

# Moving Forward with Funding:

New strategies to support transportation  
and balanced regional economic growth



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# Moving Forward with Funding:

## New strategies to support transportation and balanced regional economic growth

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# EXECUTIVE SUMMARY

Difficult economic times have created a host of challenges for Massachusetts. Among them, the financial shortfalls of the state’s transportation agencies place high on the list. The MBTA is considering fare hikes and service cuts; even with these actions, real questions remain about how the agency will close gaps and keep the aging system operating in the future. The state’s 15 regional transportation agencies are also struggling. They have gone years without an increase in state funding. Most have already raised fares and cut the modest service upon which many of the state’s most economically disadvantaged residents depend.

At this crossroads, Massachusetts faces a choice. The state can continue on the current course, applying fresh financial bandages, or Massachusetts can depart boldly from the status quo by giving regions across the Commonwealth tools to invest in public transportation at levels consistent with their needs and aspirations for economic growth. *Moving Forward with Funding* charts this second route, presenting the economic rationale for a bolder approach and demonstrating how new strategies would help Massachusetts make optimal investments in public transportation. The report advances four key themes:

**1. The rationale for investing in public transit as a regional economic development strategy is exceptionally strong.** Supporting evidence can be found in a large body of rigorous economic research. It is also visible in the investment patterns of private developers and the increasing number of regions focused on keeping efforts to upgrade their public transportation infrastructure moving even during these difficult economic times: New development totaling more than \$7 billion in investment is planned for transit-connected areas in Greater Boston’s urban core. Regions around the country have proposals

for more than 600 transit projects, representing over \$230 billion in new public transportation infrastructure. . . . . Page 9

**2. The state’s current practice of paying for transit with taxes collected statewide weakens support for efforts to increase spending on this vital infrastructure.** Allocating resources among the state’s many regions equitably is inherently difficult. Analysis suggests the MBTA has captured a disproportionate share of revenue, but like the RTAs, it has not been able to generate adequate resources to meet its needs.

- Among major US transit agencies, the MBTA receives the highest share of funding from statewide sources. This comes at a cost to regional transit agencies in Massachusetts. State assistance to RTAs amounts to just 13 percent of the money RTA communities send to the MBTA through the sales tax. On average, RTAs receive only one-third of their budget through state assistance, whereas the MBTA receives 57 percent of its budget through state funds. And while the MBTA has actually seen a 16 percent increase in state support since the fiscal crisis began in FY09, the RTAs have faced a 5 percent decrease in state funds.

. . . . . Page 11

- This uneven balance has eroded support for additional investment. The RTA systems are not able to provide adequate service, which reduces ridership and causes many to overlook their role in regional economies and their ability to contribute to future economic growth. At the same time, communities outside of the MBTA service area are keenly aware of the outsized investments that have been made in Greater Boston. Only 40 percent of the state’s House districts include a municipality within the

MBTA's core service area. So while the MBTA clearly requires additional resources to support its operations and failing infrastructure, many Legislators have been unwilling to provide the necessary funds. .... Page 12

**3. This analysis shows regional financing has the potential to produce the resources needed to support robust transit systems across the state.** Evidence nationally suggests that states with regional transportation financing are investing more in this vital infrastructure. This paper examines two regional revenue streams: A payroll tax and a tax on vehicles per mile traveled. These taxes can be collected at varying rates within discrete geographic areas and they have the potential to generate significant resources at a relatively low cost to the average taxpayer.

- For instance, a 0.16 percent payroll tax would provide revenue in the range needed to close the MBTA's annual operating deficit (\$140 million to \$207, million depending on how the tax is levied in overlapping RTA districts). This 0.16 percent payroll tax would cost the median full-time worker in the MBTA service area just \$1.77 per week. In RTA service districts, a payroll tax at this rate would generate nearly \$100 million in revenue (more than one and a half times what RTAs currently receive from the state) at a cost of approximately \$1.50 per week to the median full-time worker in RTA districts. .... Page 18
- Alternatively, RTAs could generate a similar revenue stream with a 0.5¢/mile tax on vehicle travel at a cost of \$1.53 per week per registered vehicle. The MBTA shortfall could be closed with a tax ranging from 0.5¢/mile to 0.75¢/mile (depending on how the tax is levied in overlapping RTA districts). This would

cost between \$1.03 and \$1.54 per week per registered vehicle in the MBTA service area. .... Page 19

**4. To make regional financing work, Massachusetts must first develop a sound framework for establishing the geography of transit districts and supporting these districts as they plan, build, and operate this critical infrastructure.** A bill authorizing regional financing would need to carefully negotiate how regions establish districts to support regional transportation assets, and how revenue should be allocated to build, operate, and maintain transportation infrastructure over the long term. The state would also need capacity to support regions as they develop plans for transportation investments and undertake the technical aspects of this complex work. . . Page 22

*Moving Forward with Funding* outlines a vision for investment in public transportation infrastructure that regions all across the state can endorse. The report identifies revenue mechanisms that provide a foundation for stronger regional transit systems, while closing the large gaps in the MBTA operating budget. By adopting this strategy, the T can move forward with projects essential to Greater Boston's future growth and prosperity. At the same time, the state's RTAs can better support regional economic development. This balanced approach better serves Massachusetts.

## INTRODUCTION

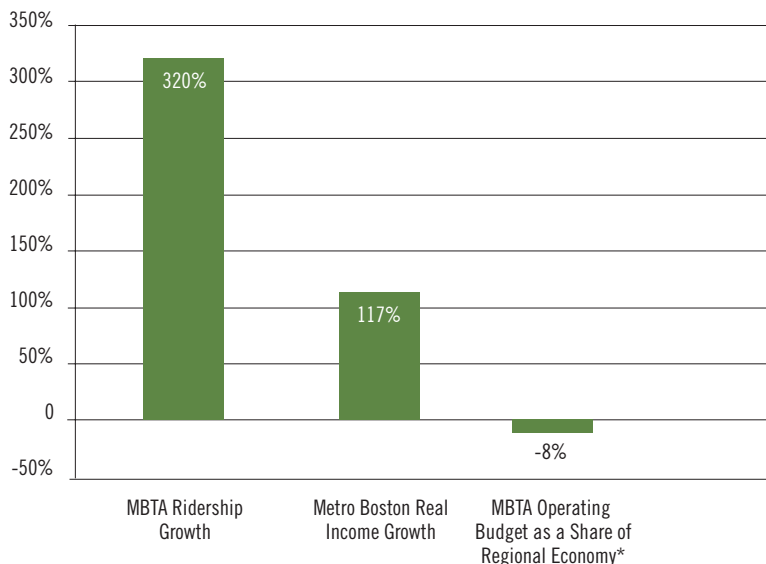
Transportation networks are the backbone of economic development in regional economies. They increase productivity by allowing for the smooth movement of people and goods and by making labor markets more flexible. These economic efficiencies are amplified when regional transportation networks are anchored by extensive public transit systems. Public transit reduces congestion on roadways. Equally critical, it allows for high-density development, which gives businesses the ability to cluster in urban areas where they enjoy large benefits from co-locating.

Without a doubt, Greater Boston's growth and competitiveness over the last several decades is partially attributable to the unique asset it has in the MBTA. Boston is the nation's 10th largest metro area by population, but the region lays claim to the country's fifth largest public transit agency measured by ridership. Between 1980 and 2010, per capita personal income in Greater Boston grew 1.8 times faster than in metro areas nationally. The T played a big part in this growth by more than tripling its ridership over the last three decades. However, its operating budget as a share of the regional economy fell by nearly 8 percent over this 30-year period. The T was an asset that supported the region's economic success, but it did not benefit from this success in terms of capturing the revenue needed to sustain and grow its operations (Figure 1).

With savings from reform legislation (enacted in 2009) and one-time revenue solutions nearly exhausted, it is increasingly clear that unsustainable finances imperil the MBTA's ability to continue to buttress regional economic growth. The window to act is closing quickly. If revenue solutions are not found fast, deferred maintenance and failure to upgrade aging equipment will result in years of service interruptions that will undermine Greater Boston's quality of life and business climate. At a time when the region faces cutthroat

Figure 1:

**Growth in the MBTA relative to the Greater Boston Regional Economy, 1980-2009**



Source: MassINC's analysis of data from US Bureau of Economic analysis and MBTA

\* Total personal income

competition for skilled workers and employers, this outcome would have serious consequences for job creation.

While the need to find a revenue solution for the T is urgent, other regions in Massachusetts have equally pressing transportation needs. This challenge has received less attention, in part because of a tendency to view the state as one large region driven by Greater Boston. While Massachusetts is geographically small, it actually has distinct regional economies. As MassINC and other economic analysts have demonstrated, Boston's growth has not reached these communities, and they have been slow to build their own competitive clusters in new high-growth industries. This slow transition is partially attributable to the Commonwealth underinvesting in these regions and their substantial economic assets.

Nowhere is this more apparent than in state investments in public transportation. The dense

urban fabric found in Gateway Cities — the sputtering engines of regional economies outside of Greater Boston — has real economic potential. But this potential will only be realized with investments in public transit that facilitate higher-intensity development without leading to growth-choking congestion.<sup>2</sup>

The current practice of financing transportation with revenue collected statewide has forced Massachusetts to look at transportation investment decisions as trade-offs between spending limited state dollars in one region versus another.

This has led to the uneven allocation of state transportation dollars, driven, in part, by a belief that a dollar invested in Boston's established network goes much further than a dollar invested in regions with less developed public transit systems. But underfunding has become a self-fulfilling prophecy, condemning the transit agencies serving Gateway Cities and their regions to low ridership, and perpetuating the state's uneven development patterns.<sup>3</sup> It has also hamstrung the MBTA: The T's failure to attract the revenue it needs is largely due to regions outside of Greater Boston overwhelmingly saying no to

increases in transportation taxes.

In searching for a solution to this stalemate, the clear answer is a system of regional revenue options that would allow communities across the state to invest in their transportation networks according to their needs and aspirations for economic growth. Such an approach has several advantages.

First, regional financing has been proven to engender greater public support. Taxpayers who understand how transportation revenue will be spent and how it will benefit their communities are more likely to get behind efforts to build and improve these services. States that are making major new investments in transit are doing it regionally with taxes approved directly by voters at the ballot box.<sup>4</sup>

Indeed, just empowering regions to act would open new opportunities for them to think boldly about their future. Like communities throughout the nation that have struggled with industrial change, Gateway Cities, their regions, and the regional transit agencies (RTA) that serve them have not had enough confidence in their direction and future to put forward brash growth strategies — another reason why, for far too long, their needs have been overlooked.<sup>5</sup>

Second, financing transportation regionally gives communities strong incentives to work to align their regional planning and land use decisions to maximize the economic impact of these investments. Alternatively, experience has shown that when decisions are made by the state, residents are often detached from the process. In an age where economic development is largely a regional function, and in a state that has eschewed regional cooperation, the opportunity for a new approach has huge significance. Giving regions more power over their transportation future would provide a strong impetus to improve regional coordination.

Facilitating regional collaboration and increasing our ability to generate revenue to sus-

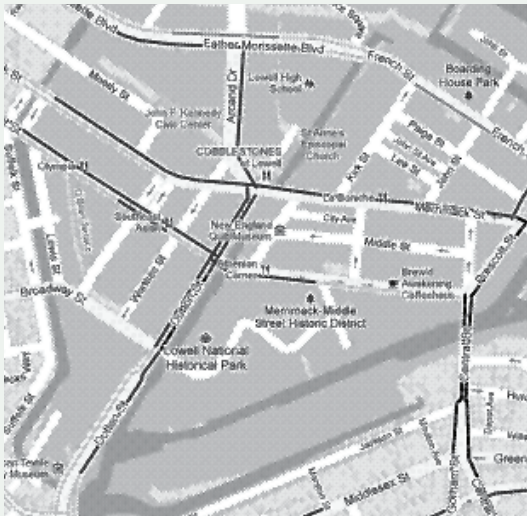
#### **HOW ABOUT ROADS?**

Roads and bridges in Massachusetts have large unmet needs as well. The state's 2007 Transportation Finance Commission estimated the state's road and bridge gap at \$10.5 billion between 2007 and 2026. Our analysis focuses on public transportation funding. This perspective is especially important given the inherent difficulty in supporting this critical service utilized regularly by only a fraction of the public. And this topic is especially urgent given the T's fragile finances and the rate at which our midsize cities are falling behind their peers nationally in the race to build 21st-century transit systems. While the revenue options presented below are described purely from a transit perspective, there is adequate revenue generation potential to extend these mechanisms to cover regional needs for investments in roads and bridges as well.



## CONGESTION IN THE URBAN CORE

Downtowns in the state's Gateway Cities were not designed to accommodate cars. These areas have the potential to become thriving urban centers, but like larger downtowns, they need frequent and predictable transit service to allow people to move about without getting caught up in congestion. The Google maps below, snapshots taken at 5 p.m. during a recent workday, demonstrate the high levels of congestion these areas already experience. (Dark lines indicate very slow moving traffic.)



Downtown Lowell



Downtown Worcester

tain transportation investments will be critical to attracting scarce federal dollars. There is an increasing push to award federal funds through a competitive process. Federal agencies will want to see that transit projects are maximizing their economic impact through coordinated land use planning. They will also factor in financial feasibility, which has already become a serious hurdle for the MBTA.<sup>6</sup>

A new vision for financing the state's transportation future is needed, an approach that can take advantage of the opportunities regional financing presents, solving the T's revenue shortfalls and giving regions across the state new possibilities to invest in their futures. While there are many opportunities to use new forms of creative financing that can help fill gaps, given the large unmet needs across the state, it is most critical to find strong, predictable sources of funding upon

which the state's public transportation systems can be built and sustained.

This report focuses on revenue sources with the potential to provide this foundational funding. It builds upon earlier work by MassINC and others to advance new regional revenue rationale strategies by highlighting the economic rationale for public investments in transit (Section I) and demonstrating how unbalanced investments have prevented regions outside of Greater Boston from realizing these benefits (Section II). The paper then describes the revenue-generating potential of alternative transportation financing mechanisms in each region of the state (Section III). Finally, the paper concludes with some of the challenges and opportunities that must be considered as the state contemplates regional revenue options (Section IV) and a call for near-term action (Section V).

## I. TRANSPORTATION AND ECONOMIC DEVELOPMENT

Multi-modal transportation networks anchored by extensive public transit systems are an imperative for regional economic growth in Massachusetts. This section examines the growing link between transportation and economic development by reviewing evidence in economic research and highlighting two emerging trends: growth in private sector investments around the state's transportation assets, and increased interest in expanding public transportation service in regions across the nation.

### Investing in Public Transit for Economic Development

Research suggests that there are at least five ways multi-modal transportation networks anchored by extensive public transportation systems deliver economic benefits:

#### 1. *Reduced congestion costs*

The lost time associated with congestion has large economic costs that place a drag on productivity and job creation. Companies with significant transportation costs are obviously affected by congestion. But studies also show that firms that rely on skilled workers can be heavily impacted by congestion as well because their employees shift a large share of congestion costs off to them. Given the prominent role of knowledge workers in the Bay State economy, congestion may have a disproportionately heavy impact on Massachusetts.<sup>7</sup>

Because congestion increases dramatically as road networks reach capacity, regions that are able to reduce vehicle travel with public transit have significantly lower congestion costs; congestion in US cities with strong public transit is about half that of similarly sized cities that lack a robust public transit system.<sup>8</sup>

While there are data available on roadway congestion costs for large metropolitan areas —

in 2010, for instance, congestion cost Greater Boston \$2.4 billion in lost economic activity — there are no figures accounting for the congestion-like cost of delay on transit lines.<sup>9</sup> The deteriorating service quality at both the MBTA and the state's RTAs is likely placing large and growing costs on the Massachusetts economy. Already, the 285,000 residents who travel to work each day on public transit spend nearly twice as long commuting as those driving to work.<sup>10</sup>

#### 2. *Increased regional productivity*

Strong multi-modal transportation networks concentrate employment, making jobs more accessible and labor markets more flexible for companies seeking workers with specialized skills. By centralizing employers, strong transportation systems also support the formation of dense clusters of businesses in related fields, such as health care in Longwood Medical Center or biotechnology in Kendall Square. These clusters facilitate the face-to-face interaction critical for innovation and economic growth in the state's knowledge economy.<sup>11</sup> Residents experience an economic benefit from this increased productivity directly in the form of higher wages; with a 10 percent increase in population density, a county's household income climbs by 7 percent.<sup>12</sup>

#### 3. *Additional local purchasing power*

Building transportation networks that reduce vehicle travel can have an economic development impact by keeping money in the regional economy. In 2008, the average household in Massachusetts spent \$2,200 on gasoline. Almost all of this \$5.4 billion left the state economy.<sup>13</sup> Research shows that households in regions with strong transit networks save approximately \$500 annually in transportation costs. Because a much larger portion of this substantial savings will stay in the local economy, it generates large net regional economic benefits.<sup>14</sup>

#### 4. More efficient growth patterns

Increasingly, cities working to regenerate struggling neighborhoods are turning to transit-oriented development. While there is still much to be learned about where and how these projects can be successful, many are delivering promising returns. For instance, the Hiawatha Light Rail in Minneapolis increased the value of commercial property along the transit corridor by 56 percent, and the district has seen 6.7 million square feet of new development since it opened in 2004. Charlotte's Blue Line is another notable example; nearly 10 million square feet of new development has been put in place in the rail corridor since service was introduced in 2007.<sup>15</sup>

Reinvestment in older urban areas adds to the tax base and fiscal capacity of these cities, reducing the need for state aid. Over the long term, by allowing for dense development, transportation can reduce housing costs and public infrastructure costs. Lower tax rates and cheaper housing make regional economies more competitive.<sup>16</sup> The housing benefit may be especially large for Massachusetts, given the heavy drag the state's high housing costs place on economic growth.

#### 5. Greater access to economic opportunity

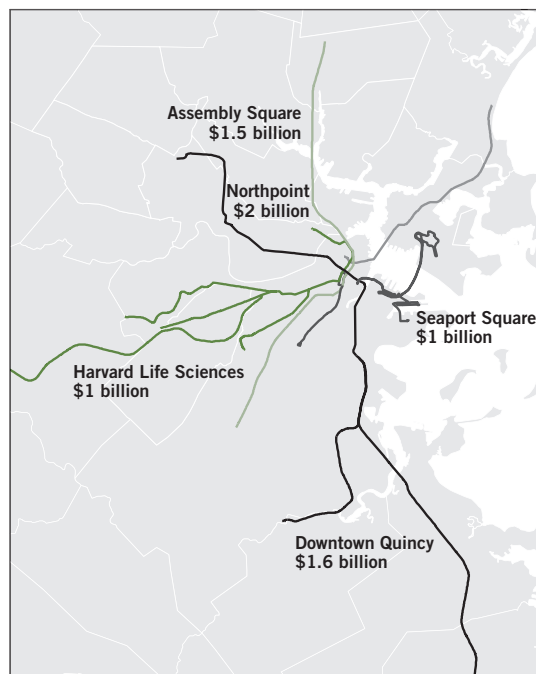
Transit also makes jobs more accessible to low-wage workers. The decentralization of employment has made it more difficult for low-income residents living in cities to reach jobs. In Greater Boston, for example, less than one-third of jobs are accessible by transit with a 90-minute commute. For Gateway City regions like Springfield and Worcester, this ratio drops to only one-quarter of all jobs.<sup>17</sup> Connecting low-income workers to jobs maximizes the utilization of labor and lowers taxes by reducing the large public costs associated with the social problems that arise when residents are economically isolated. Fixed-guideway lines are particularly important in increasing transit accessibility. Rail service makes bus feeders sig-

nificantly more efficient, opening up new areas of employment possibility.<sup>18</sup>

#### Transit-Oriented Development Activity in Massachusetts

The largest economic development projects in Massachusetts moving forward in this challenging environment all have close proximity to transit. Combined, they will link at least \$7 billion in new investment to the MBTA's future. This pattern provides solid evidence that private markets find real value in the state's transportation assets. These projects include:

- **Assembly Square.** \$1.5 billion in investment that will add 2,100 housing units, 1.75 million square feet of office space, and 1 million square feet of retail space.
- **Downtown Quincy.** \$1.6 billion in investment leading to 1,200 housing units, 2 million square feet of office space, and 625,000 square feet of retail space.
- **Northpoint.** \$2 billion in investments in a 44-acre district between Cambridge and Somerville. Phase I includes 350 apart-



ments and 2 million square feet of office and retail space.

- **Seaport Square.** A 23-acre district that includes plans for 6.3 million square feet of mixed-used development. Over \$1 billion in permitted new construction activity is getting underway.
- **Harvard Life Sciences Business Park.** A 36-acre parcel in Allston, which is projected to create 2.5 million square feet of new commercial development. This project is expected to produce at least \$1 billion in investment.

Private investors have also been attracted by transportation assets in Gateway Cities across Massachusetts.<sup>19</sup> For example, Worcester's City-Square development, which is adjacent to Union Station, has drawn \$470 million in private funding to reshape the city's downtown commercial district, adding 2.2 million square feet in new office, residential, and retail space.

### The Growing Push for Transit Investments in Regions Nationally

Private sector interest in transit-oriented development has generated a response from regions across the country that increasingly recognize how public transportation infrastructure can contribute to their economic success. A recent analysis of planning for new transit investments uncovered more than 640 projects in 106 regions around the country.

Nearly one-quarter of these projects were located in midsize metro areas (141 projects in metros with less than 1.5 million residents). And among the midsize regions, older, slower-growing regions were well represented. Dayton, Des Moines, Grand Rapids, Norfolk, and Toledo have plans for new streetcar lines queued for federal funding. Bus rapid transit projects in Albany and Hartford are in the construction and engineering phases. Harrisburg and Madison have new commuter rail service in the works.<sup>20</sup>

In these midsize regions, many projects are new “backbone lines” upon which future transit systems will be established. These investments have the potential to transform the metropolitan area by improving job connectivity and increasing productivity.

### Insufficient Federal Funding

Unfortunately, federal funding is nowhere near sufficient to support these projects at present levels. At the current rate, building just the 413 projects with complete cost estimates (totaling \$233 billion) would require 73 years. As a result, many regions are looking for options to finance their projects, or at least a large portion of them, without federal dollars. As described in the next section, the current practice of financing transit statewide makes it exceedingly difficult for regions in Massachusetts to take these projects upon themselves.

## II. STATEWIDE PUBLIC TRANSPORTATION FINANCING AND REGIONALLY UNBALANCED INVESTMENT

Massachusetts currently finances a large share of the public transportation service provided across the Commonwealth with revenue collected state-wide. As the data presented below demonstrate, this structure has led to regional imbalances in the delivery of public transportation service. By restricting the ability of communities to capitalize fully on the economic development potential of transportation assets, statewide public transportation financing has contributed to uneven growth in regional economies across the Commonwealth.

### The Limitations of a Statewide Revenue Model

The system for financing public transit in Massachusetts is unique in the degree to which it has been designed to meet the needs of just the MBTA. Unlike most major transit systems in the United States, the MBTA's principal source of

funding is a statewide revenue stream. Transit authorities serving other major cities across the nation, including Atlanta, Chicago, Denver, and Seattle, are supported by taxes collected in the counties within their service area. While transit agencies in other large cities, such as New York and Philadelphia, also receive state funding, among major US transit systems, the MBTA has the highest dependence on statewide revenue (Table 1).<sup>21</sup>

Placing heavy reliance on state funds to finance MBTA operations has three major drawbacks:

First, to the extent that revenue increases are needed, it is more difficult to build support. Out of 160 House legislative districts in Massachusetts, 97 include no cities or towns within the MBTA's core service area.<sup>22</sup> While the agency was able to win some additional revenue as part of a sales tax increase passed in 2009, so far

**Table 1:**  
State funding for major US transit agencies, 2009

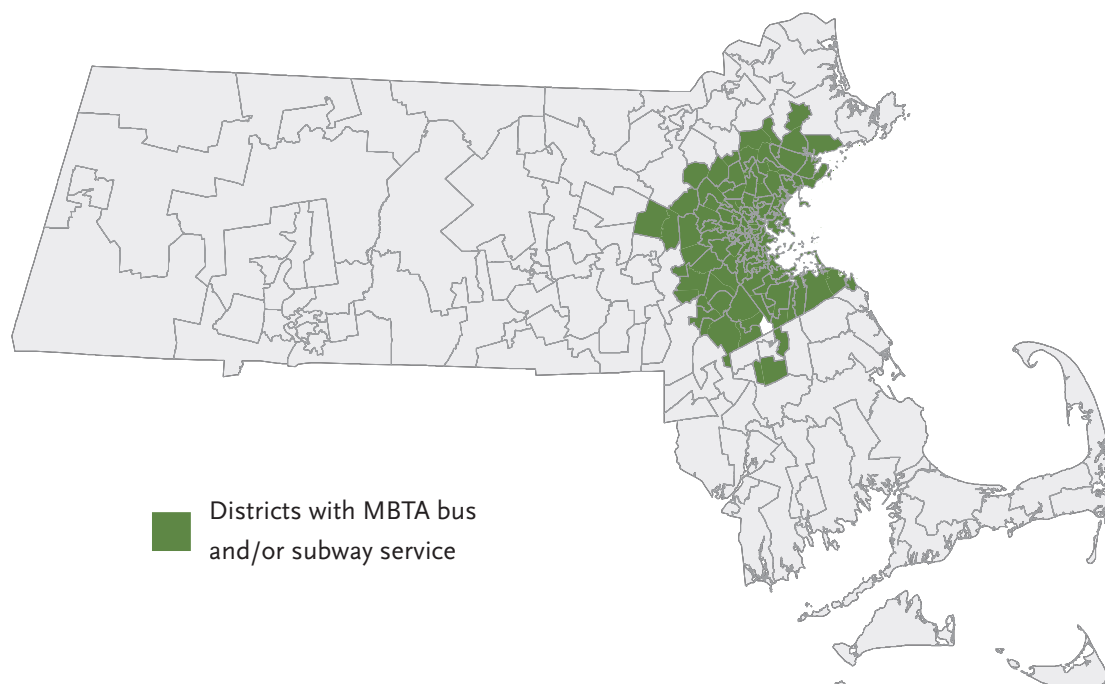
CITY	TRANSIT AGENCY	SERVICE POPULATION AREA AS PERCENT OF STATE POPULATION	STATE FUNDING AS A PERCENT OF AGENCY OPERATING BUDGET
Atlanta	MARTA	17%	0%
Boston	MBTA	69%	52%
Chicago	CTA	65%	23%
New York	MTA	67%	41%
Philadelphia	SEPTA*	32%	50%
Portland	Tri-Met	43%	<1%
Seattle	King County Metro	29%	<1%
Denver	RTD	56%	0%
Miami	Miami-Dade Transit	13%	5%

Source: National Transit Database

\*Population of Mercer County, NJ and New Castle County, DE excluded

**Figure 2:**

**Massachusetts House Districts and MBTA Core Service Area**



the increase amounts to only about half of the need as projected by the state's 2007 transportation finance commission.<sup>23</sup> This leaves the MBTA with an operating gap of at least \$150 million annually. Governor Patrick had proposed a 19-cent gas tax increase, which would have pro-

**STRONGER SERVICE IN COMMUNITIES  
LIKE BROCKTON AND LOWELL  
COULD MAKE THE BROADER REGIONAL  
ECONOMY MORE PRODUCTIVE.**

duced more revenue for transportation, but this approach was unpalatable for leaders from outside of Greater Boston (see text box).

A second major limitation that results from statewide financing is underinvestment in transit assets in the regions outside of Greater Boston. With the MBTA struggling to generate adequate revenue to support existing operations, other regions of the state are suffering even more. Since transportation reform in 2009, state fund-

ing for the MBTA has increased by 16 percent, while state resources for all 15 regional transit agencies has fallen by 5 percent, after adjusting for inflation.

Third, to the extent that many of the RTAs lie within the MBTA system and are essentially sub-regions within the metropolitan area, their failure to make optimal levels of investment in their systems presents an unrealized opportunity for the larger region. In addition to drawing more riders into the MBTA system, stronger service in communities like Brockton and Lowell could make the broader regional economy more productive.

The breadth of the MBTA and its outsized role in the Commonwealth's economy mean the agency undeniably merits state investment. However, the numbers presented below suggests the current distribution is significantly unbalanced. As the state looks for new revenues, real attention must be paid to giving regions the ability to even these imbalances.



## The Uneven Distribution of Public Transportation Revenue

The statewide sales tax is the major source of revenue used to finance public transportation in Massachusetts. The MBTA currently receives 1 percent of the 6.25-cent sales tax, plus an additional \$160 million in sales tax revenue allocated by the Legislature from the Commonwealth Transportation Trust Fund. (Since this fund was created in 2009, regional transportation agencies have also received their state support through it. However, for these agencies, the fund's establishment has not led to any significant increase in state assistance.)

One way to analyze the current distribution of state public transportation spending is to look at how each region would fare if it were to receive in revenue the transit portion of the sales tax generated within its boundaries, as is the practice in many states (Figure 3).

While the Massachusetts Department of Revenue does not record sales tax collections by

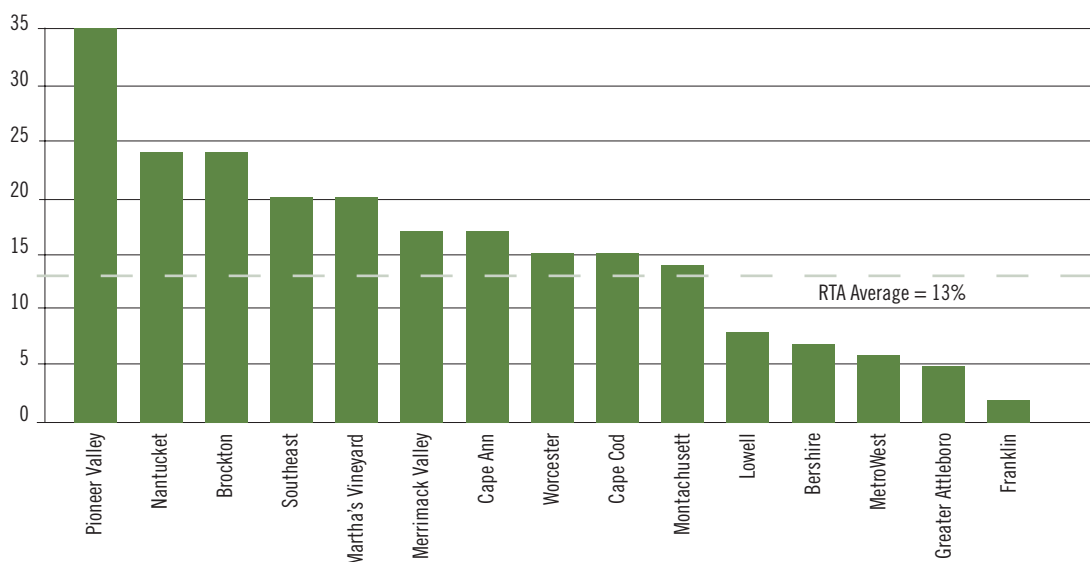
municipality, it is possible to estimate the sales tax generated by each region by apportioning the state's total sales tax collection to regions based on the relative size of their economies. This method is not perfect, but it likely produces a conservative estimate of disparities between Greater Boston and other regions in the state.<sup>24</sup>

This analysis shows that state funding assistance for regional transit agencies amounts to only a small fraction of what the constituent towns of every regional transit authority produce in sales tax revenue for the MBTA. Even the Pioneer Valley Transit Authority (PVRTA), which serves Greater Springfield and has the highest state assistance out of any regional transit agency, only receives from the state about one-third of what the MBTA draws in sales tax revenue from the region.<sup>25</sup> The ratio of RTA to MBTA revenue is just 20 percent for the South Coast, and only 15 percent for Greater Worcester, two regions with significant public transit needs of their own.

Combined, the \$60 million in state funds that

Figure 3:

State RTA contract assistance as a percentage of MBTA sales tax revenue collected in the RTA region



Source: MassINC's analysis of data from the US Bureau of Economic Analysis

the 15 RTAs receive amounts to just 13 percent of the transit sales tax collected in these regions. If they were to collect their full sales tax take, they would have nearly \$400 million more annually to operate public transportation.

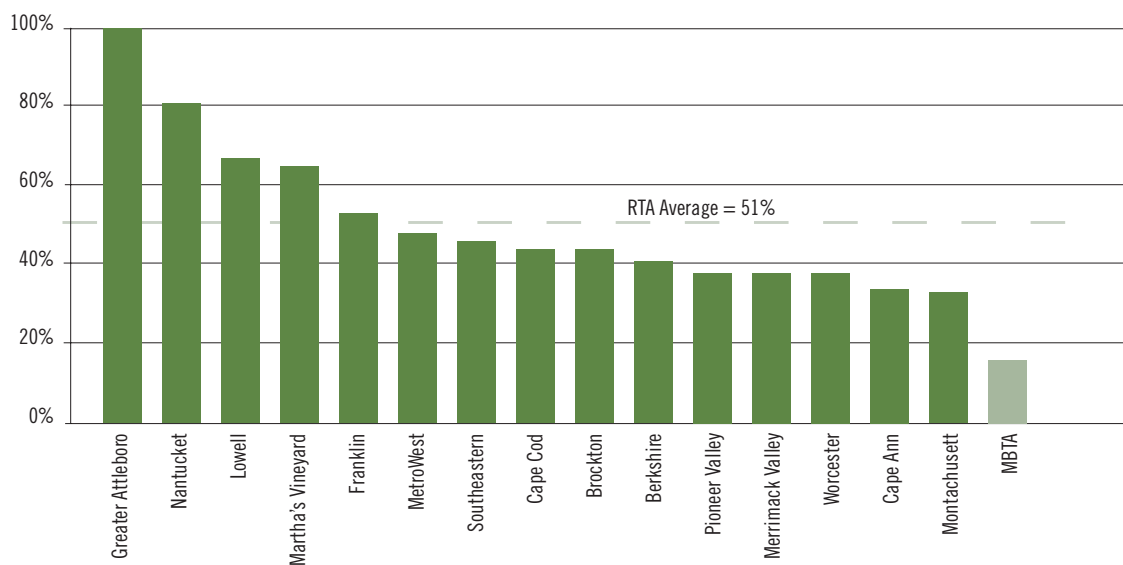
This sum may be greater than what these regions actually need, but there is no question that resource restrictions have limited their growth. Even at the minimal level of service that these regions currently offer, the state does not provide the same level of support. On average, the 15 RTAs receive just one-third of their funds from the state. In contrast, the MBTA receives 57 percent of its budget from state dollars.<sup>26</sup> Even systems serving large regions, like Worcester and Springfield, receive a significantly smaller share of their dollars from the state.<sup>27</sup>

With less state assistance, communities within regional transit agency service areas pay for a significantly larger share of operating costs. The MBTA receives about 9 percent of its funding from local assessments versus about 15 percent for the average RTA. But these figures do not

include fares and other revenues, which means they understate the true disparity in reliance on local funds. A better measure is the ratio of local assessments to state support. For the MBTA, this figure is just 16 percent, whereas for the RTAs the ratio of local to state assistance is 51 percent (Figure 5). In effect, under the current structure, residents living in non-MBTA communities contribute to the MBTA through sales taxes, but they are also responsible for a larger portion of their own local transit authority's budget.

Without a regional mechanism to raise these resources, communities are forced to rely on general fund revenue. The majority of this revenue comes from the property tax, which is subject to Proposition 2 1/2 limitations. The current system asks communities with the least tax capacity to contribute the most. Excluding the Cape and Islands, the per capita assessed valuation in RTA communities outside of Greater Boston is more than a third lower than in communities serviced by the MBTA (Table 2). The tax capacity of Springfield RTA communities is less than half that of

**Figure 4:**  
**Local funding as a percentage of state assistance, FY 2011**



Source: MassINC's analysis of data from the MA Association of Regional Transit Authorities and MBTA



communities within the MBTA service area.

And while the past decade has been particularly challenging for communities outside of Greater Boston, these communities have stepped up and contributed more while MBTA communities have reduced their contribution to the system. Since 2002, RTA local assessments have increased by 51 percent. In actual dollars, this amounts to a \$9 million increase over 2002 local assessment totals. Local assessments for the MBTA, by contrast, have increased by only \$7 million, or 5 percent, since 2002. In fact, between 2002 and 2008, MBTA local assessments actually fell substantially below the 2002 assessment level of \$143 million. Despite the system's long-term shortfalls, communities in the MBTA service area saved \$20 million between 2002 and 2008 (and saved a net \$2 million between 2002 and 2011). RTA communities experienced no such dip. They saw a net increase of \$38 million between 2002 and 2011 (Figure 5).

**Table 2:**

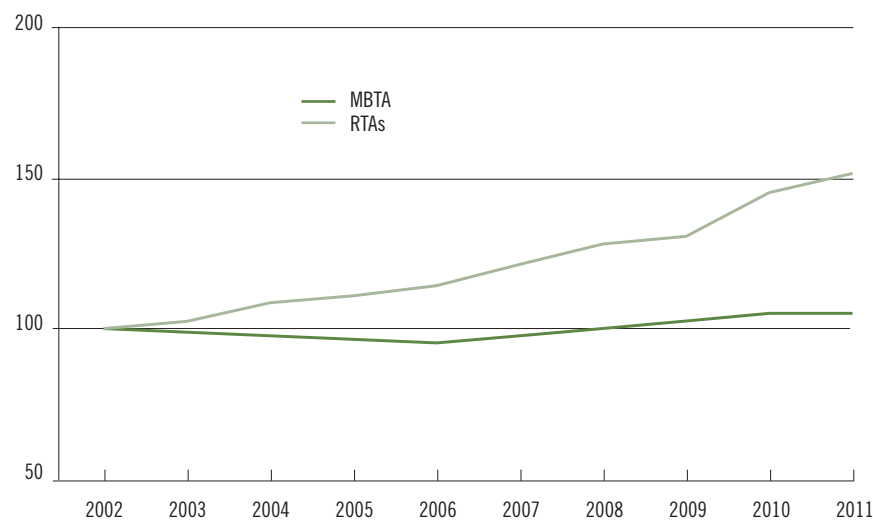
**Tax Capacity of Communities within Regional Transit Areas**

REGIONAL TRANSIT AREA	PER CAPITA EQUALIZED VALUATION (EQV)	REGIONAL PER CAPITA EQV AS A PERCENTAGE OF MBTA
<b>Majority of Communities Outside of MBTA Service Area</b>		
<b>Berkshire</b>	\$134,514	80%
<b>Franklin</b>	\$111,608	66%
<b>Pioneer Valley</b>	\$81,033	48%
<b>Southeastern</b>	\$108,651	65%
<b>Worcester</b>	\$102,899	61%
<b>Subtotal</b>	\$107,741	64%
<b>Majority of Communities Inside of MBTA Service Area</b>		
<b>Brockton</b>	\$102,239	61%
<b>Cape Ann</b>	\$217,323	129%
<b>Greater Attleboro</b>	\$146,647	87%
<b>Lowell</b>	\$120,111	71%
<b>Merrimack Valley</b>	\$124,165	74%
<b>MetroWest</b>	\$188,388	112%
<b>Montachusett</b>	\$107,555	64%
<b>Subtotal</b>	\$143,776	85%
<b>MBTA</b>	\$168,349	100%

Source: MassINC's analysis of data from the MA Dept. of Revenue

**Figure 5:**

**Change in MBTA Local Assessments vs. RTA Assessments (Fiscal Year 2002=100)**



Source: DOR Cherry Sheets

## Underserved and Underutilized Regional Transit Agencies

At a time when midsize cities need to focus on improving their transit systems and boosting ridership to take advantage of increasing interest in transit-oriented development, regional transit agencies in Massachusetts have been forced to take actions that have had the opposite effect.

### UNBALANCED GROWTH

Economic analysts increasingly note deep disparities in rates of economic growth between Boston and other regions of the state. The Boston-Springfield growth disparity provides a clear example of how economic development is occurring unevenly across the state. Between 1980 and 2009, Greater Springfield added jobs at just half the pace of Greater Boston. In 1980, per capita income in Greater Springfield was 85 percent that of Greater Boston; today it stands at just over 70 percent. Conditions are even more skewed when comparing the core cities of these regions. Boston's unemployment rate currently stands at 7 percent. In contrast, the unemployment rate for Springfield is nearly 70 percent higher at 11.8 percent.

These unemployment figures are indicative of how the recent economic challenges have intensified regional disparities across the Commonwealth. As the state's leading economists noted in the May 2011 journal *MassBenchmarks*:

*No narrative about the Massachusetts economy is complete without describing the growing imbalances in the state. Even before the recession, growing prosperity in the state was concentrated in the Boston metropolitan area, and more narrowly to certain sectors in the Boston area. This pattern has only intensified during the current recovery period.*<sup>32</sup>

Notably, these economists called for public investment to reverse these imbalances.

*For other parts of the state including the "Gateway Cities", long-term efforts to improve both public education and to rebuild their civic and the physical infrastructure will be required if these communities are to have an opportunity to more directly contribute to and benefit from future economic growth.*

In contrast to the MBTA, which has not raised fares since 2007, riders on all 15 RTAs have been asked to pay more as service has deteriorated.

As it currently stands, the poor service on many of our modes of regional transit severely inhibits their ability to build ridership. Headways — the time between departures on bus lines, in Lowell, Springfield, and Worcester — average 45 minutes.

Bus service from the Lowell train station to the UMass-Lowell campus provides a good example of how two major economic assets (the state university and the MTA system) are underleveraged by the region's transportation infrastructure. Headways along this critical route are 35 minutes during peak commute times. The service ends abruptly at 6 p.m. even on weekdays. On Saturdays there are only five buses (one every two hours), and on Sundays there is no service.<sup>28</sup> This means that on each weekday seven outbound commuter trains in the evening are not met by the bus. On Sundays, there is no service to 16 inbound and outbound trains.

Compare this with MBTA bus Number 111, connecting Chelsea to Haymarket Station. On weekdays, 128 buses service this line with an average headway of less than 10 minutes.<sup>29</sup> Over the course of a year, Chelsea's 111 bus carries nearly twice as many passengers as the entire Lowell RTA system.

It is essential to factor in these service disparities when comparing state support for the MBTA to state support for RTAs based on ridership statistics. Measured by state dollars per unlinked passenger trip and state dollars per passenger mile, the RTAs receive similar levels and in some cases more support than the MBTA (Table 3).<sup>30</sup> Still, evaluating funding based on ridership is misleading since regional transit agencies need funds to support adequate service in order to build and maintain ridership.<sup>31</sup>

**Table 3:**  
**State Funding Per Annual Passenger Trips and Miles**

AGENCY	UNLINKED PASSENGER TRIPS (THOUSANDS)	STATE FUNDING (MILLIONS)	STATE FUNDS PER UNLINKED PASSENGER TRIP	STATE FUNDS PER PASSENGER MILE
Berkshire	601	\$1.9	\$3.23	\$0.41
Brockton	3,032	\$5.3	\$1.74	\$0.27
Cape Ann	272	\$1.1	\$4.00	\$0.85
Cape Cod	800	\$3.4	\$4.31	\$0.31
Greater Attleboro	925	\$2.5	\$2.73	\$0.21
Lowell	1,505	\$2.8	\$1.85	\$0.46
Merrimack Valley	2,691	\$5.6	\$2.07	\$0.51
MetroWest	323	\$2.2	\$6.88	\$0.97
Montachusett	1,000	\$4.6	\$4.63	\$0.57
Pioneer Valley	12,191	\$17.3	\$1.42	\$0.49
Southeastern	1,741	\$4.5	\$2.56	\$0.56
Worcester	3,401	\$9.1	\$2.66	\$0.94
MBTA	367,248	\$927	\$2.52	\$0.50

Source: American Public Transportation Association Factbook, 2009

Note: MBTA state funding total adjusted to include additional \$160 million from transportation trust fund

#### REACTION TO STATEWIDE GAS TAX INCREASE

In February 2009, Governor Patrick proposed a 19-cent gas tax increase, which the administration estimated would cost the average driver an extra \$8 at the pump each month. Because of perceptions of past imbalances in state transportation investments, the proposal was harshly criticized by state lawmakers as being unfair to residents outside of Greater Boston.

Rep. Peter Kocot, a Northampton Democrat, told the *Springfield Republican*, “I don’t think the people of Western Massachusetts should foot the bill to pay for the Big Dig and the MBTA.” This view was echoed by many in the Pioneer Valley delegation. Rep. Todd Smola, a Republican from the town of Palmer, called the hike “nuts” in the *Worcester Telegram and Gazette* and was quoted saying, “We are not, in Central and Western Massachusetts, going to subsidize the Big Dig on the backs of our part of the state...

This is an East vs. West issue, and the gauntlet has been laid down.”

Republican Rep. Karyn Polito of Shrewsbury told the *Worcester Telegram and Gazette*: “It’s obvious to me that the governor’s proposal is very Boston-centric, and it does little if anything to help the people in the central and western part of the state that have to use the toll road to get to work and do not have a reliable public transportation system as backup.”

Even legislators open to the tax increase wanted to see more investment outside of Greater Boston. For example, Sen. Stephen Brewer (D-Barre) told the *Telegram and Gazette* that he might consider a modest gas tax hike. “But first I want to see targeted investments for Central and Western Massachusetts that are real and encrypted, that are written in real language.”

### III. THE REVENUE GENERATING POTENTIAL OF REGIONAL FINANCING

Massachusetts has several revenue mechanisms to choose from that could give regions across the state the ability to raise the funds needed to support regional transportation capital and operating needs. This section models these options to provide a better indication of the revenue generating potential of two promising alternatives: a payroll tax and a tax per vehicle mile traveled (VMT).

#### The Payroll Tax

A payroll tax collects revenue from businesses based on a share of total wages paid at a location (as opposed to a local income tax, which is levied against workers according to their town of residence). Payroll taxes are an especially appropriate source of funding for transit districts because they ensure that non-resident commuters help cover the cost of service. Because a payroll tax is

employers can deduct state and local taxes from their federal corporate excise tax.

Seventeen states currently authorize regional income or payroll taxes, and several expressly designate the funds from these taxes to transportation.<sup>34</sup> Portland, Oregon, relies on a regional payroll tax of 0.7 percent to fund its public transit service.

If the MBTA service region elected to institute a payroll tax at Portland's 0.7 percent rate, it would generate between \$600 million and \$900 million annually, depending on how contributions were handled for overlapping transit districts. (Under the current framework, these areas send the 1-cent sales tax to the MBTA, but RTA local assessments are deducted from any local assessments due to the MBTA.)

A much more modest 0.16 percent payroll tax would provide revenue in the range needed to close the MBTA's annual operating deficit (\$140 million to \$207 million depending on how the tax is levied in overlapping RTA districts). This works out to about a \$1.77 per week for the median full-time worker (earning \$57,924) in Greater Boston, or less than a cup of coffee.<sup>35</sup>

In RTA service districts, a 0.16 percent payroll tax would also have an extraordinary impact. The average RTA would gain resources equal to about one and half times what they currently receive from the state. Worcester would add \$13 million generated regionally to the \$9 million it currently receives annually in state assistance. The Southeastern Regional Transit Agency's budget would have \$6 million in regional resources on top of its \$4 million in state funds. And Lowell could match \$3 million in state assistance with \$11 million in regional dollars. A 0.16 percent payroll tax would cost workers from Worcester, the South Coast, and Lowell a weekly total of \$1.60, \$1.49, and \$1.81, respectively.

### THE AVERAGE RTA WOULD GAIN RESOURCES EQUAL TO ABOUT ONE AND A HALF TIMES WHAT THEY CURRENTLY RECEIVE.

broad-based, it has the potential to generate significant revenue even within a relatively small geographic area. Administrative efficiency is another attractive feature of the payroll tax; Massachusetts already has the infrastructure in place to collect state income tax withholdings.

In contrast to the current sales tax, which is rather regressive, a flat rate payroll tax is income-neutral. The payroll tax also has less impact on businesses than the sales tax. While a sales tax is born partially by both businesses and consumers (i.e., prices do not rise as much as the tax rate when there is a sales tax increase), the incidence of the payroll tax is generally shifted entirely to workers.<sup>33</sup> A regional payroll tax would also transfer costs to the federal government because

### A Vehicle Miles Traveled (VMT) Tax

Many transportation finance experts see a tax per mile traveled as the way of the future.<sup>36</sup> A VMT tax is a classic user fee in the sense that those who benefit from the transportation system would pay for it in proportion to their use. A VMT tax that rises during peak travel times (i.e., congestion pricing) also has the potential to generate large efficiencies by reducing congestion and maximizing roadway capacity. Equally important, the VMT tax solves the problem of declining gas tax revenue as drivers move to more fuel-efficient vehicles.

While the VMT tax has many advantages, it also has some shortcomings. It may be politically difficult to generate significant revenue for transit from a VMT tax.

There are also equity concerns. Some see VMT taxes and congestion pricing as privatizing public roads for those with the highest income.<sup>37</sup>

Administration is perhaps the greatest challenge with the VMT tax. Massachusetts has the basic infrastructure in place to collect a VMT fee at annual inspection. However, collecting the tax as a lump sum would create a burden for low-income residents. The tax would also feel more onerous, which would make it less popular with voters.

The alternative is a system to collect the tax in small increments every time a driver refills at a gas station (based on total mileage readings from a GPS chip installed in the vehicle), but this would require an entirely new infrastructure with significant cost to build and maintain. Gaining acceptance might also take time, since some have privacy concerns with this type of technology.<sup>38</sup>

Because of the nature of development and driving patterns, the VMT's revenue generation potential as a regional tax is almost a mirror image of the payroll tax. Companies with large payrolls are heavily concentrated in the core, whereas drivers that accumulate the most miles tend to live farthest from the center. This distinction has important implications for defining the geogra-

phy of an MBTA tax district vis-à-vis overlapping RTA districts. While excluding RTA districts would reduce a payroll tax take by about one-third (32 percent), keeping the RTAs independent from an MBTA VMT district would reduce the yield by more than one-half (54 percent).

Excluding the RTA districts from an MBTA district, a VMT tax of 0.75¢/mile would be required to place the MBTA in the range needed to close the annual operating gap. This works out to an average of \$75 annually (or \$1.43 per week) per registered vehicle.

With only a 0.5¢/mile VMT tax, RTAs could generate revenue equivalent to a 0.3 percent payroll tax (\$183 million). The average registered vehicle would pay about \$1 per week. These funds would approximately triple the resources RTAs currently receive from the state.

Table 4:

## Payroll Tax Projections and VMT Revenue Projections

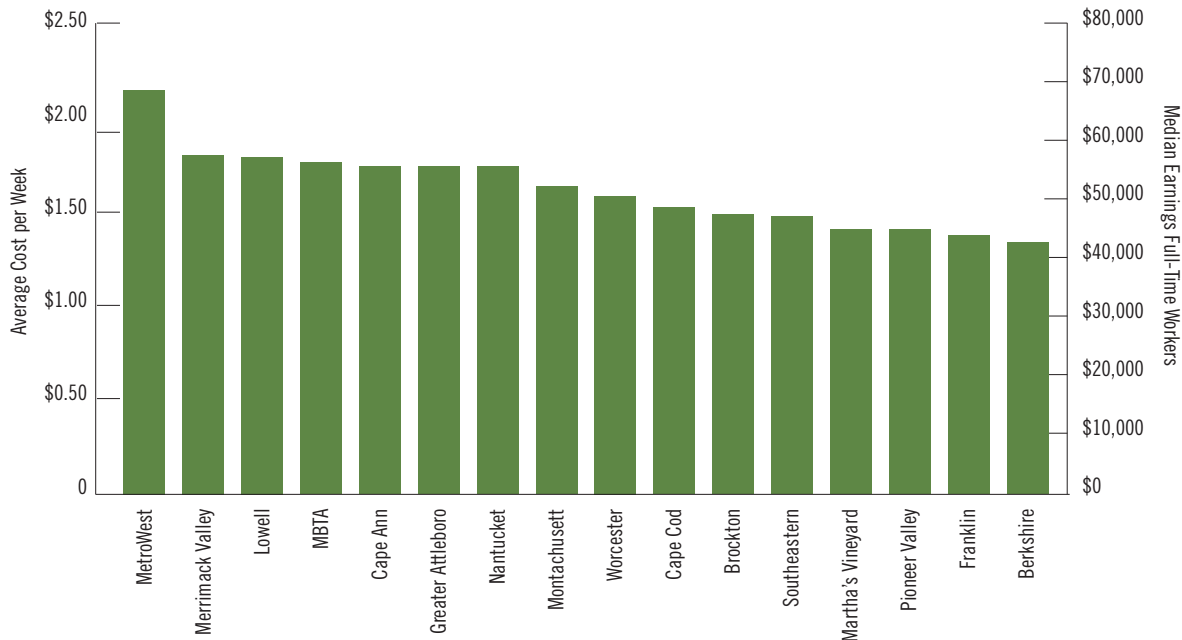
		PROJECTED PAYROLL TAX REVENUE (MILLIONS)				PROJECTED VMT REVENUE (MILLIONS)		
AGENCY	TOTAL WAGES (MILLIONS)	0.16%	0.3%	0.7%	TOTAL VMT (MILLIONS)	0.5¢ MILE	0.75¢ MILE	1¢ MILE
Majority of Communities Outside of MBTA Service Area								
Berkshire	\$1,976	\$3	\$6	\$14	1,042	\$5	\$8	\$10
Cape Cod	\$2,744	\$4	\$8	\$19	2,382	\$12	\$18	\$24
Franklin	\$913	\$1	\$3	\$6	1,212	\$6	\$9	\$12
Martha's Vineyard	\$254	\$0	\$1	\$2	170	\$1	\$1	\$2
Nantucket	\$216	\$0	\$1	\$2	90	\$0	\$1	\$1
Pioneer Valley	\$7,932	\$13	\$24	\$56	4,574	\$23	\$34	\$46
Southeastern	\$3,507	\$6	\$11	\$25	2,458	\$12	\$18	\$25
Worcester	\$8,276	\$13	\$25	\$58	4,808	\$24	\$36	\$48
Subtotal	\$25,817	\$41	\$77	\$181	16,736	\$84	\$126	\$167
Majority of Communities Inside of MBTA Service Area								
Brockton	\$3,468	\$6	\$10	\$24	2,146	\$11	\$16	\$21
Cape Ann	\$710	\$1	\$2	\$5	532	\$3	\$4	\$5
Greater Attleboro	\$7,328	\$12	\$22	\$51	5,743	\$29	\$43	\$57
Lowell	\$6,594	\$11	\$20	\$46	3,235	\$16	\$24	\$32
Merrimack Valley	\$5,667	\$9	\$17	\$40	3,111	\$16	\$23	\$31
MetroWest	\$8,358	\$13	\$25	\$59	2,291	\$11	\$17	\$23
Montachusett	\$2,920	\$5	\$9	\$20	2,260	\$11	\$17	\$23
Subtotal	\$35,045	\$56	\$105	\$245	19,317	\$97	\$145	\$193
All Regional Transit Agencies	\$60,862	\$97	\$183	\$426	36,053	\$180	\$270	\$361
MBTA	\$129,376	\$207	\$388	\$906	39,894	199	\$299	\$399

Source: MassINC's analysis of data from the US Bureau of Economic Activity, MA Dept. of Revenue and MIT's PAYD Analytic Dataset

Note: Subtotals double count \$41.2 billion in wages from areas served by both the MBTA and RTAs. Subtracting these areas out from the MBTA subtotal would reduce the MBTA payroll tax take to \$140 million, \$264 million, and \$617 million, at 0.16%, 0.3%, and 0.7%, respectively. Subtotals double count \$21 billion VMTs from vehicles registered in areas served by both the MBTA and RTAs. Subtracting these areas out of the MBTA subtotal would reduce the MBTA VMT take to \$92 million, \$141 million, and \$184 million, at 0.5¢, 0.75¢, and 1¢, respectively.

Figure 6:

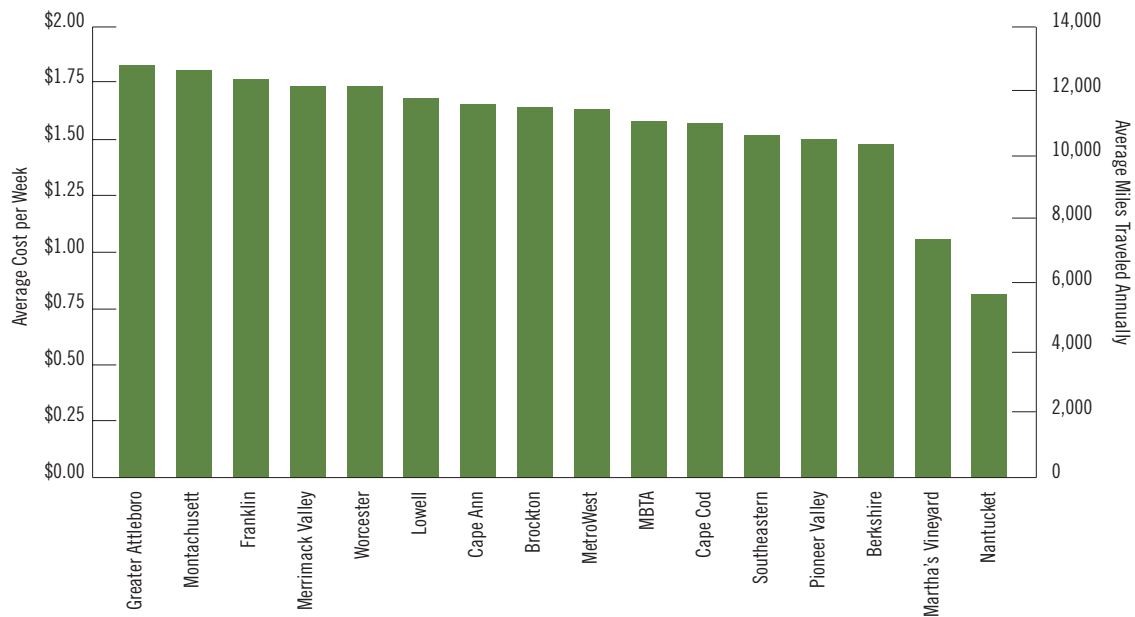
Estimated cost per week (for median full-time workers) of 0.16% payroll tax by transit agency district



Source: MassINC's analysis of data from US Bureau of Economic Analysis and the American Community Survey

Figure 7:

Estimated cost per week (per registered vehicle) of .75 cents a mile VMT Tax by transit agency district



Source: MassINC's analysis of data from US Bureau of Economic Analysis and the American Community Survey

## IV. REGIONAL FINANCING: CHALLENGES AND OPPORTUNITIES

If Massachusetts is going to move to a system of regional transportation financing, a concerted effort will be needed to lay the groundwork. New structures must be put in place. State agencies will have to reconfigure how they work with regions, and regions will need to rethink how they plan for and invest in their transportation futures in order to make the most out of this new opportunity. This section covers in more detail the key issues that moving toward a regional financing structure presents.

### A. The Framework

In writing a bill authorizing regional financing, the Legislature would need to resolve four critical issues: district geography, authorization, revenue mechanisms, and eligible uses of funds.

#### *District geography*

Regions must by definition be large enough to represent the flows of commuters using the transportation infrastructure. But expansive regions could prove unpopular with communities at the borders, where residents will generally rely on the transit system less intensively and utilize roads more.

To define zones around existing transit operations, the state could keep the current districts in place or formulate a narrower definition based on distance to service (e.g., Portland uses 2.5 miles from a transit route). For expansion projects, new districts might include all communities within this distance, with a supermajority voting for the investment to pass the initiative.

Because regional revenue mechanisms can be tightly targeted, it would be possible to introduce subregions with varying rates. Subregions would also address the challenge of overlapping districts. For example, if the Lowell RTA region, were removed completely from the MBTA district, the T would lose more than \$10 million from a

0.16 percent payroll tax and \$23 million from a 0.75¢/mile VMT tax. Removing all of the overlapping RTAs that receive significant service from the T would undermine a regional revenue approach. To encourage investments in these communities, the state may want to make some percentage of a subregion's tax deductible from a tax put in place for the larger transit district. But either a predictable source of state funding would need to replace these funds or these arrangements would need to be made at the outset.

#### *Authorization*

Most states with regional transportation taxes put them before voters for direct approval at the ballot box. Because regional measures typically result in projects and services where taxpayers work and live, voters appreciate their benefits and these initiatives frequently find popular support. For example, according to the Center for Transportation Excellence, in 2008, citizens approved 70 percent of transportation ballot measures imposing \$75 billion of new taxes on themselves to support transportation infrastructure, operations, and maintenance. Even in California, where ballot initiatives require a two-thirds supermajority for passage, these efforts have been very successful.

Turning to voters encourages transportation advocates to demonstrate the benefits of transportation services and enhancements. Ballot initiatives also place greater pressure on transportation agencies to deliver the infrastructure and services described in the ballot measure.

The alternative to ballot measures is to have the governing body of each community vote to join the transit finance district. Because most states use ballot measures, and the local bodies that do make decisions tend to be larger county governments, less is known about how this approach would play out in Massachusetts.



### *Revenue mechanisms.*

Lawmakers would also need to choose a revenue mechanism. They could allow a payroll tax, a VMT tax, or a combination of both. The legislation would also need to address the length of time a tax could be instituted without reauthorization by members of the district.<sup>39</sup>

These broad-based taxes would provide a strong foundation for building and operating transit in Massachusetts. Other financing techniques under consideration, including parking fees, land value capture, and special assessments, should also be part of the mix.<sup>40</sup> While it may add to the complexity, it would be worthwhile to think about how these supplementary revenue mechanisms could be incorporated into the regional financing framework.

### *Eligible Uses of Funds*

Legislation might authorize regional measures to support only transit projects, or a broader set of public infrastructure needs including roads and bridges — as well as bike paths, sidewalks and other pedestrian improvements.

To encourage balanced multi-modal investments, the legislation might require regional transportation financing to include revenue for both roadways and public transit. A multi-modal approach could help or hinder regional planning. Including roadways would allow for larger transportation finance districts that could more accurately reflect how people move about their regions. This would facilitate more integrated transportation and land use planning. Multi-modal packages might also have an easier time finding a supermajority. But to the extent regions make unbalanced multi-modal investments to win additional support for passage, this approach could create distortions and unnecessary public spending.

## **B. Successful Implementation:**

### **The State Role**

Making regional financing work involves the state developing capacity to support regions in their planning and decision-making process. The state can assist by providing independent review and technical assistance.

### *Independent review*

The most important function the state can provide is performing independent review of proposed projects. Long-term transportation planning depends heavily on estimates and forecasts. Even a small variation in prediction, such as regional population growth, can have large consequences for the performance of an investment. Given the resources at stake, independent analysis is crucial. Projects up for consideration must

## **INDEPENDENT REVIEW WOULD HELP ENSURE THAT FORECASTS ARE NOT BUILT ON ROSY PROJECTIONS.**

be debated based on cost/benefit data that all sides can trust as coming from a neutral source.

Independent review from the state would help ensure that forecasts are not built on rosy projections produced by entities with a vested interest. External review could also help make certain that budget projections fully account for the maintenance, equipment, and operational subsidies needed to support new services, consistent with the length of the levy imposed.

There are useful models for this type of independent analysis. Transportation agencies, most notably in the state of Washington, are developing more sophisticated processes to identify and model the uncertainties around cost and time estimates for capital projects to produce robust and realistic budgets.<sup>41</sup>

### Technical Assistance

The state's midsize regions cannot carry the capacity needed to plan, develop, and manage complex transportation projects independently. The state can provide essential support in each of these areas. Regions will need grants for preliminary planning to get big ideas off the ground. As these projects move forward, the state can play an important role as an independent advisor and consultant. Managing transportation assets is equally important, and the state has economies of scale to offer regional agencies in areas ranging from developing preventive maintenance practices that reduce long-term capital costs to producing annual service plans that adjust routes and schedules to maximize ridership and operating efficiencies.

### C. Successful Implementation: The Regional Challenge

Public transit is an essential building block to a vibrant urban experience. It creates natural focal points for communities and activates central squares, main streets, downtowns, and parks, promoting economic activity by creating spaces that people want to visit and experience. Across the country, midsize cities with a vision for a prosperous future in this century understand the link between transportation and vibrancy, and they are making bold investments in transit as a primary placemaking strategy.<sup>42</sup>

### Streetcars

Many midsize cities are reintroducing streetcar service to create a backbone for a robust public transportation system. Streetcars can become a catalyst for urban revitalization and promoting public transit use by new riders.<sup>43</sup> Buses do not provide the same land use impacts and therefore tend to provide less overall benefit;<sup>44</sup> cities where streetcars replace nearly identical bus services experienced ridership increases by as much as

500 percent.<sup>45</sup>

Tacoma, Washington, for example, opened a 1.6-mile streetcar system in 2003 that improves access to its theater district, downtown, museums, and the University of Washington at Tacoma. More than 2,000 new housing units have been permitted around streetcar stops, and establishments along the line have seen their business increase by 30 percent. Prior to the streetcar, there was a free bus service that operated along the current route carrying 141,000 riders annually. In its first year of operation, the streetcar attracted 730,000 rides.<sup>46</sup>

Kenosha, Wisconsin, is another example of the placemaking impact streetcars can provide smaller cities. Kenosha opened a streetcar line in 2000. The service connects the city's downtown business district with Harborpark, a new, vibrant public space redeveloped from a former heavy industrial American Motors plant.<sup>47</sup> This 2-mile track cost just \$6.2 million; it has already generated investments totaling \$150 million. Little Rock, Arkansas, introduced a streetcar in 2004 that has catalyzed even more investment along its route.<sup>48</sup>

Lowell is the only Gateway City in Massachusetts with a proposal for streetcar service. The city's plan builds upon the National Park Service trolley system to serve visitors, commuters, and the students, faculty, and staff of UMass-Lowell. The extended streetcar system is estimated to cost \$66 million and \$3.3 million per year to operate, with approximately 830,000 passenger trips annually. Over a 10-year period, the Lowell Trolley is estimated to boost the total value of existing residential, office, retail, hotel, and medical office properties by \$86 million due to increased demand for property along the trolley line. The trolley would also complement new projects currently in the proposed service corridor, including more than 1,000 units of housing and 1 million square feet of commercial space.<sup>49</sup>

## EVALUATING TRANSPORTATION INVESTMENTS

While there are many economic benefits associated with investments in transportation infrastructure, public spending is not guaranteed to produce positive returns. The expense of building, maintaining, and operating transportation infrastructure may mean that many projects are not the most cost-effective way to bolster economic growth. Massachusetts may get more for its money investing in education and workforce training, other economic development strategies that must be considered.

Indeed, evidence suggests that additional spending on established infrastructure may provide low returns. For example, federal investment in the national highway system supported two decades of productivity growth. These returns grew as the system became more efficient and industry capitalized on its potential. But eventually, as the system matured, additional investment began to yield diminishing returns.<sup>56</sup>

Many factors make it difficult to make investment decisions in transportation infrastructure. Systems are long-lived, slow to develop, and expensive to maintain. Not all industries derive equal benefit from transportation infrastructure. As the mix of industries in a region changes, the returns from its transportation networks will increase or decrease accordingly. The industrial mix in a region may have a lot to do with when a region's system is mature to the point where continued expansion garners diminishing returns.<sup>57</sup>

Investments in new transportation infrastructure must also be balanced against spending to maintain existing assets. In many cases, regions stand to gain more revenue by paying for preventive maintenance and avoiding the high cost of rebuilding assets that fail prematurely than they can generate by investing in new systems that provide only modest economic benefit.

With so many factors to consider and many unknowns, making investment decisions is complex. New technology and analytical approaches can help regions evaluate trade-offs, but rigorous cost/benefit reviews are only meaningful to the extent that they are incorporated into a deliberate decision making process. Much energy has been placed recently in reforming how federal transportation decisions are made and providing states with greater incentive to spend their federal transportation dollars wisely. But with intercity freight, air, and road networks largely developed, the most important investment decisions will increasingly take place at the regional level.

### *Bus Rapid Transit (BRT)*

Midsize cities can build upon the strong backbone created by streetcars with bus rapid transit. BRT lines can be implemented quicker than light rail lines at a fraction of the cost. Though there is no strict definition of bus rapid transit, there are a variety of characteristics that constitute BRT lines and help make them faster and more efficient than ordinary bus lines. These include service planning and infrastructure improvements

like peak-period frequency, enforcement of right-of-way, off-board fare collection, operational control systems, stations set back from intersections, turning restrictions across busways, and passing lanes at stations.<sup>58</sup>

In 2007, Eugene, Oregon, opened the 4-mile long Green Line bus route as the initial phase of its Emerald Express BRT system. This service replaced an existing bus route and included off-board fare collection, near-level boarding, and

dedicated bus-only lanes along 1.6 miles of the system. The project increased ridership from 2,700 to 4,700, and speeds along the route improved from 11.5 mph to 15 mph. These improvements cost \$24 million, with significant support through the FTA's Small Starts program.<sup>51</sup>

### *Bike Lanes and Bike Sharing*

Bicycles are increasingly a major component of local efforts to increase urban vibrancy. Short trips shifted to bicycles reduce congestion on roadways, and bicycles can also make a public transportation system more efficient. Investments that encourage walking and bicycling can encourage a richer and denser mix of business and amenities, reducing trip distance even for those driving to destinations.

Cities are deploying a variety of strategies to improve the environment for bicycling. However, bike lanes are one key strategy. At a relatively low cost, bike lanes can provide large placemaking benefits. Camden, New Jersey, for instance, is developing six multi-use trails to facilitate movement across the city's neighborhoods.

Public bicycle sharing is also emerging as a promising strategy. These systems provide a new model of public transportation system based on free (or almost free) bicycles that users can pick up at many points around a city, ride around, and leave at another conveniently located station. There are more than 100 of these programs in place around the world, including in medium-sized cities like Des Moines, Iowa, and Madison, Wisconsin.<sup>52</sup> The simplicity and convenience of these systems allow users to move about downtown areas rapidly and easily while reducing their dependence on cars.

### *Complete Streets*

In addition to public transit and bicycle infrastructure, cities are finding creative strategies to redesign public spaces and make them more attractive and accessible to residents, commuters, and tourists. These strategies are essential to improve the competitiveness of these cities by creating centers of activity that people enjoy visiting.

This effort, often referred to as complete streets, focuses on right-of-ways that negotiate the needs of motorists, pedestrians, and bicyclists, as well as bus and light rail riders. Many cities are widening sidewalks to facilitate the movement of various groups along streets. This also provides for pedestrian amenities such as seating, trees, and bus shelters. Cities are examining crosswalks, signage, and signals to improve the pedestrian experience.<sup>53</sup>

For example, New Haven is attempting to create more bike- and pedestrian-friendly street designs with the "New Haven Complete Streets Design Manual," which includes strategies to calm traffic and make streets safer.<sup>54</sup> Northampton adopted a Municipal Transportation Plan in 2005 that followed complete streets guidelines. The plan encourages walking, bicycling, and other non-motorized travel with roadway improvements and accommodations for both bicyclists and pedestrians. It also developed a citywide bicycle system with expanded bike paths and support services. Finally, the plan calls for traffic calming measures at busy intersections and sidewalk improvements in certain areas.<sup>55</sup>

## CONCLUDING THOUGHTS

This analysis has advanced three key points: First, regions across the state can realize real economic development benefits by making bold investments in multi-modal transportation networks. Second, regional financing is a more equitable approach to paying for these transportation investments and, as such, it is more likely to engender greater support from residents across the state. And third, regional revenue from a payroll or VMT tax has the potential to generate sufficient funds to meet the transportation needs of each region.

Residents in every region of the state are anxious for action that creates jobs and improves our competitive position. While taxpayers often take transportation for granted, this infrastructure is clearly critical to sustaining and growing the Massachusetts economy. Decades of underinvestment have undermined the state's transportation future, both in terms of our ability to sustain existing infrastructure as well as our ability to build new infrastructure to support economic growth. Regional financing authorized by voters through ballot initiatives is an opportunity to correct course.

By empowering residents to make choices about the transportation systems critical to their economic well-being and quality of life, regional financing would take Massachusetts in a fresh new direction. Voters will want to inform themselves of their options before heading to the ballot box, which would place a much larger premium on quality information and introduce a new level of transparency and debate.

While some fear the current "anti-tax" environment would doom efforts to generate more resources for transportation, this view is counter to experience across the country. Moreover, if citizens say no, it suggests the proposed investments are not what voters need or want.

Advocates for investing in our transportation future face several layers of pessimism. Some of this distrust stems from having made transportation investments that have disproportionately benefit some residents of the Commonwealth, while other residents have disproportionately borne the costs. There is also a general sense that government cannot get big things done without spending exorbitant sums of taxpayer dollars.

Regional transportation financing offers an antidote to these doubts. Voters will be able to see how transportation investments will help

### IF CITIZENS SAY NO, IT SUGGESTS THAT PROPOSED INVESTMENTS ARE NOT WHAT VOTERS WANT OR NEED.

their communities directly and how the costs will be covered fairly by those who benefit from the service.

In regions outside of Greater Boston that have struggled to gain a foothold in the state's new economy, regional financing can also counter another more general form of pessimism. The cynicism in these communities is that economic opportunity has skipped over them and the future is beyond their control. By opening up new possibilities to shape development, regional transportation financing would help eliminate this impediment to growth.

## APPENDIX

Estimates are calculated using the average of each region's share of payroll employment and payroll wages from the state total. Sales tax figures for each region are then estimated by multiplying these averages by the state's total sale tax take. A better estimation method might look at the size of sales tax producing industries, such as retail sales, in each region. Unfortunately, detailed industry data are not available at the municipal-level. These data are required to build estimates for the MBTA and RTA geographies.

There are, however, detailed industry data for metro areas based on the US Office of Management and Budget's NECTA definitions. According to these numbers, Greater Boston's economy appears slightly less sales tax intensive. For example, in the Boston region, retail trade represents 11 percent of jobs versus 13 percent in Springfield and 14 percent in Worcester. Similarly, retail trade generates 5 percent of Greater Boston's total payroll compared with 9 percent of total payroll in Springfield 8 percent of total payroll in Worcester.

### Sales Tax Revenue Generated within RTA Service Areas vs. State RTA Assistance, FY 2011

TRANSIT AUTHORITY	ESTIMATED SALES TAX REVENUE (ESTR)*	STATE CONTRACT ASSISTANCE (SCA)	SCA / ESTR
<b>Majority of Communities Outside of MBTA Service Area</b>			
Berkshire	\$27.4	\$1.8	7%
Cape Cod	\$24.6	\$3.3	15%
Franklin	\$34.1	\$0.8	2%
Martha's Vineyard	\$6.3	\$1.1	20%
Nantucket	\$1.9	\$0.4	24%
Pioneer Valley	\$51.7	\$16.3	35%
Southeastern	\$23.3	\$4.2	20%
Worcester	\$61.6	\$8.8	15%
<b>Subtotal</b>	<b>\$230.9</b>	<b>\$36.8</b>	<b>16%</b>
<b>Majority of Communities Inside of MBTA Service Area</b>			
Brockton	\$23.1	\$5.0	24%
Cape Ann	\$6.9	\$1.1	17%
Greater Attleboro	\$52.9	\$2.8	5%
Lowell	\$34.5	\$2.7	8%
Merrimack Valley	\$33.9	\$5.3	17%
MetroWest	\$36.0	\$2.2	6%
Montachusett	\$34.7	\$4.6	14%
<b>Subtotal</b>	<b>\$221.9</b>	<b>\$23.7</b>	<b>11%</b>
<b>All Regional Transit Agencies</b>	<b>\$452.8</b>	<b>\$60.4</b>	<b>13%</b>
<b>MBTA</b>	<b>\$533.2</b>	<b>\$927.0</b>	<b>174%</b>

\*Based on 16% of total projected sales tax generated by the towns in transit authority service area

\*\*Includes \$160 million in contract assistance plus \$767 million in dedicated sales tax revenue

Note: Subtotals double count \$243 million in sales tax revenue collected from areas served by both the MBTA and RTA; \$24 million is generated in communities with no transit services.

## END NOTES

1. Benjamin Forman is Research Director at MassINC. Dan Darcy and James Ermilio served as 2011 MassINC summer research interns. Dan is a senior at Duke University. James is a senior at NYU.
2. Data suggest there is a threshold of urban intensity (residents and jobs) of approximately 14 per acre needed to support public transit. While the population density in Boston and Cambridge is nearly double the average Gateway City population density (approximately 20 residents per acre vs. 10 to 12 residents per acre in Gateway Cities), these communities are currently right around the threshold needed to sustain public transportation service. See Peter Newman and Jeffrey Kenworthy, "Urban Design to Reduce Automobile Dependence," *Opolis: An International Journal of Suburban and Metropolitan Studies* 2(1) (2006).
3. For example, this approach has clearly been to the detriment of places like Worcester, a growing city and metro area with a public transit system that moves fewer passengers each year than the Number 1 MBTA bus running up and down Massachusetts Avenue.
4. For example, see Martin Wachs, "A Quiet Crisis in Transportation Finance," (Santa Monica, CA: Rand Corporation, 2006).
5. For a good description of the process communities facing adverse industrial change use in the struggle to reinvent themselves, see Sherry Linkon and John Russo, *Steeltown USA* (Lawrence, KS: University Press of Kansas, 2003).
6. The state is legally required to extend the Green Line to Somerville and Medford by 2014. The \$950 million project should be eligible for \$760 million in federal New Starts funding. However, the FTA is expected to reject an application for federal funds for the project, based on a federal financial feasibility test.
7. Workers with greater bargaining power must be compensated for the personal time lost commuting to congested areas. This is reflected in higher wages. See Glen Weisbrod and others, "Economic Implications of Congestion," Transportation Research Board Report 463 (Washington, DC: National Academy Press, 2001).
8. Todd Litman, "Rail Transit in America: A Comprehensive Evaluation of Benefits" (Victoria, BC: Victoria Transport Policy Institute, 2011).
9. See the *2011 Annual Urban Mobility Report* (College Station, TX: Texas Transportation Institute, 2011).
10. See data from the 2010 American Community Survey, Journey to Work. The average public transit commute in Massachusetts is 45 minutes versus 26 minutes for workers who drive in cars. While public transit commutes may be pulled up by those choosing to commute longer distances, it is unlikely that this fully explains the disparity. For example, 22 percent of bus riders versus just 8 percent of those driving to work alone spend more than 60 minutes commuting to work each day.
11. "Transit and Regional Economic Development" (Center for Transit Oriented Development, 2011).
12. Edward L. Glaeser, "Which Places Are Growing?" (Cambridge, MA: Rappaport Institute for Greater Boston, March 2011).
13. "Massachusetts Clean Energy and Climate Plan for 2020" (Boston, MA: Executive Office of Energy and Environmental Affairs, December 2010).
14. Litman (2011).
15. "Impacts of the Hiawatha Light-Rail Line on Commercial & Industrial Property Values in Minneapolis" (Minneapolis, MN: University of Minnesota Center for Transportation Studies, 2009); Nadine Fogarty and Mason Austin, "Rails to Real Estate: Development Patterns along Three New Transit Lines" (Washington, DC: Center for Transit-Oriented Development, 2011).
16. For example, see Dena Belzer and Gerald Autler, "Transit Oriented Development: Moving from Rhetoric to Reality" (Washington, DC: Brookings Institution, 2002).
17. Adie Tomer and others, "Missed Opportunity: Transit and Jobs in Metropolitan America" (Washington, DC: Brookings Institution, 2011).
18. Yingling Fan and others, "Impact of Light Rail Implementation on Labor Market Accessibility: A Transportation Equity Perspective," *Journal of Transport and Land Use* (2011).
19. While these projects do not have fully developed multi-modal transportation networks to leverage, and they require more public subsidy as a result, the hope is that improved transportation service will follow stimulating additional private investment.
20. "Jumpstarting the Transit Space Race: A Catalog and Analysis of Planned and Proposed Transit Projects in the US" (Washington, DC: Reconnecting America, 2011).
21. While these are the most current numbers in the National Transit database, they are already out of date. For instance, in 2009 New York enacted a 0.34 percent payroll tax in 12 counties to help the MTA close a more than \$2 billion budget gap.
22. Core service includes only municipalities with bus and subway connections. Three-quarters of House districts have at least one municipality in the full MBTA service area.
23. The Transportation Finance Commission estimated an operating gap ranging between \$4.2 and \$8.4 billion for the MBTA between 2007 and 2026. Taking the midpoint, \$6.3 billion, suggests an annual operating gap of \$314 million. However, more recent estimates suggest the actual need may be far greater. The most recent MBTA pro forma reflects an operating deficit of \$132 million for FY12, rising to \$344 million in FY16. And this operating deficit does not account for the additional investment the agency must make to close the state of good repair backlog, which is now estimated at \$4.5 billion and growing at the current rate of spending.
24. Estimates are calculated using the average of each region's share of payroll employment and payroll wages from the state total. Sales tax figures for each region are estimated by applying these averages to the state's total sale tax. A better estimation method might look at the size of sales tax producing industries, such as retail sales, in each region. Unfortunately, detailed industry data are not available at the municipality-level. Data for municipalities are required to build estimates for the MBTA and RTA geographies. From



- the available data, Greater Boston's economy appears less sales tax intensive due to the high value production of many firms located in the region. For more on how Boston's economy differs from other areas in these industries, see the Appendix.
25. "RTA Scorecard," *MassDOT: Massachusetts Department of Transportation*. December 2009.
  26. There are limitations to this comparison because the MBTA has both annual operating costs and annual debt service costs. The RTAs do not have debt. Assuming the \$927 million the MBTA receives in statewide revenue included \$405 million to fully cover debt service payments, the remaining \$522 million in state operating subsidy would equal just 44 percent of the MBTA's \$1.2 billion annual operating expense. However, if the assumption were that the state funds were provided to cover just half of the MBTA debt, than \$724 million in state funding would equal 60 percent of the agency's \$1.2 billion operating expense.
  27. *Ibid.*
  28. *Ibid.*
  29. "MBTA: Schedules and Maps, 111 Weekday Bus Schedule." Massachusetts Bay Transit Authority.
  30. Unlinked passenger trips count the number of riders on each route. Riders who transfer lines to complete their trip will be counted multiple times. Passenger miles incorporate the distance between stops, which adds to the expense of service. It is calculated as the average trip length times the total number of passengers carried.
  31. Another common metric for comparison is the fare recovery ratio (the percentage of operating expenses paid by passengers). While the MBTA's fare recovery ratio is nearly double the average RTA's fare recovery ratio, low ridership also makes it difficult to make these comparisons.
  32. "Excerpts from the Board," *MassBenchmarks* (May 2011).
  33. See Don Fullerton and Gilbert Metcalf, "Tax Incidence," *NBER Working Paper No. 8829* (March 2002).
  34. Georgia and New York have since added regional transportation payroll taxes. See "A Quiet Revolution in Transportation Finance: The Rise of Local Option Transportation Taxes." *University of California: Transportation Center*. 2003. 26
  35. Calculated from American Community Survey (2005-2009) using the median weighted average for municipalities within the MBTA service area.
  36. See Transportation Research Board of the National Academies, "The Fuel Tax and Alternatives for Transportation Funding," *Special Report 285* (Washington, DC: National Research Council, 2006).
  37. Although others argue this approach is no less equitable than the current reliance on the sales tax, and technology would enable policies to reduce rates for low-income drivers. See Genevieve Giuliano, "An Assessment of the Political Acceptability of Congestion Pricing," *Transportation* 19(4) (1992); "Curbing Gridlock: Peak-Period Fees to Relieve Traffic Congestion" (Washington, DC: Transportation Research Board, 1994).
  38. Genevieve Giuliano, "An assessment of the political acceptability of congestion pricing," *Transportation* 19(4) (1992); "Curbing Gridlock: Peak-Period Fees to Relieve Traffic Congestion," (Washington, DC: Transportation Research Board, 1994).
  39. Regional option taxes in other states typically sunset after 15 or 20 years after which reauthorization is required. See Wachs (2006).
  40. See for example, "Blue Ribbon Summit on Financing the MBTA and RTAs: Option Papers," (Boston, MA: Northeastern University Dukakis Center, 2010); Benjamin Forman and others, "Next Stop, Massachusetts: Strategies to Build the Bay State's Transportation Future and Keep our Economy Moving" (Boston, MA: MassINC, 2010).
  41. The Washington State Department of Transportation has developed two models: Cost Estimate Validation Process (CEVP) and Cost Risk Assessment (CRA). See "Risk Assessment and Allocation for Highway Construction Management" (Washington, DC: Federal Highway Administration, 2006).
  42. See for example, Ethan Kent, "From Place to Place: Shifting the Transportation Paradigm with Placemaking" (New York, NY: Project for Public Spaces).
  43. "Revitalizing Cities with Streetcars" (Project for Public Spaces, 2008).
  44. "Responses to 'A Desire Named Streetcar'" (Victoria, BC: Victoria Transport Policy Institute, 2006).
  45. "Seattle Streetcar Network and Feasibility Analysis" (Seattle, WA: Parsons Brinckerhoff, 2004).
  46. "Seattle Streetcar Network and Feasibility Analysis" (Seattle, WA: Parsons Brinckerhoff, 2004).
  47. "Harborpark: Kenosha, WI" (Project for Public Spaces, 2003).
  48. "Why Transit Oriented Development and Why Now?" (Washington, DC: Center for Transit-Oriented Development, 2007).
  49. "Lowell Trolley Study" (Lowell, MA: City of Lowell, 2011).
  50. "Recapturing Global Leadership in Bus Rapid Transit" (New York, NY: Institute for Transportation and Development Policy, 2011).
  51. *Ibid.*
  52. "The Amazing Revival of the Bicycle" (Project for Public Spaces, 2008).
  53. "Balancing Street Space for Pedestrians and Vehicles" (Project for Public Spaces).
  54. "City Has Guide for Building 'Complete' Streets" (New Haven, CT: New Haven Independent, 2010).
  55. "Municipal Transportation Plan for the City of Northampton" (Northampton, MA: Northampton City Council, 2005).
  56. John Fernald, "Roads to Prosperity? Assessing the Link between Public Capital and Productivity," *American Economic Review* 89(3) (1999); Ishaq Nadiri and Thefanis Mamuneas, "Contribution of Highway Capital to Industry and National Productivity Growth" (Washington, DC: Federal Highway Administration, 1996).
  57. Fernald (1999).





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