MassDOT and the cities of Somerville and Cambridge over an appropriate local financial contribution to support completion of the project. In May 2016, the two cities agreed to contribute a $75 million local match, and the MassDOT Fiscal Management and Control Board voted to move forward with seeking Federal Transit Administration approval for a redesigned GLX project.

This appendix includes the following sections:

- **Summary of Key Findings:** Summarizes major findings from the GLX analysis.
- **Value Capture Overview:** Includes a general overview of value capture, including a definition, an introduction to value capture tools, and a discussion of key considerations in using value capture to pay for transit (including potential tradeoffs with funding other public infrastructure and services).
- **Economic and Property Value Benefits of Transit:** Discusses the economic, environmental, and social benefits associated with transit, and the extent to which those benefits are reflected in (or "capitalized" into) increases in local property values.
- **Property Value and Fiscal Benefits of the Green Line Extension:** Provides estimates of (1) the total amount of new development planned within roughly a quarter-mile of the station areas; (2) the assessed property value, local property tax, local hotel and meal taxes, and state tax revenues (income, sales, and hotel taxes) associated with that development; and (3) the share of development, assessed property values, and tax revenues that are directly related to the Green Line Extension (GLX) and are not expected to occur in the absence of the transit project (referred to as the "transit benefit").
- **Capturing the Value from the Green Line Extension:** Describes the opportunities and challenges associated with using the value capture tools that are currently available or proposed in Massachusetts to recover some of the value to help pay for the GLX project, and provides order-of-magnitude estimates of the revenues that could be generated by the tools with the greatest potential.
- **Detailed Assumptions:** Provides a list of the development projects included in the analysis and more detailed information the tax revenue projections.

SUMMARY OF KEY FINDINGS

This section summarizes the major findings from the analysis. Additional detail on each finding is provided below, in the body of the memo.

The Economic and Fiscal Benefits of the Green Line Extension

The planned Green Line Extension (GLX) will generate substantial economic, social and environmental benefits. Transit access is associated with a wide range of benefits, including reduced transportation costs, improved connections to jobs, and reduced costs for maintenance of road

infrastructure. Some of these benefits are reflected in higher property values near stations, and result in higher tax revenues for local governments. Other benefits accrue broadly to society and the region.

Research suggests that the property value and development impacts of the GLX are likely to be very significant. The GLX has many of the characteristics that have been shown to support higher property values near transit and to enhance the opportunity for new development, including:

- *Connections to major regional destinations.* Studies demonstrate that transit has the greatest positive impact on property values when the transit investment significantly improves residents' access to employment centers and other regional destinations. The Green Line Extension will connect neighborhoods in Somerville, Medford, and Cambridge with Downtown Boston and Tufts University.
- *Supportive local land use context.* Pedestrian-friendly, mixed-use neighborhoods with good connections to transit stations generally experience the most significant property value benefits from transit. The established residential neighborhoods surrounding the GLX stations in the northern part of the planned alignment are characterized by high-density, pedestrian-friendly neighborhoods, while there are plans for mixed-use, transit-oriented development in the southern part of the alignment.
- *Supportive public policy.* Supportive public policy can help reinforce the value of transit-served locations for new, higher-intensity development by allowing higher densities (resulting in increased potential revenues) and reduced parking requirements (resulting in decreased construction costs). In anticipation of the Green Line Extension, Somerville and Cambridge have implemented new land use plans that envision higher density development and lower parking requirements, and/or entitled higher density development projects than would otherwise have been permitted.

Investments in high-quality pedestrian connections to the Green Line Extension stations will play an important role in generating value for surrounding properties, and in the successful implementation of a value capture strategy. The extent of the property value benefits and development impacts associated with new transit are in part related to the quality of the pedestrian connections to the stations. Moreover, most value capture tools are designed to capture value from new development, and property owner or developer approval is often required to implement the tools. This means that the private sector must see a clear value proposition in contributing to a project for implementation to be successful. Ensuring that the project provides the pedestrian connections and other amenities required to support increased property values and new development is thus an important consideration for a value capture strategy.

Impact of the GLX on Future Development and Tax Revenues

A significant amount of development is planned for development in future GLX station areas. Within a quarter mile of the planned stations, expected development over the next thirty years (2017-2047) includes:

- Approximately 5,400 new residential units,
- 4.6 million square feet of office,
- 615,000 square feet of retail, and
- 210 hotel rooms.

A high proportion of this development is directly related to the completion of the GLX as currently planned. Figure A-1 shows the amount of development that is related to the extension of the Green Line,

and that is unlikely to occur if the project is not completed (the "transit benefit"). Some planned development projects are entirely contingent upon the completion of the GLX, including projects at the College Avenue and Lechmere Stations. In addition to the impacts on specific projects, by improving access to Downtown Boston the GLX will attract increased market demand for new development, especially for employment uses. In direct response to the GLX project and the commercial development that the new transit is expected to attract, the City of Somerville is planning to allow for increased residential densities and reduced parking requirements, enabling additional multi-family development that would not otherwise be allowed. The transit benefit estimates shown in Figure A-1 reflect assumptions about the scale of these impacts on new development in the station areas. In addition to these development impacts, the GLX is expected to result in increased assessed property values.

Figure A-1: Development Impacts of the Green Line Extension, 2017-2047

	Residential (Units)	Office (Sq. Ft.)	Hotel (Rooms)	Retail (Sq. Ft.)
Currently Planned Development	5,435	4,677,622	210	615,860
Development Directly Related to the Green Line Extension (Transit Benefit)				
Low Estimate	729	2,037,335	0	74,172
High Estimate	867	2,175,717	0	89,965
Percent of Total Planned Development that is Directly Related to the Green Line Extension				
Low Estimate	13%	44%	0%	12%
High Estimate	16%	47%	0%	15%

Sources: RKG Associates and Strategic Economics, April 2016.

If the GLX does not move forward, this will result in reduced tax revenues for the cities and the Commonwealth. If the transit project is not completed, the reduced development and lower assessed property values will result in reduced tax revenues. The potential impacts to the cities and the state include:

- **$250 to $280 million in combined property tax revenues for Somerville, Cambridge and Medford are directly related to the planned transit extension, and are unlikely to occur in the absence of the GLX.** This amounts to a 40 to 43 percent reduction in property tax revenues, compared to the amount that would be generated between 2017 and 2047 if the GLX is completed and all development moves forward as planned. In addition, the development directly associated with the GLX is expected to generate up to $460,000 in local hotel and meal tax revenues between 2017 and 2047.
- **$399 to $431 million in state tax revenues are directly related to the GLX**. This includes revenues from income, sales, and hotel occupancy taxes associated both with the construction and long-term operations of the projected new development that is directly related to the GLX. Note that some of the planned development in the station areas (and, by extension, the state tax revenues) might occur elsewhere in the state even in the absence of the GLX. However, the transit is expected to enable new housing development that might not otherwise occur, given the prevalence of regulatory constraints on housing development throughout Massachusetts. In turn, new housing development supports the state's long-term economic and fiscal growth. The new transit investment and planned transit-oriented development may also help make the state more attractive in competing with other regions for new households and jobs.

Additional assessed value and tax revenues will be generated based on appreciation of existing properties where no development is currently planned. Indeed, anecdotal evidence suggests that some

of the benefits associated with the Green Line Extension have already been capitalized into local property values. In addition, development has already begun to move forward around some of the stations in anticipation of the new transit service.

The projected growth will come with fiscal costs as well as benefits, especially for local governments. In many locations along the corridor, major improvements to roadways, sewers, stormwater systems, and other infrastructure systems are required in order to both address existing deficiencies, and make new development possible. Moreover, additional investments in pedestrian and bicycle connections, streetscape, and other improvements may be required in order to connect new development to transit and fully realize the accessibility benefits of the GLX. Increased investments in affordable housing may also be required, to ensure that the new development is inclusive and to enable lower income residents to remain in their neighborhoods as housing prices continue to rise. Accommodating new growth also requires providing additional services to residents and workers, including police and fire, ongoing maintenance of roads and facilities, local contribution to the schools, etc.

Value Capture Potential

Most of Massachusetts' existing tools would be challenging to apply directly to financing the GLX. Value capture tools capture a portion of increased property values associated with new transit, in order to pay for the transit infrastructure. Key challenges associated with implementing the tools that are either currently available or proposed in the Commonwealth are described below:

- **Tools designed to capture value from individual development projects, instead of broader districts:** Most of the existing tools that are authorized by the Commonwealth are tied to specific development projects, and are not well-suited to capturing value from a district spanning multiple development projects, let alone a corridor spanning multiple jurisdictions. While District Improvement Financing (DIF) could in theory be implemented in a district covering multiple properties within a jurisdiction, the tool has never been used this way, and capturing property value growth that is not associated with new development may be challenging because of limitations posed by Proposition 2½. Among other provisions, Proposition 2½ limits total citywide property tax increases to 2.5 percent per year, plus an allowance for growth associated with new development. To the extent that properties increase in value more than 2.5 percent in a given year without experiencing new development (for example, due to the benefits existing development receives from the introduction of a new transit line), this growth cannot be captured in the property tax rolls – and therefore, cannot be captured by value capture tools that rely on incremental growth in property tax revenues, such as DIF.
- **Implementation barriers:** Several of the tools have implementation requirements that would be difficult to meet. For example, as part of the approval process for the Infrastructure Investment Incentive Program (I-Cubed), the Commonwealth must find that individual projects would not achieve the contemplated level of development, jobs, or other economic activity "but for" the infrastructure investment supported by I-Cubed. Meeting the "but for" requirement typically involves assessing the location decisions of individual tenants, an analysis that would be difficult if not impossible to conduct for the corridor as a whole, especially given that much of the commercial development is still in the planning phase and specific tenants have not yet been identified. In addition, the program has limited financial capacity. The Local Infrastructure Development Program (MGL Ch. 23L) requires 100 percent property owner approval, and has never been implemented in Massachusetts.
- **Timing:** Development has already begun to move forward around some of the stations in anticipation of the new transit service. It may be too late to capture value for the GLX from development projects that are already entitled or under construction.

- **Competing funding needs:** A successful value capture strategy will need to balance the scale of any contribution to transit, with the need to provide local infrastructure, services, and community benefits such as affordable housing. In the absence of any local sales or income taxes, cities in Massachusetts are heavily dependent on property tax revenues to pay for local services and infrastructure, including schools, parks, sidewalks and sewers. Proposition 2½ limits local governments' ability to increase property tax rates, further constraining local governments' ability to raise revenues to pay for services and facilities. In part because of these limitations, the Cities of Somerville, Cambridge, and Medford expect new development to contribute to local-serving infrastructure, affordable housing, and other community needs. These competing needs limit the potential for either cities or developers to contribute to the GLX.

However, there may be an opportunity to capture a share of incremental growth in property tax revenues associated with planned new development. DIF and the Chapter 40X Supplemental Infrastructure Financing for Transportation (SIFT) program (proposed in the 2015-2016 legislative session) both are designed to capture incremental growth in property tax revenues from the existing municipal levy (known as "tax increment financing" in other states). Given that the development planned around the GLX is expected to generate significant growth in property tax revenues, these tools have some potential. However, the DIF tool has typically been implemented on a project-by-project basis; no precedent exists for a DIF district spanning multiple development projects or multiple jurisdictions. There is also no established mechanism for DIF revenues to fund state transportation investments. As currently proposed, SIFT would address the latter challenge by creating a process for collaboration between the MBTA/MassDOT and a municipality in implementing tax increment financing.

Assuming these challenges could be overcome, Figure A-2 shows two ways of estimating the potential revenues from capturing a share of the property tax increment. **Scenario 1** is calculated based on the property tax revenues generated by all planned development in the station areas. In this scenario $158 million is captured over 30 years. **Scenario 2** is calculated based on the property tax revenues generated by the development that is directly related to the build-out of the GLX (the "transit benefit"). This scenario generates a total of $67 million between 2017 and 2047.

Negotiated development contributions are a likely mechanism for providing some of the local-serving infrastructure needs associated with the Green Line Extension, such as bicycle and pedestrian connections to the stations. The MBTA has already begun preliminary discussions with some of the major property owners and developers in the GLX station areas. These contributions would likely come in the form of improvements provided in-kind by the developer or one-time payments for specific project components, and would thus be difficult to use as an up-front funding source for transit. However, if another funding source were identified, developer contributions could conceivably help contribute to debt service or recover other costs over time.

Figure A-2 shows the potential value (in 2017 dollars) that might be generated from development contributions under two scenarios. The two scenarios can be interpreted as target amounts for total developer contributions to the GLX over time. **Scenario 1** calculates the development contribution as a share of the new assessed value generated from all development that is currently planned in the station areas. In this scenario, development could contribute up to $20.7 million over 30 years. **Scenario 2** calculates the development contribution as a share of the assessed value associated with the development that is directly related to the build-out of the GLX (i.e., the "transit benefit"). Based on these assumptions, development along the corridor could contribute $9.7 million over 30 years.

The estimates in Figure A-2 are intended to serve as one possible basis for conceptualizing a reasonable level of contribution to the transit project, and should not be considered definitive. The estimates are based on the available information about the scale of new development planned for the station

areas, and competing needs for funding (including funding for other local infrastructure needs, the provision of municipal services, and other community benefits such as affordable housing). However, the GLX will also provide broader economic, environmental, and social benefits that are not fully captured in this analysis (such as improved accessibility for existing residents and workers), but that cities and the state may wish to take into consideration in determining an appropriate level of contribution from each jurisdiction. In addition, different jurisdictions along the corridor have varying levels of financial capacity, which may also influence the amount each city is able to contribute.

Figure A-2: Total Potential Value Capture Revenues, 2017-2047 (In 2017 Dollars, Millions)

	Potential Revenues from Property Tax Increment[a]		**Potential Value of Development Contributions[d]**	
	Scenario 1: Calculated from All Planned Development[b]	*Scenario 2: Calculated from Transit Benefit[c]*	*Scenario 1: Calculated from All Planned Development[e]*	*Scenario 2: Calculated from Transit Benefit[f]*
Total Corridor	**$158.0**	**$66.9**	**$20.7**	**$9.7**
Cambridge	$25.1	$2.6	$6.3	$2.9
Medford	$5.4	$2.4	$0.6	$0.2
Somerville	$127.6	$62.0	$13.8	$6.6

Notes:
[a] Assumes cities contribute 25% of annual property tax revenue increases associated with new development, beginning in 2017.
[b] Calculated as a share of property tax revenues generated from all development currently planned in the station areas.
[c] Calculated as a share of property tax revenues generated from development directly related to the build-out of the GLX (the "transit benefit"). Based on the midpoint of the low and high transit benefit estimates.
[d] Assumes one-time contributions of 1.25% of assessed value of development completed in each year, beginning in 2018.
[e] Calculated as a share of new assessed value generated each year from all development currently planned in the station areas.
[f] Calculated as a share of new assessed value generated each year from development directly related to the build-out of the GLX (the "transit benefit"). Based on the midpoint of the low and high transit benefit estimates.
Source: Strategic Economics, May 2016.

VALUE CAPTURE OVERVIEW

A large body of research shows that transit can generate many economic, environmental, and social benefits. Some of these benefits are reflected in (or "capitalized" into) higher property values, with the effects typically most concentrated within a quarter- to half-mile around the transit stations. Studies also show that the increased desirability of locations near transit can help to attract additional real estate development. Value capture tools capture a portion of this property value growth in order to pay for transit infrastructure or for transit-oriented development (TOD). Across the U.S., states, regional planning agencies, and local governments are increasingly interested in the use of value capture in light of increasing demand and declining federal funding for transit projects. In Massachusetts, value capture tools are being discussed as one possible source of a "local match" (i.e., city or town contribution) for state-funded transportation projects.

Value capture tools consist of a variety of property-based financing mechanisms that are employed by the public sector. Nationally, these tools include special assessments and taxes, tax increment financing (TIF), development impact fees, negotiated development contributions, and public sector real estate transactions. The categories of tools are summarized in Figure A-3 on the following page; specifics regarding the tools available in Massachusetts are provided later in this memo.

Most value capture tools, including tax increment financing, are designed to capture value from new development. In addition, property owner, developer, and/or voter approval is often required to implement

the tools. This means that the private sector must see a clear value proposition in contributing to a transit project for implementation to be successful.

Note also that value capture tools often rely on the same sources of revenue – such as property tax – that local governments rely on to pay for other local services and infrastructure, including schools, parks, sidewalks and sewers. The use of value capture for transit can be challenging when station areas need other costly investments, or when value capture strategies are viewed as important for providing other community benefits such as affordable housing.

It is also important to note that not every transit project generates the same magnitude of increases in value, or the same level of increased tax revenue. Some projects generate substantial additional value; others are much more modest. Furthermore, not all local communities start the process with the same level of resources. Lower-income communities with high levels of social need may find it much more difficult than wealthier communities to contribute new local revenues to pay for the cost of transit. Finally, increased value and tax revenues develop over time – in some cases, quickly, and in other cases, much more slowly.

All of these factors must be taken into account as the Commonwealth develops an equitable plan to take advantage of value capture while protecting the critical needs of local communities and neighborhoods.

Figure A-3: Broad Categories of Value Capture Tools

Mechanism	Definition
Special assessments and taxes	An additional assessment or tax on properties or businesses within a specific district or jurisdiction
Tax increment financing	Diversion of growth in tax revenues generated within a district (usually property tax)
Development impact fee	A one-time fee assessed on new development to offset the cost of infrastructure needs generated by development
Negotiated development contributions	Direct provision of or payment for public improvements by a developer in conjunction with a development project
Community benefits bonus program	A zoning tool that allows developers to build to a higher density or height in exchange for provision of specific community benefits
Public sector real estate transaction	Revenues generated through sale, ground lease or joint development on publicly-owned land or air rights

Source: Strategic Economics.

ECONOMIC AND PROPERTY VALUE BENEFITS OF TRANSIT

Public transit is associated with a wide range of economic, environmental, and social benefits. Ideally, transit funding sources should be related to the benefits transit provides: those who benefit the most from transit should assist with payment proportionally. However, this ideal is complicated by the reality that transit benefits accrue in different ways to different groups, including households, businesses, property owners and developers, and society at large. Furthermore, the benefits of transit occur at different geographies, ranging from households, businesses, and properties that are located directly adjacent to a transit station, to the region or state as a whole.

Figure A-4 summarizes the major benefits associated with transit investments.[73] Each benefit is characterized in terms of the major beneficiaries, whether households (i.e., transit riders), businesses, or society as a whole. For example, improved transit access directly benefits transit riders by providing increased convenience, speed, and savings from decreased auto use and ownership. This can result in long-term productivity benefits for workers and businesses, by allowing transit riders to access employment centers, schools and colleges, and other destinations more quickly and reliably.

Other benefits affect the regional economy and society as a whole. For example, a high-quality transit system can make a region more competitive in attracting new workers and businesses. Frequent, convenient, and reliable public transit is increasingly seen as a critical component of a high quality of life, and is one of the factors that many households and firms consider in determining where to locate. In a 2014 survey, 81 percent of Millennials (people born in the 1980s and 1990s) and 77 percent of Baby Boomers (people born between 1946 and 1964) polled agreed that "affordable and convenient transportation alternatives to the car are at least somewhat important when deciding where to live and work."[74] Businesses – especially in the high-tech industry and other sectors that require skilled labor – are also increasingly choosing locations based on factors such as local quality of life and the productivity and education levels of the local workforce.[75]

PROPERTY VALUE BENEFITS

Figure A-4 also shows the extent to which the benefits associated with transit are capitalized into property values. Property values are often higher within a quarter- to a half-mile of a transit station because households and employers are willing to pay a premium to locate in areas where they can take advantage of the improved accessibility and other benefits provided by transit. Many studies show that rail transit investments have a positive effect on property values, typically in the range of 5 to 15 percent. Based on the research, the impact of transit stations on property values is influenced by several factors, described below.

- **Extent of the transit system and quality of service.** Transit has the greatest impact on property values when it significantly improves residents' access to employment, education, entertainment, and other destinations.[76] Studies have also shown that transit systems that provide frequent, convenient access to multiple employment centers or other important destinations are likely to attract more new development.[77] The Green Line Extension will improve connections to Downtown

[73] Figure A-4 is adapted from Todd Litman, "Evaluating Public Transit Benefits and Costs: Best Practices Guidebook," Victoria Transportation Policy Institute, March 2011, p. 67.

[74] American Planning Association, "Investing in Place: Two Generations' View on the Future of Communities," May 2014, http://www.planning.org/policy/polls/investing/pdf/pollinvestingreport.pdf.

[75] David Salvesen and Henry Renski, "The Importance of Quality of Life in the Location Decisions of New Economy Firms" (Center for Urban and Regional Studies, January 2003), http://www.unc.edu/depts/curs/curs-pdf-downloads/recentlyreleased/neweconomyreport.pdf.

[76] Nancy Pindus, Howard Wial, and Harold Wolman, eds., *Urban and Regional Policy and Its Effects*, vol. 3 (Washington D.C.: Brookings Institution Press, 2010), http://www.brookings.edu/research/books/2010/urbanandregionalpolicyanditseffectsvolume3; Keith Wardrip, "Public Transit's Impact on Housing Costs: A Review of the Literature," Insights from Housing Policy Research (Center for Housing Policy, August 2011), http://www.nhc.org/media/documents/TransitImpactonHsgCostsfinal_-_Aug_10_20111.pdf.

[77] Nadine Fogarty and Mason Austin, "Rails to Real Estate: Development Patterns along Three New Transit Lines" (Center for Transit-Oriented Development, March 2011), http://www.ctod.org/portal/node/2302; Nadine Fogarty et al., "Downtowns, Greenfields, and Places in Between: Promoting Development Near Transit" (Center for Transit-Oriented Development, May 2013), http://ctod.org/pdfs/20130528_DntnsGreenfieldsEtc.FINAL.pdf.

Boston and Tufts University, as well as other destinations, suggesting potential for significant positive value impacts.

- **Property type:** Some studies have found that multifamily residential and office property values benefit more from proximity to rail than single-family property values. For example, a study of the Metro system in Washington D.C. found that proximity to Metro increased property values by 7 percent for single-family residential, 9 percent for multifamily apartment buildings, and 9 percent for office properties.[78] A meta-study that combined the results from a number of research efforts concluded that the premium is generally higher for commercial properties within short distances of rail stations, but the impact on residential properties extends for a greater distance.[79] The established residential neighborhoods surrounding the GLX stations in the northern part of the planned alignment are primarily multi-family, while there are plans for significant office and other commercial development in the southern part of the alignment (e.g., near the Lechmere and Union Square Stations) – suggesting significant opportunity for property value increases.
- **Local land use context and connectivity:** Neighborhood context also plays an important role in determining the value generated by transit, with higher premiums found in locations that offer good pedestrian connections, a mix of uses, and other neighborhood amenities. For example, a study of the Hiawatha Line in Minneapolis[80] found that while properties on the west side of the alignment benefited from an accessibility premium, properties on the east side – which are separated from the line by a four-lane road and an industrial area – did not. This suggests that high quality pedestrian connections to the Green Line Extension stations will be an important factor in creating value for the surrounding properties.
- **Supportive land use policy:** Supportive public policy can help reinforce the value of transit-served locations for new, higher-intensity development by allowing higher densities (resulting in increased potential revenues) and reduced parking requirements (resulting in decreased construction costs).[81] In anticipation of the Green Line Extension, Somerville and Cambridge have implemented new land use plans that envision higher density development and lower parking requirements.

Note that some of the property value benefits associated with a new transit investment may accrue well before transit service begins. For example, a series of studies of Chicago's Orange Line found that property value increases occurred as early as six years before the opening of the line, and that single-family residential properties located within a half-mile of the stations had experienced a 17 percent value premium three years before the line opened.[82] Indeed, anecdotal evidence suggests that some of the benefits associated with the Green Line Extension have already been capitalized into local property values, and development has already begun to move forward around some of the station locations in anticipation of the new transit service.

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[78] Washington Metropolitan Area Transit Authority, "Making the Case for Transit: WMATA Regional Benefits of Transit," November 2011, http://www.wmata.com/about_metro/makingthecase.cfm.

[79] Ghebreegziabiher Debrezion, Eric Pels, and Piet Rietveld, "The Impact of Railway Stations on Residential and Commercial Property Value: A Meta-Analysis," *Journal of Real Estate Finance and Economics* 35, no. 2 (June 2007): 161–80.

[80] Edward G. Goetz et al., "The Hiawatha Line: Impacts on Land Use and Residential Housing Value" (Center for Transportation Studies, University of Minnesota, February 2010), http://www.cts.umn.edu/Publications/ResearchReports/.

[81] Nadine Fogarty et al., "Capturing the Value of Transit" (Center for Transit Oriented Development, 2008).

[82] John F. McDonald and Clifford L. Osuji, "The Effect of Anticipated Transportation Improvements on Residential Land Values," *Regional Science and Urban Economics* 25, no. 3 (June 1995): 261–7; Daniel P. McMillen and John McDonald, "Reaction of House Prices to a New Rapid Transit Line: Chicago's Midway Line, 1983–1999," *Real Estate Economics* 32, no. 3 (September 2004): 463–86.

Figure A-4: Benefits of Transit

Benefit	Description	Primary Beneficiaries	Geography of Primary Benefit*	Capitalized in Land Values?
Accessibility and connectivity	Access, convenience, speed and comfort provided to users of transit service	Transit Riders	Transit-served areas	Yes
Consumer savings	Reduced consumer transportation costs, including vehicle operation/ownership costs	Transit Riders	Transit-served areas	Yes
Increased productivity	Improved access for employers to workforce and customers	Businesses, Transit Riders	Transit-served areas	Yes
Facility cost savings	Reduced costs on other transportation facilities, such as roads and parking facilities	Government/ Taxpayers, Developers	Transit-served areas & regions	Some
Reduced congestion	Reduced traffic congestion on roadways	Drivers/Everyone	Transit-served areas & regions	Some
Economic development	Business and labor force attraction; productivity gains from more clustered land use patterns and economic activity	Businesses/ Everyone	Transit-served areas & regions	Some
Efficient land use	More compact development, reduced sprawl; potential infrastructure and services savings	Everyone	Transit-served areas & regions	Some
Public health	Increased physical activity, especially walking	Transit riders	Transit-served areas	Some

Road safety	Savings from reduced per capita traffic crash rates, reduced need for emergency services	Everyone	Transit-served areas & regions	Mostly not
Environmental quality	Reduced pollution emissions and habitat degradation	Everyone	Transit-served areas & regions	Mostly not

*Transit-served areas are defined as locations in close proximity to transit stations, where workers and households can take advantage of the improved accessibility and other benefits provided by transit service.
Adapted from Litman, *Evaluating Public Transit Benefits and Costs: Best Practices Guidebook*, p 67.

FISCAL BENEFITS

Many of the economic benefits of transit translate into fiscal benefits for local and state governments. These include:

- **Increased tax revenues:** Transit improvements can support regional economic growth, leading to higher overall tax revenues. Local governments may also benefit from increased assessed values and higher tax revenues in transit station areas. Construction spending on new transit investments can also result in higher revenues for local and state governments by generating new income for construction workers and vendors, which in turn results in increased local spending and sales tax revenues.[83]
- **Facilities cost savings:** Improved transit can result in reduced use of other facilities such as roads and parking lots, reduced traffic fatalities and crash rates, and reduced pollution. These benefits can result in government savings by reducing the need for road maintenance, police and emergency services, and environmental mitigation or clean up.[84]
- **Fostering compact development:** High-quality transit service can encourage more compact development and reduced suburban sprawl. Studies show that more efficient land use patterns can result in higher land values and savings on the cost of infrastructure and services.[85]

PROPERTY VALUE AND FISCAL BENEFITS OF THE GREEN LINE EXTENSION

Significant new commercial and residential development is planned for the areas around the Green Line Extension stations. This development will result in higher assessed property values, generating new property tax revenues for the cities along the corridor. In addition, the development will generate tax revenues for the state. This section provides an estimate of the amount of new development planned within roughly a quarter-mile of the station areas (referred to as the "GLX station areas" below[86]), as well as the assessed value, local property, meals, and hotel taxes, and state tax revenues (income, sales, and hotel taxes) that would be associated with that development. This section also provides estimates of the share of development, assessed property values, and tax revenues that are directly related to the GLX and are not expected to occur in the absence of the transit project (referred to as the "transit benefit").

Note that the assessed value and tax revenue estimates described in this section are based solely on new development that is expected to occur within a quarter-mile of the GLX stations. In addition, the GLX is expected to positively impact the value of existing properties. As described earlier in this memo, these impacts are likely to be substantial given the significant accessibility improvements and other economic benefits associated with the project. By focusing solely on the impacts of new development, this analysis

[83] Terry L. Clower et al., "Through Recession and Recovery: Economic and Fiscal Impacts of Capital and Operating Spending by Dallas Area Rapid Transit" (Dallas Area Rapid Transit, January 2014).
[84] Todd Alexander Litman, "Evaluating Public Transit Benefits and Costs: Best Practices Guidebook" (Victoria Transport Policy Institute, July 21, 2011), http://www.vtpi.org/tranben.pdf.
[85] Smart Growth America, "Building Better Budgets: A National Examination of the Fiscal Benefits of Smart Growth Development" (Washington D.C., May 2013), http://www.smartgrowthamerica.org/documents/building-better-budgets.pdf.
[86] Note that projects located immediately outside the quarter-mile walkshed, but that are known to be associated with the GLX (such as some of the development in the Inner Belt area in Somerville), were also included in the analysis.

is intended to inform a conservative estimate of the value that might be captured to help pay for the GLX. As a general rule, value capture strategies primarily capture value from new development. In addition, the potential to capture value from appreciation of existing properties may be particularly limited in Massachusetts, where Proposition 2½ limits property tax revenue increases associated with the revaluation of existing properties but places fewer restrictions on tax revenue increases from new development. Moreover, in the case of the GLX, it is likely that some of the expected benefits have already been capitalized into local property values because the project has been planned for many years.

NEW DEVELOPMENT AND ASSESSED PROPERTY VALUE INCREASES

Approximately 5,400 new residential units, 4.6 million square feet of office, 615,000 square feet of retail, and 210 hotel rooms are planned for the station areas, assuming the GLX moves forward as planned. Figure A-5 shows the total amount of new development currently planned for the GLX station areas and expected to be completed between 2017 and 2047, by city and station area. The development projections include projects that (1) have been completed or are under construction, (2) are currently moving through the permitting process, or (3) are proposed or included in a small area plan.[87] The development projections shown in Figure A-5 were derived based on data provided by Somerville, Cambridge, and Medford, supplemented with interviews with City staff and Tufts University, a review of land use plans, and independent market research by the consultant team.

The planned development is expected to generate an additional $3.2 billion in assessed property value by 2047. The assessed value projections, shown in Figure A-5, were developed using per-unit and per-square foot values provided by the Somerville Assessor department.[88]

Of the $3.2 billion in projected increase in assessed value, approximately $1.37 to $1.52 billion (or 43 to 47 percent) is related to the planned transit expansion, and is unlikely to occur in the absence of the GLX. Figures A-6 and A-7 show the estimated amount of development and assessed value, respectively, that is related to the extension of the Green Line, and that is unlikely to occur if the project is not completed (the "transit benefit"). The GLX is expected to have a number of impacts on the scale, timing, and value of new development. The transit benefit estimates in Figures A-6 and A-7 are expressed as a range, and reflect the following assumptions about the impact of the GLX (summarized in Figure A-8):

- **New opportunities for development at the stations:** Some planned development projects are entirely contingent upon the completion of the GLX. These include a Tufts University facility in Medford planned for the air rights over the College Avenue station,[89] and a mixed-use development

[87] Note that some area plans are not expected to be fully built out in 30 years; these development projections were adjusted downwards to reflect the likely build out by 2047 based on expected market absorption.

[88] The total projected assessed value (in 2047) of improvements associated with new development was calculated assuming an annual 2 percent increase in per-unit and per-square foot improvement values, based on analysis provided by the City of Somerville Assessor. Potential increases in land values are excluded because Proposition 2½ provides that land values are only reassessed when major infrastructure improvements are made to serve new development. While some planned projects will include major infrastructure improvements, it was not possible to quantify potential land value increases at the station area or corridor level. The assessed values of existing improvements are not excluded, due to incomplete information on existing conditions on the parcels slated for redevelopment.

[89] As a University facility, the Tufts project would not be subject to property taxes. Therefore, it is reflected in the development transit benefit (Figure A-6) but not in the assessed property value transit benefit (Figure A-7). However, Tufts has a payment-in-lieu-of-taxes agreement with the City of Medford related to this project, wherein the University has agreed to pay the City not less than $250,000 a year starting when the certificate of occupancy is issued (projected

(including approximately 180 residential units and 11,000 square feet of ground floor retail) planned for the current site of the Lechmere station in Cambridge (which will be relocated as part of the planned GLX project).[90] All of transit benefit estimates assume that in the absence of the GLX, these projects will not move forward.

- **Increased demand for office development:** By improving access to Downtown Boston, the GLX will attract increased market demand for new development. In particular, the GLX is expected to draw employers who would not otherwise locate in Somerville in the near to mid-term, opening up opportunities to transform formerly industrial areas and underutilized parcels to higher value office and research and development uses. In order to facilitate this development, the City of Somerville is planning to allow for higher floor area ratios and reduced parking requirements, which will enable commercial development to occur at higher densities. Based on discussions with local developers and City staff, the transit benefit estimates assume that 70 to 75 percent of the planned office development in Somerville and Medford is directly related to the GLX, and would not occur within the 2017-2047 timeframe if the project does not move forward.[91] This assumption may be conservative given that studies show that many types of employers, including technology and professional services, prefer to locate near rail transit.
- **Land use policy and regulatory changes to permit additional residential development:** In direct response to the GLX project and the commercial development that new transit is expected to attract, the City of Somerville is planning to allow for increased residential densities and reduced parking requirements in the station areas located within the City's jurisdiction. These regulatory changes will enable additional multi-family development that would not otherwise be allowed, despite significant demand for new residential units throughout the region. The analysis assumes that 20 to 25 percent of the planned residential development in Somerville and Medford is directly related to the GLX, and would not occur within the 2017-2047 timeframe in the absence of the project. Because retail demand is related to residential growth, the analysis also assumes that 20 to 25 percent of planned retail development in the two cities would not occur without the GLX.
- **Increased values:** Households and employers are expected to pay more for housing and commercial space that is located within walking distance of the Green Line stations, in order to take advantage of the improved accessibility provided by the GLX. Based on the literature about transit's impact on property values (reviewed in the previous section of this memorandum), the assessed value transit benefit estimates reflect an assumption that 8 to 10 percent of the value for office space, 5 to 8 percent of the value for multi-family residential, and 3 to 5 percent of the value for retail space in all the station areas is directly related to the introduction of new transit. The assessed value transit benefit estimates also take into account the development scale and timing considerations described above.

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for 2020; see http://www.globest.com/sites/globest/2015/06/16/tufts-u-plans-new-building-at-mbta-station/?slreturn=20160311151104). For the purposes of the property tax estimates discussed below, this PILOT payment was treated as property tax revenues that are contingent upon the completion of the GLX.

[90] The Lechmere project is part of the NorthPoint development project.

[91] With the exception of the Lechmere Station Project, all of the development in Cambridge that is planned for the GLX station areas is already fully entitled and moving forward.

Figure A-5: New Development Currently Planned for the Green Line Extension Station Areas and Associated Increase in Assessed Property Values, 2017-2047[a]

	Total New Development (2017-47)[b]				Total New Assessed Value in Millions (2047, Millions)[c]				
	Residential (Units)	Office (Sq. Ft.)	Hotel (Rooms)	Retail (Sq. Ft.)	Residential	Office	Hotel	Retail	Total
Total Corridor	**5,435**	**4,677,622**	**210**	**615,860**	**$1,500.3**	**$1,415.6**	**$98.7**	**$206.5**	**$3,221.1**
Cities									
Cambridge	2,555	1,400,000	0	300,000	$569.0	$346.6	$0.0	$74.3	$989.8
Medford	127	103,000	0	63,290	$43.6	$1.8	$0.0	$37.8	$83.2
Somerville	2,753	3,174,622	210	252,570	$887.7	$1067.2	$98.7	$94.4	$2,148.0
Station Areas	0	0	0	0	$0.0	$0.0	$0.0	$0.0	$0.0
Route 16/Mystic River	125	13,000	0	69,500	$43.0	$7.8	$0.0	$41.6	$92.4
College Avenue	0	100,000	0	0	$0.0	$0.0	$0.0	$0.0	$0.0
Ball Square	63	0	0	11,440	$22.7	$0.0	$0.0	$6.0	$28.7
Lowell Street	112	6,000	0	18,258	$44.6	$2.3	$0.0	$7.5	$54.4
Gilman Square	211	51,100	0	39,800	$60.8	$26.6	$0.0	$5.9	$93.4
Washington Street	581	901,250	35	36,000	$202.2	$322.8	$12.9	$24.2	$562.1
Union Square	1,656	1,796,272	175	140,862	$528.4	$607.7	$85.7	$46.9	$1,268.8
Lechmere	2,688	1,810,000	0	300,000	$598.6	$448.4	$0.0	$74.3	$1,121.3

Notes:
[a] Assumes the Green Line Extension moves forward as planned.
[b] Includes projects that (1) were recently completed or are under construction, (2) are planned and moving through the permitting process, and (3) are proposed or included in a small area plan. Note that some area plans are not expected to be fully built out in 30 years; these development projections were adjusted downwards to reflect the likely build out by 2047 based on expected market absorption.
[c] Total projected assessed value (in 2047) of improvements associated with new development, assuming an annual 2 percent increase in per-unit and per-square foot improvement values based on analysis provided by the City of Somerville Assessor. Excludes potential increases in land values because Proposition 2½ provides that land values are only reassessed when major infrastructure improvements are made to serve new development. While some planned projects will include major infrastructure improvements, it was not possible to quantify potential land value increases at the station area or corridor level. The assessed values of existing improvements are not excluded, due to incomplete information on existing conditions on the parcels slated for redevelopment.
Sources: RKG Associates and Strategic Economics, April 2016.

Figure A-6: Development Directly Related to the Extension of the Green Line, 2017-2047

	Transit Benefit: Low Estimate				Transit Benefit: High Estimate			
	Residential (Units)	Office (Sq. Ft.)	Hotel (Rooms)	Retail (Sq. Ft.)	Residential (Units)	Office (Sq. Ft.)	Hotel (Rooms)	Retail (Sq. Ft.)
Total Corridor	**729**	**2,037,335**	**0**	**74,172**	**867**	**2,175,717**	**0**	**89,965**
Cities								
Cambridge	180	0	0	11,000	180	0	0	11,000
Medford	25	102,100	0	12,658	32	102,250	0	15,823
Somerville	524	1,935,235	0	50,514	655	2,073,467	0	63,143
Station Areas								
Route 16/Mystic River	25	9,100	0	13,900	31	9,750	0	17,375
College Avenue	0	100,000	0	0	0	100,000	0	0
Ball Square	13	0	0	2,288	16	0	0	2,860
Lowell Street	22	4,200	0	3,652	28	4,500	0	4,565
Gilman Square	42	35,770	0	7,960	53	38,325	0	9,950
Washington Street	116	630,875	0	7,200	145	675,938	0	9,000
Union Square	331	1,257,390	0	28,172	414	1,347,204	0	35,216
Lechmere	180	0	0	11,000	180	0	0	11,000

Sources: RKG Associates and Strategic Economics, April 2016.

Figure A-7: Assessed Property Value Directly Related to the Extension of the Green Line, 2017-2047 (in 2047 Dollars, Millions)

	Transit Benefit: Low Estimate					Transit Benefit: High Estimate				
	Residential	**Office**	**Hotel**	**Retail**	**Total**	**Residential**	**Office**	**Hotel**	**Retail**	**Total**
Total Corridor	**$284.4**	**$1,055.0**	**$0.0**	**$34.5**	**$1,373.9**	**$364.3**	**$1,106.4**	**$0.0**	**$44.3**	**$1,515.0**
Cities										
Cambridge	$66.5	$346.6	$0.0	$4.9	$418.0	$82.4	$346.6	$0.0	$6.3	$435.3
Medford	$10.5	$1.3	$0.0	$8.5	$20.2	$13.5	$1.4	$0.0	$10.9	$25.8
Somerville	$207.4	$707.1	$0.0	$21.2	$935.7	$268.4	$758.4	$0.0	$27.2	$1053.9
Station Areas										
Route 16/Mystic River	$10.3	$5.7	$0.0	$9.3	$25.3	$13.3	$6.0	$0.0	$12.0	$31.3
College Avenue	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Ball Square	$5.4	$0.0	$0.0	$1.4	$6.8	$7.0	$0.0	$0.0	$1.7	$8.8
Lowell Street	$10.7	$1.6	$0.0	$1.7	$14.0	$13.8	$1.8	$0.0	$2.2	$17.8
Gilman Square	$14.6	$19.3	$0.0	$1.3	$35.2	$18.9	$20.6	$0.0	$1.7	$41.2
Washington Street	$48.5	$233.7	$0.0	$5.4	$287.6	$62.7	$250.2	$0.0	$7.0	$319.8
Union Square	$126.8	$440.0	$0.0	$10.5	$577.3	$163.8	$471.0	$0.0	$13.5	$648.3
Lechmere	$68.0	$35.9	$0.0	$4.9	$108.8	$84.8	$44.8	$0.0	$6.3	$135.9

Sources: RKG Associates and Strategic Economics, April 2016.

Figure A-8: Transit Benefit Assumptions

Assumption	Low Estimate	High Estimate
Specific Development Projects		
Tufts University/College Ave. Station Project (100,000 sq. ft. commercial)[a]	Does not occur in absence of GLX	Does not occur in absence of GLX
Lechmere Station Project (180 residential units and 11,000 sq. ft. retail)[b]	Does not occur in absence of GLX	Does not occur in absence of GLX
Share of Other Development Directly Related to GLX (in Somerville and Medford)[c]		
Office	70%	75%
Residential	20%	25%
Retail	20%	25%
Hotel	0%	0%
Assessed Property Value Premium Associated with GLX (in Somerville, Medford, and Cambridge)		
Office	8%	10%
Residential	5%	8%
Retail	3%	5%
Hotel	0%	0%

[a] As a University facility, the Tufts project would not be taxable. Therefore, it is reflected in the development transit benefit but not in the assessed property value transit benefit. However, Tufts has a payment-in-lieu-of-taxes agreement with the City of Medford related to this project, wherein the University has agreed to pay the City $250,000 a year starting when the certificate of occupancy is issued. For the purposes of the property tax estimates discussed below, this PILOT payment was treated as property tax revenues that are contingent upon the completion of the GLX.

[b] Planned for the current site of the Lechmere station in Cambridge (which will be relocated as part of the planned GLX project).

[c] Share of planned development (other than the specific development project listed) that is expected not to occur within the 2017-2047 timeframe if the GLX is not completed as planned. With the exception of the Lechmere Station Project, all of the development in Cambridge that is planned for the GLX station areas is already fully entitled and moving forward.

LOCAL FISCAL BENEFITS

Assessed property value increases in the GLX station areas driven by new development are projected to contribute $632 million in property tax revenues (in 2017 dollars) to the Cities of Cambridge, Medford, and Somerville between 2017 and 2047. Figure A-9 shows the cumulative property tax revenues over the thirty-year period by city, station area, and land use, calculated by applying the FY 2016 property tax rates to the assessed value estimates shown above.[92]

[92] Assumes FY 2016 property tax rates (as provided by the city assessors) for commercial and residential development remain in place through 2047. In the rare instance where a project crosses municipal boundaries, the lower tax rate of

Of the $632 million in projected property tax revenues, approximately $250 to $280 million (or 40 to 45 percent) are directly related to the planned transit expansion.[93] Figure A-10 shows the property tax benefits associated with the GLX, calculated by applying the FY 2016 property tax rates for each city to the assessed value transit benefit shown in Figure A-7, above. These property tax benefits reflect the revenues generated by the value from new development that is only expected to occur if the GLX is completed as planned.

In addition, the development directly associated with the GLX is expected to generate up to $460,000 in local hotel and meal tax revenues between 2017 and 2047. Figure A-11 shows the total hotel and meal tax revenues associated with the new development projected for each city, calculated using the assumptions shown in the final section of this appendix. In total, the new development planned for the GLX station areas is expected to contribute $15.7 million in local hotel and meal tax revenues, of which $370,000 to $460,000 would not occur if the project does not move forward as planned.[94]

However, the projected growth will come with fiscal costs as well as benefits. Some of the potential costs of new development include:

- **Significant new infrastructure investments (above and beyond the cost of the transit):** In many locations along the corridor, major improvements to roadways, sewers, stormwater systems, and other infrastructure systems are required in order to both address existing deficiencies, and make new development possible. Moreover, additional investments in pedestrian and bicycle connections, streetscape, and other improvements may be required in order to connect new development to transit and fully realize the accessibility benefits of the GLX. For example, an estimated $70 to $90 million in capital improvements (including sewer separation, stormwater storage, flood mitigation, and streetscape) are needed in the Union Square district to implement the City of Somerville's plan for the area.
- **Cost of providing services to new households and employers:** Accommodating new growth requires providing additional services to residents and workers, including police and fire, ongoing maintenance of roads and facilities, local contribution to the schools, etc.

While estimating the total municipal costs associated with the development planned for the GLX station areas was outside the scope of this analysis, a recent study of the Union Square project by TischlerBise found that the development is expected to generate $200 million in new revenues over 20 years, including $158 million in new property tax revenues. However, the cost of providing infrastructure and services will total $156 million, resulting in a cumulative net revenue to the city over 20 years of $44 million.[95]

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the two communities was applied. Note that the Tufts University/College Avenue project was assumed to contribute $250,000 a year in PILOT revenues starting in 2020; these revenues were treated as property tax revenues to the City of Medford.

[93] Note that the transit benefit (in percentage terms) is slightly different for property tax revenues than for assessed values because each City has different mill levy rates, and each City's rates for commercial property are higher than for residential property.

[94] Since no hotel development is directly tied to the GLX, the transit benefit includes local meal tax revenues but does not include local option hotel occupancy tax revenues.

[95] Note that because significant upfront infrastructure investments are required before development can proceed, on an annual basis net revenues are negative in early years, although total net revenues are positive over the full 20-year period. Note also that the positive fiscal impact is for the development program as a whole; some individual components of the project many not have positive fiscal impacts, although this was not directly addressed in the study.

Figure A-9: Cumulative Property Tax Revenues Associated with New Development Currently Planned for the Green Line Extension Station Areas, 2017-2047 (in 2017 Dollars, Millions)

	Cumulative Property Tax Revenues, 2017-2047 (in 2017 Dollars, Millions)[a]				
	Residential	**Office**	**Hotel**	**Retail**	**Total**
Total Corridor	**$216.3**	**$332.8**	**$31.2**	**$51.9**	**$632.1**
Cities					
Cambridge	$49.2	$37.3	$0.0	$13.8	$100.2
Medford	$5.8	$5.6	$0.0	$10.0	$21.5
Somerville	$161.3	$289.9	$31.2	$28.1	$510.5
Station Areas					
Route 16/Mystic River	$5.9	$1.9	$0.0	$10.9	$18.7
College Avenue	$0.0	$5.1	$0.0	$0.0	$5.1
Ball Square	$3.8	$0.0	$0.0	$1.9	$5.7
Lowell Street	$8.1	$0.7	$0.0	$1.9	$10.8
Gilman Square	$11.5	$8.3	$0.0	$1.8	$21.6
Washington Street	$37.5	$82.1	$4.5	$7.7	$131.7
Union Square	$94.7	$167.3	$26.7	$13.8	$302.6
Lechmere	$54.8	$67.3	$0.0	$13.8	$135.9

[a] Assumes Green Line Extension moves forward as planned, and that FY 2016 property tax rates (as provided by the city assessors) for commercial and residential development remain in place through 2047. In the rare instance where a project crosses municipal boundaries, the lower tax rate of the two communities was applied. Note that the Tufts University/College Avenue project was assumed to contribute $250,000 a year in PILOT revenues starting in 2020; these revenues were treated as property tax revenues to the City of Medford.

Sources: RKG Associates and Strategic Economics, April 2016.

Figure A-10: Cumulative Property Tax Revenues Directly Related to the Extension of the Green Line, 2017-2047 (in 2017 Dollars, Millions)

	Transit Benefit: Low Estimate					Transit Benefit: High Estimate				
	Residential	Office	Hotel	Retail	Total	Residential	Office	Hotel	Retail	Total
Total Corridor	**$44.3**	**$199.0**	**$0.0**	**$9.4**	**$252.7**	**$57.1**	**$213.6**	**$0.0**	**$12.1**	**$282.9**
Cities										
Cambridge	$5.2	$3.0	$0.0	$0.9	$9.1	$6.6	$3.7	$0.0	$1.2	$11.5
Medford	$1.4	$5.5	$0.0	$2.2	$9.1	$1.8	$5.5	$0.0	$2.9	$10.2
Somerville	$37.6	$190.5	$0.0	$6.3	$234.5	$48.7	$204.4	$0.0	$8.1	$261.2
Station Areas										
Route 16/Mystic River	$1.4	$1.4	$0.0	$2.4	$5.3	$1.8	$1.5	$0.0	$3.1	$6.5
College Avenue	$0.0	$5.1	$0.0	$0.0	$5.1	$0.0	$5.1	$0.0	$0.0	$5.1
Ball Square	$0.9	$0.0	$0.0	$0.4	$1.3	$1.2	$0.0	$0.0	$0.6	$1.7
Lowell Street	$1.9	$0.5	$0.0	$0.4	$2.9	$2.5	$0.6	$0.0	$0.6	$3.6
Gilman Square	$2.8	$6.0	$0.0	$0.4	$9.1	$3.6	$6.4	$0.0	$0.5	$10.5
Washington Street	$9.0	$59.4	$0.0	$1.7	$70.1	$11.6	$63.6	$0.0	$2.2	$77.4
Union Square	$22.7	$121.1	$0.0	$3.1	$147.0	$29.4	$129.7	$0.0	$4.0	$163.0
Lechmere	$5.5	$5.4	$0.0	$0.9	$11.8	$7.1	$6.7	$0.0	$1.2	$15.0

Sources: RKG Associates and Strategic Economics, April 2016.

Figure A-11: Local Hotel and Meal Tax Revenues, 2017-2047 (in 2017 Dollars, Millions)

	Total New Development[a]			Transit Benefit[b]	
	Local Option Hotel Occupancy Tax	Local Excise Tax on Meals	Total	Low Estimate	High Estimate
Total Corridor	**$12.78**	**$2.90**	**$15.68**	**$0.37**	**$0.46**
Cities					
Cambridge	$0.00	$1.07	$1.07	$0.04	$0.04
Medford	$0.00	$0.27	$0.27	$0.05	$0.07
Somerville	$12.78	$1.56	$14.34	$0.28	$0.35

[a] Assumes the Green Line Extension moves forward as planned.
[a] Includes local excise tax on meals from new development that is not expected to occur if the GLX is not completed as planned. Since no currently planned hotel development is directly tied to the GLX, this does not include local option hotel occupancy tax revenues.
Sources: RKG Associates and Strategic Economics, May 2016.

STATE FISCAL BENEFITS

The new development currently planned for the GLX station areas is expected to support 14,365 permanent jobs and provide $932 million in state tax revenues over thirty years (2017-2047). Figure A-12 shows the total jobs and state tax revenues associated with the development planned for the station areas, including income, sales, and hotel occupancy tax associated with construction and the long-term operation of the planned development. Note that state tax revenues include $28 million set aside for the MBTA (Figure A-12). The last section of this appendix shows the assumptions used to estimate jobs and state tax revenues, and provides more detailed projections of permanent jobs by city, and state tax revenues by source.

Of the total projected state revenues, $399 to $431 million would be generated from new development that is directly related to the GLX. These revenues are directly associated with the development that is directly related to the Green Line Extension (the transit benefit).

Much of the economic growth and tax revenues associated with the Green Line Extension will represent net new contributions to the state economy and budget, while also helping to meet state and regional smart growth goals. In the absence of the Green Line Extension, it is reasonable to expect that some of the development that is expected to occur in the station areas might occur elsewhere in the state. It was not possible to conduct a rigorous "but for" analysis to determine how much of the projected development (and, by extension, income and sales tax revenues) associated with the GLX would not otherwise occur in Massachusetts.[96] However, given the significant economic impacts associated with the GLX, it is reasonable to expect that the project will generate net new economic and fiscal benefits for the Commonwealth. In particular:

- **By enabling new housing development, the Green Line Extension will support long-term economic and fiscal growth.** As discussed above, the City of Somerville is planning to allow for increased residential densities and reduced parking requirements in the station areas located within the City's jurisdiction. The City is contemplating these regulatory changes in direct response to the introduction of transit and the commercial development that transit is expected to attract. Given the prevalence of regulatory constraints on housing development throughout Massachusetts, these regulatory changes will enable multi-family development to go forward that might not otherwise occur in Massachusetts, despite significant demand for new residential units throughout the region. Studies have found that limited housing development acts as a constraint on employment growth in Massachusetts, and that new housing development is critical to supporting the state's long-term economic health.[97] Research has also shown that new housing development generates net positive

[96] For example, the I-Cubed program requires a "but for" analysis of whether the individual tenants slated to occupy a specific development would locate elsewhere in the state in the absence of this development. This type of analysis was not possible to conduct at a corridor level, especially given that many of the planned development projects are in the early planning stages and do not have specific tenanting agreements in place.

[97] Linday Koshgarian et al., "Foundation for Growth: Housing and Employment in 2020" (Massachusetts Housing Partnership Foundation for Growth Initiative, 2010), http://www.massgrowth.net/writable/research_items/document/foundationforgrowth_scopea_final_10_29_10.pdf.

tax revenues for the state, even after accounting for the share of residents who move from elsewhere within Massachusetts.[98]

- **New transit investments and transit-oriented development can also help make the region and the state more attractive in competing for new households and jobs.** Frequent, convenient, and reliable public transit is increasingly seen as a critical component of a high quality of life, and is one of the factors that many households and firms consider in determining where to locate.[99] The Green Line Extension station areas will provide housing and commercial space for households and employers who are attracted to a transit-oriented, urban lifestyle. Some of these households and employers might not otherwise locate in the Boston region or in Massachusetts, especially given the high cost of real estate and low vacancies around many existing transit stations in the region.

In addition to generating new revenues, the GLX can also contribute to cost savings for facilities such as highways and bridges. As mentioned previously in this memo, improved transit can result in long-term cost savings, as well as improvements to public health and safety resulting from fewer automobile accidents and reduced pollution.

It is important to also note that increased state revenues will be accompanied by some additional costs associated with growth. These costs include state contributions to schools and other public services and facilities.

Figure A-12: Total Permanent Jobs and State Tax Revenues Associated with New Development, 2017-2047

	Total New Development	Transit Benefit	
		Low Estimate	High Estimate
Permanent Jobs (as of 2047)[a]	**14,365**	**5,816**	**6,231**
State Tax Revenues (in 2017 Dollars, Millions)	**$932.06**	**$399.48**	**$431.04**
Income Tax Associated with New Permanent Jobs	$692.72	$353.29	$377.56
Sales Tax Associated with New Retail and Hotel Development	$166.85	$20.71	$25.34
Hotel Occupancy Tax Associated with New Hotel Development[b]	$12.15	$0.00	$0.00
Income Tax Associated with Construction Employment	$24.79	$10.47	$11.56
Sales Tax Associated with Construction Materials & Equipment	$35.55	$15.01	$16.58
MBTA Share of all Sales Tax Revenues (in 2017 Dollars, Millions)	**$28.52**	**$5.22**	**$6.10**

[a] Excludes temporary construction jobs.
[b] None of the hotel development currently planned for the corridor is directly tied to the GLX.
Sources: RKG Associates and Strategic Economics, May 2016.

[98] Michael D. Goodman, Elise Korejwa, and Jason Wright, "The Costs and Hidden Benefits of New Housing Development in Massachusetts," PPC Working Paper Series - No. 2 (Public Policy Center, UMass Dartmouth, March 2016), http://www.massgrowth.net/writable/resources/document/cost_benefit_new_housing_3-15-16.pdf.
[99] American Planning Association, "Investing in Place: Two Generations' View on the Future of Communities"; Salvesen and Renski, "The Importance of Quality of Life in the Location Decisions of New Economy Firms."

CAPTURING THE VALUE FROM THE GREEN LINE EXTENSION

The previous section demonstrated the significant value that the GLX is expected to generate. This section describes the opportunities and challenges associated with using the value capture tools that are currently available or proposed in Massachusetts to recover some of the value to help pay for the project, and provides order-of-magnitude estimates of the revenues that could be generated by selected tools that were determined to be most applicable.

The estimates presented below are intended to serve as one possible basis for conceptualizing a reasonable level of value capture contribution to the transit project, based on the available information about the scale of new development planned for the station areas, and competing needs for funding (including funding for other infrastructure needs, the provision of municipal services, and other community benefits such as affordable housing). However, the GLX will also provide broader economic, environmental, and social benefits that are not fully captured in this analysis (such as improved accessibility for existing residents and workers), but that cities and the state may wish to take into consideration in determining an appropriate level of contribution from each jurisdiction. In addition, different jurisdictions along the corridor have varying levels of financial capacity, which may also influence the amount each city is able to contribute.

POTENTIAL USE OF VALUE CAPTURE TOOLS

Figure A-13 provides an overview of the value capture tools that are currently available or proposed in Massachusetts, including the revenue source, financing potential, major requirements for approval, and likely applicability to funding the Green Line Extension. As shown, most of the tools would be challenging to apply directly to financing the Green Line Extension, especially at a corridor-wide, multi-jurisdictional level. Based on an analysis of the available tools, some form of tax increment financing – i.e., a mechanism that captures incremental growth in property tax revenues from the existing municipal levy – and/or negotiated development contributions are most likely to be applicable.

Specifically, the opportunities and challenges associated with applying each tool to the GLX include:

- **District Improvement Financing (DIF**) and the **Chapter 40X Supplemental Infrastructure Financing for Transportation (SIFT)** program proposed in the 2015-2016 legislative session both are designed to capture incremental growth in property tax revenues from the existing municipal levy (known as "tax increment financing" in other states). Given that the development planned around the GLX is expected to generate significant growth in property tax revenues, these tools have some potential. However, the DIF tool has typically been implemented on a project-by-project basis; no precedent exists for a DIF district spanning multiple development projects or multiple jurisdictions. There is also no established mechanism for DIF revenues to fund state transportation investments. As proposed, SIFT would address the latter challenge by creating a process for collaboration between the MBTA/MassDOT and a municipality in implementing tax increment financing.
- The **Infrastructure Investment Incentive Program (I-Cubed)** is a program of the Commonwealth that captures state tax revenues generated by a project and uses them to finance local infrastructure improvements required to make the project possible. The municipality and developer are required to help cover any shortfalls in projected state tax revenues. This program provides a potential framework for collaboration among the Commonwealth, municipalities, and developers in financing infrastructure projects. However, I-Cubed would be challenging to

implement for the GLX as currently formulated. As part of the approval process for the program, the Commonwealth must find that individual projects would not happen or achieve the contemplated level of development, jobs, or other economic activity "but for" the infrastructure investment supported by I-Cubed. Meeting the "but for" requirement typically involves assessing the location decisions of individual tenants, an analysis that would be difficult if not impossible to conduct for the corridor as a whole, especially given that much of the commercial development is still in the planning phase and specific tenants have not yet been identified. Indeed, there is no precedent for an I-Cubed investment spanning multiple projects. Moreover, the program has the capacity to finance no more than eight projects per community, with total statewide investment capped at $600 million a year.

- The **Local Infrastructure Development Program (Chapter 23L)** imposes a special assessment on property. The program is intended to shift the burden of paying for infrastructure to the private sector, by allowing private property owners to finance public-serving infrastructure with tax-exempt bonds issued by MassDevelopment. The program requires 100 percent property owner approval, and has never been implemented in Massachusetts.
- **Negotiated development contributions** are a likely mechanism for providing some of the local-serving infrastructure needs associated with the Green Line Extension, such as bicycle and pedestrian connections to the stations. The MBTA has already begun preliminary discussions with some of the major property owners and developers in the GLX station areas. These contributions would likely come in the form of improvements provided in-kind by the developer or one-time payments for specific project components, and would be difficult to finance – but could have the effect of reducing some of the costs associated with full build-out and maintenance of the GLX by providing some of the local infrastructure needed to serve specific station areas. For example, Tufts University and MBTA have entered an agreement under which Tufts will pay for redesign and construction changes to the College Avenue station and provide maintenance and security around the station in exchange for the air rights to build a 100,000 square foot building that would be partially located above the station. In addition, Tufts will allow MBTA to use University-owned land for the construction of the new station at no cost to the MBTA.[100]

In general, these tools are best suited for capturing the value created by individual new development projects, and are limited in their ability to capture value either from a district spanning multiple development projects, or from appreciation of existing properties that do not experience new development. I-Cubed and negotiated development contributions are specifically tied to new development projects, while the 100 percent property owner approval requirement for the Local Infrastructure Development Program suggests that it is most likely to be approved in districts that include a small number of property owners who are anticipating major development projects, and expect that development will benefit directly from the proposed assessment. While DIF could in theory be implemented in a district covering multiple properties within a jurisdiction, capturing property value growth that is not associated with new development may be challenging because of the limitations posed by Proposition 2½. Among other provisions, Proposition 2½ limits total citywide property tax increases to 2.5 percent per year, plus an allowance for growth associated with new development.[101] To the extent that properties increase in value more than 2.5 percent in a given year without experiencing new development (for example, due to the benefits they receive from the

[100] "Cummings Foundation Supports New Academic Building for Tufts, Public-private collaboration also involves City of Medford and MBTA," June 15, 2015, http://now.tufts.edu/news-releases/cummings-foundation-supports-new-academic-building-tufts.

[101] In addition, total property tax revenues in any given year – including from voter-approved overrides, the automatic 2.5 percent annual increase, and growth associated with new development – may not exceed 2.5 percent of the total full and fair cash value of all taxable real and personal property in the community (the "levy ceiling").

introduction of a new transit line), this growth cannot be captured in the property tax rolls – and therefore, cannot be captured by tools that rely on incremental growth in property tax revenues, such as DIF or SIFT.

Timing also poses a challenge to implementing a value capture strategy for the GLX. As discussed above, the GLX has been planned for many years, and development has already begun to move forward around some of the stations in anticipation of the new transit service. It may be too late to capture value for the GLX from development projects that already entitled or under construction, especially using tax increment financing tools such as DIF or SIFT that capture increases in property tax above and beyond the total revenues generated within the district in the "base" year (typically the year immediately preceding implementation). Note however that the proposed SIFT legislation could allow a municipality and MassDOT to mutually agree to set the base year earlier, in order to capture future tax revenues generated by development that occurred after the base year but prior to the establishment of the SIFT.

Based on this analysis of the available tools, the consultant team modeled (1) the potential scale of revenues that could be generated by capturing some share of local property tax revenues (i.e., a form of tax-increment financing such as DIF or SIFT) and (2) the potential value of development contributions. These estimates are discussed below.

Figure A-13: Summary of Massachusetts' Value Capture Tools (Existing and Proposed)

Tool	Revenue Source	Financing	Major Requirements for Approval	Applicability to Green Line Extension
District Improvement Financing (DIF)	Future, incremental growth in property tax revenues ("tax increment") from the existing municipal property tax levy, generated within an established district	Bonds issued by municipality or MassDevelopment on behalf of the district	Approval by City Council or Town Meeting	Some potential, but challenging: • Typically implemented on a project-by-project basis; no precedent for DIF district spanning multiple projects or multiple jurisdictions • No established mechanism for DIF revenues to fund state transportation investments
Infrastructure Investment Incentive Program (I-Cubed)	Commonwealth tax revenue generated from job creation and other economic activity associated with the project	Bonds issued by the Commonwealth; debt service paid from state tax revenue from project, with shortfalls covered by local government and (typically) the developer	Commonwealth must find that individual projects would not happen or achieve the contemplated level of development, jobs, or other economic activity "but for" the infrastructure investment supported by I-Cubed	Provides potential framework for collaboration among Commonwealth, cities and towns, and developers, but challenging to implement as is: • Tied to specific development projects; no precedent for I-Cubed investment spanning multiple projects • Limited program capacity: Up to $600 million total investment statewide per year; no more than 10 projects per community; designed for development projects with public infrastructure costs between $5 and $50 million • "But for" requirement difficult to meet at corridor level
Local Infrastructure Development Program (MGL Chapter 23L)	Special assessment on property	Bonds issued by MassDevelopment on behalf of the district	Approval by 100% of assessed property owners, as well as by City Council or Town Meeting	Unlikely: • 100% property owner approval unlikely at corridor level • No precedent (no 23L districts have been implemented in Massachusetts to date)

Figure A-13, cont'd.

Tool	Revenue Source	Financing	Major Requirements for Approval	Applicability to Green Line Extension
Chapter 40X Supplemental Infrastructure Financing for Transportation (SIFT[a])	Future, incremental growth in property tax revenues ("tax increment") from the existing municipal property tax levy, generated within an established district	Bonds issued by the Massachusetts Bay Transit Authority (MBTA), Massachusetts Department of Transportation (MassDOT), or the municipality	Agreement between MBTA/MassDOT and municipality Approval by City Council or Town Meeting	Possible: • Creates specific mechanism for tax increment revenues to fund state transportation investments • Bill has not yet been passed by legislature
Negotiated Development Contributions	Direct provision of or payment for public improvements by a developer in conjunction with a development project	Challenging to issue bonds because payments are typically one-time, and/or improvements are provided in-kind	Negotiated with developer (typically through the special permitting process).	Likely: • MBTA and cities have had preliminary discussions with some major developers in the corridor about direct provision of connectivity and other local-serving improvements associated with the GLX

[a] Proposed in the 2015-2016 legislative session.

Note: Business Improvement Districts are not shown, because this form of value capture is not used for major capital investments. Impact fees are not shown because the legality of this form of value capture in Massachusetts remains somewhat uncertain.

POTENTIAL CONTRIBUTION FROM LOCAL PROPERTY TAX INCREMENT

Figure A-14 shows the potential scale of revenues (in 2017 dollars) that might be generated from capturing a share of the local property tax increment associated with new development, using DIF, SIFT or another mechanism.

The analysis assumes that only 25 percent of annual property tax increment (growth in property tax revenues over a base year) would be available for transit.[102] This assumption is intended to represent a reasonable contribution given the significant new infrastructure investments (above and beyond the cost of the transit) required to both address existing deficiencies and make new development possible in the GLX station areas, and the cost of providing municipal services to new households and employers.

The 25 percent assumption was derived from the recent fiscal impact analysis of the Union Square project conducted by TischlerBise. As discussed above, this study found that the development is expected to generate $200 million in new revenues over 20 years, including $158 million in new property tax revenues. However, the cost of providing infrastructure and services will total $156 million, resulting in a cumulative net revenue to the city over 20 years of $44 million. In other words, the project will generate $0.22 in net revenues for every $1 in total revenues, and $0.28 in net revenues for every $1 in property tax revenues.[103] Based on this finding, 25 percent was used as a reasonable, conservative estimate of the share of property tax revenues that might be available after paying for infrastructure and services.[104]

Potential revenue was estimated for two scenarios that each represent a different approach for estimating a reasonable contribution:

- **Scenario 1** assumes that the cities would contribute 25 percent of the property tax revenues generated from all new development in the station areas. In this scenario $158 million is captured over 30 years.
- **Scenario 2** assumes that the cities would contribute 25 percent of the property tax revenues generated only from development directly related to the build-out of the GLX (i.e., the transit benefit).[105] In practice, tax increment financing strategies capture a share of the property tax increment generated from all new development that occurs within the designated district; however, considering the value created by the transit may be a useful way of conceptualizing an appropriate level of contribution. This scenario generates a total of $67 million between 2017 and 2047.

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[102] The property tax revenues used as the basis for these calculations are an approximation of the tax increment that could be generated by new development; as discussed above, the property tax projections presented above include the total assessed value of improvements (excluding land values) associated with new development. The assessed values of existing improvements are not excluded from the calculation of the increment, due to incomplete information on the parcels slated for redevelopment.

[103] TischlerBise, "Draft Fiscal Impact Analysis of Union Square and Boynton Yard," prepared for City of Somerville, November 16, 2015.

[104] The Union Square project requires significant upfront infrastructure investments, both to address existing infrastructure deficiencies and serve the planned new development. (As a result, on an annual basis net revenues are negative in early years, although total net revenues are positive over the full 20-year period.) While the scale of the Union Square infrastructure improvements is significant, many other GLX station areas also require major infrastructure improvements.

[105] Calculated from the midpoint of the low and high transit benefit estimates presented above.

Figure A-14: Total Potential Revenues from Capturing a Share of the Local Property Tax Increment, 2017-2047 (In 2017 Dollars, Millions)[a]

	Scenario 1: Calculated from All Planned Development[b]	Scenario 2: Calculated from Transit Benefit[c]
Total Corridor	**$158.0**	**$66.9**
Cities		
Cambridge	$25.1	$2.6
Medford	$5.4	$2.4
Somerville	$127.6	$62.0

Notes:
[a] Assumes cities contribute 25% of annual property tax revenue increases associated with new development, beginning in 2017. Note that the property tax revenues used as the basis for these calculations are an approximation of the tax increment that could be generated by new development; as discussed above, the property tax revenues presented above include the total assessed value of improvements (excluding land values) associated with new development. The assessed values of existing improvements are not excluded, due to incomplete information on existing conditions on the parcels slated for redevelopment.
[b] Calculated as a share of property tax revenues generated from all development currently planned in the station areas.
[c] Calculated as a share of property tax revenues generated from development directly related to the build-out of the GLX (i.e., the "transit benefit"). Based on the midpoint of the low and high transit benefit estimates.
Source: Strategic Economics, April 2016.

POTENTIAL DEVELOPMENT CONTRIBUTION

Figure A-15 shows the potential value (in 2017 dollars) that might be generated from development contributions under two scenarios. As discussed above, these contributions would likely come in the form of improvements provided in-kind by the developer or one-time payments for specific project components, and would thus be difficult to use as an up-front funding source for transit. However, if another funding source were identified, it is possible that developer contributions could help contribute to debt service or recover other costs over time.

The analysis assumes that the value of total development contributions to transit would equal 1.25 percent of the assessed value of new development completed in each year, beginning in 2018. This assumption is intended to represent a reasonable contribution given the likely cost of development, including development contributions (through fees, exactions, or negotiated agreements) to other community benefits including affordable housing.

The 1.25 percent assumption was derived from the Assembly Row project that is currently underway in Somerville, in which private developers contributed $15 million to the construction of the Orange Line Station – or 1.25 percent of the estimated $1.2 billion development cost (excluding the cost of infrastructure improvements and land).[106] Note that the estimates shown in Figure A-15 use increases in the assessed value of improvements, rather than development cost, as an approximation of project value.

The two scenarios below can be interpreted as target amounts for total developer contributions to the GLX over time:

[106] "Commonwealth of Massachusetts Infrastructure Investment Incentive Program: Economic Development Proposal Pursuant to 801 CMR 51.10; Assembly on the Mystic in the City of Somerville," Submitted to the Massachusetts Executive Office for Administration & Finance by Federal Realty Investment Trust and the City of Somerville, October 27, 2009; additional information provided by the City of Somerville.

- **Scenario 1** calculates the development contribution as 1.25 percent of the new assessed value generated from all development that is currently planned in the station areas. In this scenario, development could contribute up to $20.7 million over 30 years.
- **Scenario 2** calculates the development contribution as 1.25 percent of the assessed value associated with the development that is directly related to the build-out of the GLX (i.e., the "transit benefit").[107] Based on these assumptions, development along the corridor could contribute $9.7 million over 30 years.

Figure A-15: Total Potential Value of Development Contributions, 2017-2047 (In 2017 Dollars, Millions)[a]

	Scenario 1: Calculated from All Planned Development[b]	Scenario 2: Calculated from Transit Benefit[c]
Total Corridor	**$20.7**	**$9.7**
Cities		
Cambridge	$6.3	$2.9
Medford	$0.6	$0.2
Somerville	$13.8	$6.6

Notes:
[a] Assumes one-time contributions of 1.25% of assessed value of development completed in each year, beginning in 2018.
[b] Calculated as a share of new assessed value generated each year from all development currently planned in the station areas.
c Calculated as a share of new assessed value generated each year from development directly related to the build-out of the GLX (i.e., the "transit benefit"). Based on the midpoint of the low and high transit benefit estimates.
Source: Strategic Economics, May 2016.

[107] Calculated from the midpoint of the low and high transit benefit estimates presented above.

DETAILED ASSUMPTIONS

Development Projects

The following table provides a list of the development projects that are currently planned for the Green Line Extension station areas and were included in the analysis. While some of this development is expected to occur whether or not the GLX is completed, much of it is directly related to the extension of the Green Line and is unlikely to occur if the project is not completed (the "transit benefit"). See Figure A-8, above, and the accompanying text for a discussion of how the transit benefit was calculated.

Figure A-16: Development Projects Included in the Analysis

				Total Development (by FY 2047)			
Station Area/City	**Location/Project**	**Status[a]**	**Expected Year of Completion**	**Residen-tial Units**	**Office Sq. Ft.**	**Retail Sq. Ft.**	**Hotel Rooms**
ROUTE 16/MYSTIC RIVER							
Medford	200 Boston Avenue	Concept Plan	FY 2026	0	3,000	57,000	0
Medford/Somerville	Whole Foods (part in Somerville & Medford)	Concept Plan	FY 2027	85	0	2,500	0
Somerville	166-194 Boston Avenue	Concept Plan	FY 2026	40	10,000	10,000	0
COLLEGE AVENUE							
Medford	College Station (Tufts)	Concept Plan	FY 2020	0	100,000	0	0
BALL SQUARE							
Medford	640 Boston Avenue (in Medford)	Proposed	FY 2025	42	0	3,790	0
Somerville	SONS OF ITALY (BROADWAY/ALFRED ST) 32-A-1	Planned	FY 2017	10	0	4,750	0
Somerville	620 BROADWAY 27-L-2	Planned	FY 2018	11	0	2,900	0
LOWELL STREET							
Somerville	235 LOWELL ST 42-B-3	Built, U/C, Permitted	FY 2016	6	0	0	0
Somerville	315 HIGHLAND AVE 29-E-28	Built, U/C, Permitted	FY 2017	7	0	1,600	0
Somerville	231 LOWELL ST 42-B-4 (site 1)	Built, U/C, Permitted	FY 2018	19	1,000	0	0
Somerville	229 Lowell Street (site 2)	Planned	FY 2020	40	5,000	5,000	0
Somerville	99 Albion Street (site 3)	Concept Plan	FY 2026	40	0	11,658	0
GILMAN SQUARE							
Somerville	82 HIGHLAND AVE 62-B-25	Built, U/C, Permitted	FY 2016	6	0	0	0
Somerville	Gilman Square 61-G	Built, U/C, Permitted	FY 2019	44	22,000	22,000	0

Station Area/City	Location/Project	Status[a]	Expected Year of Completion	Total Development (by FY 2047)			
				Residen-tial Units	Office Sq. Ft.	Retail Sq. Ft.	Hotel Rooms
Somerville	91 Marshall Street (site 3)	Concept Plan	FY 2021	24	0	7,800	0
Somerville	345 Medford Street (site 2)	Concept Plan	FY 2021	20	0	4,000	0
Somerville	350-360 Medford Street (site 1)	Concept Plan	FY 2021	82	18,000	6,000	0
Somerville	Litchfield Block at Mad Oyster House (site 5)	Concept Plan	FY 2021	24	0	0	0
Somerville	GILMAN SQUARE MAP 61	Concept Plan	FY 2021	11	11,100	0	0
WASHINGTON STREET							
Somerville	181-197 WASHINGTON ST 81-A-12	Built, U/C, Permitted	FY 2017	84	0	6,500	0
Somerville	163 GLEN ST 93-A-12	Built, U/C, Permitted	FY 2017	11	0	0	0
Somerville	373 BEACON ST 37-C-2 (35 Key Hotel)	Proposed	FY 2017	0	0	0	35
Somerville	90 WASHINGTON ST 106-A-3	Built, U/C, Permitted	FY 2018	154	0	13,000	0
Somerville	50 Tufts Street	Concept Plan	FY 2022	14	0	0	0
Somerville	30 Alston Street	Concept Plan	FY 2022	6	0	0	0
Somerville	160 Washington Street	Concept Plan	FY 2022	20	0	12,000	0
Somerville	182 Washington Street	Concept Plan	FY 2022	9	0	4,500	0
Somerville	BRICKBOTTOM MAP 115	Concept Plan	FY 2023	67	150,000	0	0
Somerville	200 INNER BELT RD (2ND BLDG.) 115-A-3	Concept Plan	FY 2025	0	150,000	0	0
Somerville	INNER BELT MAP 110,111,115	Concept Plan	FY 2029	216	601,250	0	0
UNION SQUARE							
Somerville	9-39 MEDFORD ST 114-A-1 + 113-B-3	Built, U/C, Permitted	FY 2017	100	0	0	0
Somerville	70 Prospect Street	Built, U/C, Permitted	FY 2017	14	0	1,296	0
Somerville	USQ BLOCK D-4.5	Concept Plan	FY 2017	18	0	1,296	0
Somerville	444 SOMERVILLE AVE 64-A-2	Planned	FY 2018	0	45,983	0	0
Somerville	USQ BLOCK D-5.1 (POST OFFICE)	Concept Plan	FY 2018	0	45,000	0	0
Somerville	92-96 Prospect Street	Built, U/C, Permitted	FY 2020	11	0	0	0
Somerville	97 Prospect Street	Built, U/C, Permitted	FY 2020	7	0	0	0
Somerville	USQ BLOCK D2	Concept Plan	FY 2020	400	90,000	90,000	0
Somerville	USQ BLOCK D-7.1 & 7.2	Concept Plan	FY 2020	50	0	0	0
Somerville	USQ BLOCK D-1.1 (175 Key Hotel)	Concept Plan	FY 2020	0	0	0	175
Somerville	USQ BLOCK D-4.1	Concept Plan	FY 2020	0	33,000	0	0
Somerville	USQ BLOCK D-5.2 & 5.3	Concept Plan	FY 2022	35	44,143	0	0
Somerville	USQ BLOCK D3	Concept Plan	FY 2024	375	535,000	0	0
Somerville	USQ BLOCK D-7.3 & 7.4	Concept Plan	FY 2025	55	0	0	0
Somerville	USQ BLOCK D6	Concept Plan	FY 2025	0	255,000	0	0

Station Area/City	Location/Project	Status[a]	Expected Year of Completion	Total Development (by FY 2047) Residen-tial Units	Office Sq. Ft.	Retail Sq. Ft.	Hotel Rooms
Somerville	USQ BLOCK D-4.3 & 4.4	Concept Plan	FY 2025	65	0	0	0
Somerville	USQ BLOCK D 1.2 & 1.3	Concept Plan	FY 2026	85	201,549	0	0
Somerville	BOYNTON MAP 95,96,9725	Concept Plan	FY 2028	441	546,597	48,270	0
LECHMERE STATION							
Cambridge	Avalon Bay - Twenty|20	Built, U/C, Permitted	FY 2017	355	0	0	0
Cambridge	NORTH POINT (in Cambridge)	Built, U/C, Permitted	FY 2029	2,200	1,400,000	300,000	0
Somerville	NORTH POINT (in Somerville)	Built, U/C, Permitted	FY 2021	133	410,000	0	0
CAMBRIDGE TOTAL				2,555	1,400,000	300,000	0
MEDFORD TOTAL				127	103,000	63,290	0
SOMERVILLE TOTAL				2,753	3,174,622	252,570	210
TOTAL CORRIDOR				5,435	4,677,622	615,860	210

[a] Built,U/C,Permitted: Projects that were recently completed, are under construction, or entitled.
Note that for some projects that are still in conceptual planning, the amount of development projected by FY 2047 and included in the analysis is less than the total planned development, reflecting RKG Associates' analysis of market conditions and the amount of development the market is likely to support in coming decades.
Source: RKG Associates, May 2016.

Detailed Tax Revenue Assumptions and State Tax Revenue Estimates

The following tables show the assumptions used to estimate local hotel and meal taxes and state tax revenues, and provide additional information on projected state tax revenues by source and city of origin.

Figure A-17: Local Hotel and Meal Tax Assumptions

Assumption		Source
Local Option Occupancy Tax Analysis		
Occupancy Rate	65%	Smith Travel Research; RKG Associates, Inc.
Average Daily Rate	$270	Smith Travel Research; RKG Associates, Inc.
Average Revenue per Room per Night	$176	Smith Travel Research; RKG Associates, Inc.
Annual Inflation	1%	Smith Travel Research; RKG Associates, Inc.
Local Option Occupancy Tax	6.00%	Massachusetts Department of Revenue
Visitor Spending on Meals as % of Room Revenues	10.00%	RKG Associates, Inc.
Local Excise Tax on Meals Analysis		
Sales per Square Foot	$350	City of Somerville GLX revenue model
Percent Taxable Retail	75%	Strategic Economics, Inc.
Meals as a Percent of Taxable Retail	15%	Strategic Economics, Inc.
Local Excise Tax on Meals	0.75%	Massachusetts Department of Revenue

Figure A-18: State Revenue Analysis Assumptions

Assumption		Source
Income Tax Revenue Analysis		
Income Tax Rate	5.10%	Massachusetts Department of Revenue
Square Feet per Office Job	325	Assembly Row I-Cubed Application
Square Feet per Retail Job	500	Assembly Row I-Cubed Application
Jobs per Hotel Room	1.33	Assembly Row I-Cubed Application
Average Annual Wage - Office	$70,000	Assembly Row I-Cubed Application
Average Annual Wage - Retail	$25,000	Assembly Row I-Cubed Application
Average Annual Wage - Hotel	$37,500	Assembly Row I-Cubed Application
Sales Tax Revenue Analysis		
Sales per Square Foot	$350	Strategic Economics, Inc.
Percent Taxable Retail	75%	Strategic Economics, Inc.
Meals as a Percent of Taxable Retail	15%	Strategic Economics, Inc.
Sales Tax Rate	6.25%	Massachusetts Department of Revenue
MBTA Share of Sales Tax[a]	16%	Massachusetts Bay Transportation Authority
Office Vacancy Rate	9.5%	REIS, Inc. and RKG Associates, Inc.
Retail Vacancy Rate	4%	REIS, Inc. and RKG Associates, Inc.
Hotel Tax Revenue Analysis		
Occupancy Rate	65%	Smith Travel Research; RKG Associates, Inc.
Average Daily Rate	$270	Smith Travel Research; RKG Associates, Inc.
Average Revenue per Room per Night	$176	Smith Travel Research; RKG Associates, Inc.
Annual Inflation	1%	Smith Travel Research; RKG Associates, Inc.
Hotel Occupancy Tax	5.70%	Massachusetts Department of Revenue
Construction Tax Revenue Analysis[b]		
Labor and Wages as % of Total Construction Costs	33%	RS Means; RKG Associates, Inc.
Materials and Equipment as % of Total Construction Costs	40%	RS Means; RKG Associates, Inc.
Average Effective Income Tax Rate for NAICS 236 Construction of Buildings	4.32%	Massachusetts Department of Revenue; Executive Office of Labor and Workforce Development; RKG Associates, Inc.
Percent Taxable Construction Materials	81.1%	Massachusetts Department of Revenue

[a] Not applied to sales taxes on meals.
[b] Analysis of income and sales tax revenues associated with construction of new development.

Figure A-19: Permanent Jobs and State Income Tax Revenue Associated with New Development Currently Planned for Green Line Extension Station Areas, 2017-2047[a]

	Office	Hotel	Retail	Total
New Permanent Jobs				
Total Corridor	**13,025**	**158**	**1,182**	**14,365**
Cities				
Cambridge	3,898	0	576	4,474
Medford	287	0	122	408
Somerville	8,840	158	485	9,483
Income Tax Revenue Associated with New Permanent Jobs, 2017-2047 (In 2017 Dollars, Millions)				
Total Corridor	**$662.76**	**$6.31**	**$23.66**	**$692.72**
Cities				
Cambridge	$93.69	$0.00	$9.26	$102.95
Medford	$20.78	$0.00	$2.34	$23.12
Somerville	$548.29	$6.31	$12.06	$566.66

[a] Assumes the Green Line Extension moves forward as planned. Excludes temporary jobs (and associated income tax) related to construction.
Source: Strategic Economics, May 2016.

Figure A-20: Permanent Jobs and State Income Tax Revenue from Development Directly Related to the Extension of the Green Line

	Transit Benefit: Low Estimate				Transit Benefit: High Estimate			
	Office	**Hotel**	**Retail**	**Total**	**Office**	**Hotel**	**Retail**	**Total**
New Permanent Jobs								
Total Corridor	**5,673**	**0**	**142**	**5,816**	**6,059**	**0**	**173**	**6,231**
Cities								
Cambridge	0	0	21	21	0	0	21	21
Medford	284	0	24	309	285	0	30	315
Somerville	5,389	0	97	5,486	5,774	0	121	5,895
Income Tax Revenue Associated with New Permanent Jobs, 2017-2047 (In 2017 Dollars, Millions)								
Total Corridor	**$350.07**	**$0.00**	**$3.22**	**$353.29**	**$373.62**	**$0.00**	**$3.94**	**$377.56**
Cities								
Cambridge	$0.00	$0.00	$0.34	$0.34	$0.00	$0.00	$0.34	$0.34
Medford	$20.65	$0.00	$0.47	$21.12	$20.67	$0.00	$0.58	$21.26
Somerville	$329.42	$0.00	$2.41	$331.83	$352.95	$0.00	$3.01	$355.97

Excludes temporary jobs (and associated income tax) related to construction.
Source: Strategic Economics, May 2016.

Figure A-21: State Hotel and Sales Tax Revenue Associated with New Retail and Hotel Space, 2017-2047 (In 2017 Dollars, Millions)

	Total New Development			Transit Benefit: Low Estimate		Transit Benefit: High Estimate	
	Total Hotel Tax Revenue	**Total Sales Tax Revenue**	**MBTA Share of Sales Tax**	**Total Sales Tax Revenue**	**MBTA Share of Sales Tax**	**Total Sales Tax Revenue**	**MBTA Share of Sales Tax**
Total Corridor	**$12.15**	**$166.85**	**$22.83**	**$20.71**	**$2.82**	**$25.34**	**$3.45**
Cities							
Cambridge	$0.00	$59.58	$8.10	$2.18	$0.30	$2.18	$0.30
Medford	$0.00	$15.04	$2.05	$3.01	$0.41	$3.76	$0.51
Somerville	$12.15	$92.23	$12.68	$15.52	$2.11	$19.40	$2.64

Source: RKG Associates and Strategic Economics, May 2016.

Figure A-22: State Income and Sales Tax Revenue Associated with Construction of New Development, 2017-2047 (in 2017 Dollars, Millions)

	Total New Development	Transit Benefit	
		Low Estimate	High Estimate
Income Tax Associated with Construction Employment			
Total Corridor	**$24.79**	**$10.47**	**$11.56**
Cities			
Cambridge	$7.68	$3.24	$3.38
Medford	$0.65	$0.16	$0.20
Somerville	$16.47	$7.07	$7.99
Sales Tax Associated with Construction Materials and Equipment			
Total Corridor	**$35.55**	**$15.01**	**$16.58**
Cities			
Cambridge	$11.01	$4.65	$4.84
Medford	$0.93	$0.23	$0.29
Somerville	$23.62	$10.14	$11.45
MBTA Share of Sales Tax			
Total Corridor	**$5.69**	**$2.40**	**$2.65**
Cities			
Cambridge	$1.76	$0.74	$0.77
Medford	$0.15	$0.04	$0.05
Somerville	$3.78	$1.62	$1.83

Source: RKG Associates and Strategic Economics, May 2016.

APPENDIX B: LIST OF INTERVIEWEES

This study was informed by interviews with the following individuals:

- Edward Bean, City of Somerville
- Noah Berger, Massachusetts Budget and Policy Center
- Scott Bosworth, Massachusetts Department of Transportation
- Mark Boyle, MBTA
- Mike Cantalupa, Boston Properties
- Kathleen Colleary, Department of Revenue
- Sean Cronin, Department of Revenue
- Rick Dimino, A Better City
- Kate Fichter, Massachusetts Department of Transportation
- Jim Fitzgerald, Boston Planning and Development Agency
- Peter Forcellese, City of Somerville
- Jean Fox, Massachusetts Department of Transportation
- Doug Foy, Serrafix
- Vineet Gupta, Boston Transportation Department
- Greg Karczewski, US2
- Joshua Katz, Joint Committee on Transportation and Office of State Representative William M. Straus
- Grant King, Southeastern Regional Planning and Economic Development District
- Erica Kreuter, MassWorks Infrastructure Program
- Drew Leff, Stantec
- Marc Levye, City of Somerville
- John Markowitz, MassDevelopment
- Rob May, City of Brockton
- Lara Mérida, Boston Planning and Development Agency
- Tim McGourthy, Worcester Regional Research Bureau
- Jeffrey Mullan, FoleyHoag LLP
- Stephen O'Neil, MassWorks Infrastructure Program
- Charles Planck, Massachusetts Bay Transportation Authority
- Al Raine, AECOM
- Brad Rawson, City of Somerville
- Tad Read, Boston Planning and Development Agency
- Bob Ross, Executive Office of Administration & Finance
- Tom Ryan, A Better City
- William M. Straus, Representative 10th Bristol District, Massachusetts Legislature
- Ben Stone, Executive Office of Administration & Finance
- Jeffrey Walker, Southeastern Regional Planning and Economic Development District
- Matt Zahler, Trinity Financial

APPENDIX C: MATRIX OF VALUE CAPTURE CASE STUDIES IN REPORT

Value Capture Case	Description	State	Page	Link to State Enabling Legislation
SPECIAL ASSESSMENT AND TAXING DISTRICTS				
Portland Streetcar Local Improvement District	A special assessment district established along the streetcar line, imposing an annual tax on property owners, and used to fund 20 percent of project costs.	OR	19	Oregon Revised Statutes, Vol. 6, Chapter 223, "Local Improvements and Works Generally", https://www.oregonlaws.org/ors/chapter/223
South Lake Union Streetcar Local Improvement District (Seattle, Washington)	A special assessment district used to fund almost half of the streetcar's capital costs.	WA	19	Revised Code of Washington, Title 52, Chapter 52.20, "Local Improvement Districts", http://app.leg.wa.gov/rcw/default.aspx?cite=52.20&full=true
New York Avenue Special Assessment District (NoMA Gallaudet University Metrorail Station, Washington, DC)	A special assessment district imposing a tax on property owners located within 2,500 feet of the station's entrance, used to fund a portion of Washington Metrorail's first infill station.	DC	19	Code of the District of Columbia, Title 47, Chapter 8, Subchapter V, "New York Avenue Metro Special Assessment District", https://beta.code.dccouncil.us/dc/council/code/titles/47/chapters/8/subchapters/V/
Bay Meadows Community Facilities District (San Mateo, California)	A special tax district covering a future development site to pay for streets, sewers, and other public infrastructure, imposing an annual special tax varying between $0.52 and $2.29 per square foot, depending on development type.	CA	20	California Government Code, §5331, "Mello-Roos Community Facilities Act of 1982", https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=2.&title=5.&part=1.&chapter=2.5.&article=1.
Emery-Go-Round Business Improvement District (Emeryville, California)	A special assessment district imposed on parcels located within a quarter mile of shuttle stops and used to pay for operating a local shuttle service. The assessment rate varies by land use and frequency of shuttle service that each property receives.	CA	83	California Streets and Highways Code, Division 18. Parking, Part 7. Property and Business Improvement District Law of 1994, http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=18.&chapter=1.&part=7.&lawCode=SHC&article=1.
Dulles Corridor Metrorail Transit Improvement Districts (Fairfax County, Virginia)	Special assessment districts established by a majority of property owners to fund the County's share of the Dulles Corridor Metrorail project (also known as the Silver Line).	VA	107	Code of Virginia, Title 33.2 Highways and Other Surface Transportation Systems, Chapter 21 Transportation Districts With Certain Counties, http://law.lis.virginia.gov/vacode/title33.2/chapter21/
Dulles Corridor Metrorail Service Districts (Fairfax County and Loudoun County, Virginia)	Special assessment district used to pay for local-serving infrastructure around the Dulles Corridor Metrorail project (Silver Line) stations. Approval of this form of district requires a public hearing but does not require formal property owner approval.	VA	107	Code of Virginia, Title 15.2 Cities, Counties and Towns, Chapter 24 Service Districts, Taxes and Assessments for Local Improvements, http://law.lis.virginia.gov/vacodefull/title15.2/chapter24/article1/

Value Capture Case	Description	State	Page	Link to State Enabling Legislation
TAX INCREMENT FINANCING				
City of Chicago Transit-Tax Increment Financing (Red and Purple Modernization Program)	The modernization of Chicago's Red and Purple lines is partly funded by this TIF tool that was approved by the Illinois General Assembly in August 2016, and applies to properties within a half mile of stations.	IL	20	Illinois Compiled Statutes, Illinois Municipal Code, Sec.11-74.4, "Tax Increment Allocation Redevelopment Act", http://ilga.gov/legislation/ilcs/ilcs4.asp?DocName=006500050HArt.+11+Div.+74.4&ActID=802&ChapterID=14&SeqStart=208900000&SeqEnd=211000000
Texas Transportation Reinvestment Zones	TIF districts established by cities, counties, or port authorities in underdeveloped areas, where incremental tax revenue is captured for the benefit of transportation projects.	TX	20	Texas Transportation Code, Title 6, Subtitle B, Sec. 222-106, "Municipal Transportation Reinvestment Zones", http://www.statutes.legis.state.tx.us/Docs/TN/htm/TN.222.htm#222.106
Pennsylvania Transit Revitalization Investment Districts	Districts in which tax increment financing may be used to fund both transit and other station area needs such as local infrastructure and affordable housing	PA	20	Pennsylvania General Assembly, 2004 Act 238, "Transit Revitalization Investment District Act", http://www.legis.state.pa.us/cfdocs/Legis/LI/uconsCheck.cfm?txtType=HTM&yr=2004&sessInd=0&smthLwInd=0&act=238
Denver Union Station Tax Increment Financing District	A TIF district encompassing 40 acres around Union Station, used in conjunction with a special assessment district, a local hotel tax, and a variety of other funding and financing sources to pay for a new intermodal transit station and other infrastructure improvements.	CO	23	Colorado Revised Statutes, Title 31, Government - Municipal, Art. 25. Public Improvements, § 31-25-101 et seq., https://law.resource.org/pub/us/code/co/colorado.xml.older/code11.31.html
DEVELOPER CONTRIBUTIONS				
Transportation Concurrency Fees (Broward County, Florida)	Impact fees paid by developers to mitigate the impact of new development on existing transportation systems. Transit-oriented projects are able to substantially reduce the fee.	FL	21	Florida Statutes, Title XI, Chapter 163, "Concurrency", http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&Search_String=&URL=0100-0199/0163/Sections/0163.3180.html
San Francisco Transportation Sustainability Fee	A developer impact fee intended to mitigate the impact of new development on transit, requiring developers to pay between $7.74 and $19.04 per square foot depending on development type.	CA	22	California Government Code §§ 66000-66025 (the "Mitigation Fee Act"), http://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=1.&chapter=5.&lawCode=GOV&title=7.
City of San Diego FAR Bonus Payment Program	The program collects a dollar amount per square foot of bonus density (over and above the density permitted as of right), up to a specified maximum density. The payments go into a fund that is used for parks and local infrastructure improvements	CA	22	City of San Diego,[1] "The Centre City Planned District," San Diego Municipal Code, Chapter 15, Article 6, Division 3, http://docs.sandiego.gov/municode/MuniCodeChapter15/Ch15Art06Division03.pdf.

1 The San Diego FAR bonus program is considered voluntary, and is not specifically authorized by state legislation.
Source: Strategic Economics, 2017.