

# Building Massachusetts' Economy through Transportation Investment

*A Review of Potential New Funding Sources for Transportation*



*prepared for  
A Better City*

*prepared by  
Cambridge Systematics, Inc.*

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*Executive Summary*

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## **About A Better City**

A Better City (ABC) advances infrastructure investments, policy, and projects that are vital to sustaining and growing the Boston area's economy and ensuring that the metropolitan area remains one of the most dynamic and unique regions in the world. Comprised of leaders from business and major institutions, the ABC is focused on solving problems and developing strategies that ensure the continuity and progress of significant transportation, land development, and environmental initiatives.

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# Preface

Our transportation funding situation is dire, and if we do not take care of more than a century of investment in transportation infrastructure, we will lose the value of that investment, the economic benefits it facilitates, and the quality of life that it allows. That message is clear. The global financial crisis that has developed over the last few months will not change that – it will only make it worse.

The words to the right open the just-released report of a congressionally appointed commission tasked with addressing transportation across the nation. Massachusetts is not alone; but, regardless of national initiatives, we must take matters into our own hands.

This report has three sections. Section 1.0 describes the role that transportation plays in the Massachusetts and Boston metropolitan area economies, based on national, state, and local data, and interviews with industry leaders in the region. Section 2.0 summarizes the findings of the Massachusetts Transportation Finance Commission's report and changes that have occurred since. Section 3.0 provides an analysis of a menu of options that Massachusetts can select from for raising revenue to address the enormous gap in Massachusetts transportation funding.

Suggestions for how to increase the amount of revenue for basic transportation infrastructure are contained in this report. We reiterate the Massachusetts Transportation Finance Commission's recommendations that making project and program delivery more efficient is a top priority, but we also are clear on the need for new revenue. We lay out in stark terms that additional revenue means that someone, somewhere, somehow, someday has to pay more, and that there is no getting around that basic fact.

Therefore, in the face of billions in budget cuts, we present this report that provides a menu of options for closing the transportation funding gap in Massachusetts through revenue increases while recognizing the need for implementing reforms. Regardless of the path to economic recovery, we will need a healthy transportation infrastructure to take us there.

**The nation faces a crisis. Our surface transportation system has deteriorated to such a degree that our safety, economic competitiveness, and quality of life are at risk.**

*Paying our Way, A New Framework for Transportation Finance, Report of the National Surface Transportation Infrastructure Financing Commission, February 26, 2009*



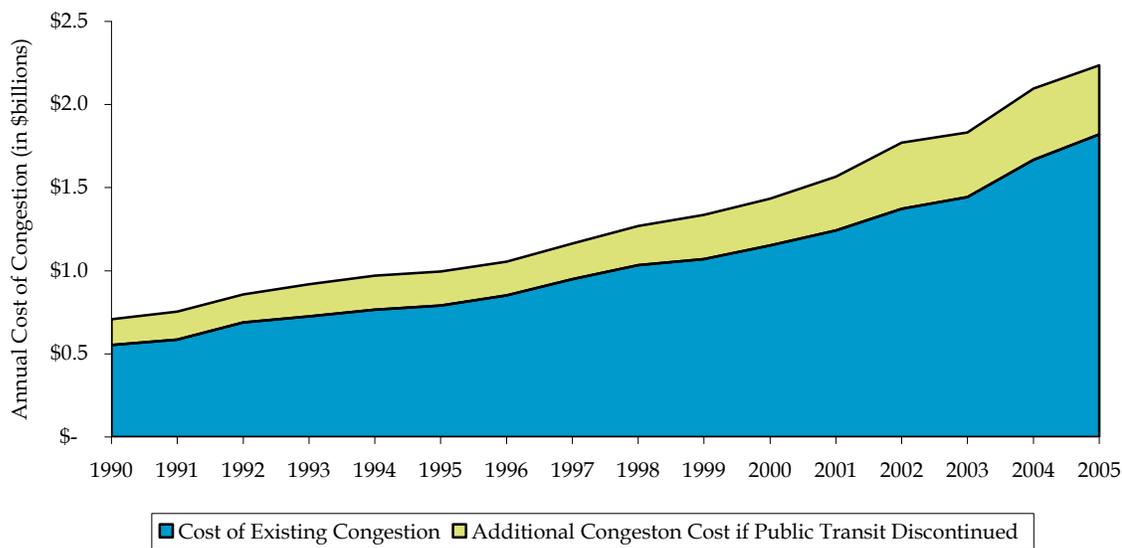
# Executive Summary

Transportation infrastructure plays a crucial role supporting the nation's and the Massachusetts economy. Investment in transportation increases capacity, improves service, reduces travel time, lowers trip cost, increases business access and mobility, and improves travel time reliability. Targeted investments in transportation also have been effective in improving the environment. For individuals, as well as for businesses, these improvements translate into greater productivity and better access to labor and markets, thereby making industries more competitive and enabling economic growth.

## ■ An Economic Imperative

There are economic benefits to be had both from the preservation of the existing transportation system and expansion of that system to both spur and accommodate future growth. Preservation is critical, because it preserves the value of investments made over the last century. Expansion is crucial for the long-term health of the economy. Investments to preserve and expand the transportation system reverberate throughout the economy, creating jobs and income. Not all transportation projects are the same, and to best use available dollars, projects should be evaluated and prioritized in terms of their transportation and economic impacts. The positive effects of transportation investments, as demonstrated by economic research on the topic (discussed in the main report), are predicated on the successful implementation of projects that make real improvements in connectivity, time savings, market expansion, and capacity. For example:

- The annual cost of congestion (the value of lost time to commuters and truckers) in the Boston metropolitan region mushroomed from \$553 million in 1990 to \$1.8 billion in 2005.<sup>1</sup>
- In the Springfield area, the cost of congestion reached \$71 million in 2005.<sup>2</sup>
- If public transit services ceased to exist, the annual cost of congestion would go up by more than \$400 million per year.<sup>3</sup>
- Nationally, the direct cost of highway bottlenecks for truckers is nearly \$8 billion annually.<sup>4</sup>



- Long-term population and economic growth in Massachusetts will put more vehicles on the roads and more people in the State's transit systems. Without sufficient investment, the State's transportation infrastructure is likely to be too hard pressed to handle this growth.
- According to the recent plan released by the Metropolitan Area Planning Council, Eastern Massachusetts employment is expected to grow by 234,000 through 2030 if recent trends continue, and could be 25 percent higher (293,000) if the investment and other objectives of the Metro Futures plan occur. The transportation system will need to keep pace with this growth.<sup>5</sup>
- About 22 million domestic and international visitors travel to Massachusetts annually and spend over \$14 billion at restaurants, hotels, retailers, and sites and attractions. Transportation is an important element of the traveler experience and difficulties with the system can denigrate the image of a destination, reducing their likelihood to return or to encourage others to travel.<sup>6</sup>
- In 2004, Logan International Airport's passenger and freight-related facilities contributed \$7 billion to the regional economy, in addition to the connections it makes for the industries that are drivers for Massachusetts economic growth.<sup>7</sup>
- Driving on roads in need of repair costs Massachusetts' motorists \$718 million annually - \$156 per driver - in extra vehicle operating costs, including accelerated vehicle depreciation, additional repair costs and increased fuel consumption and tire wear.<sup>8</sup>
- In total, Massachusetts roads, airports, rail lines, and ports move 234 million tons of freight on an annual basis to support the State's citizens and businesses. The value of

the goods moved by the Massachusetts transportation network annually is over \$375 billion.<sup>9</sup>

- The jobs, income, and sales generated by transportation construction projects act as a stimulus for the local economy, with each dollar of direct spending generating \$2.34 of total economic activity.<sup>10</sup>



- The American Road and Builders Association (ARTBA) estimates that a \$1 billion investment by state governments in transportation construction supports a total of 27,832 jobs.<sup>11</sup>

- Highway investments are estimated to have contributed approximately 25 percent of total productivity growth nationwide during the Interstate era.<sup>12</sup>

## Transportation Affects Economic Development

Transportation enables the Massachusetts economy to thrive by connecting workers to employers, linking businesses with suppliers and markets, and fostering the face-to-face business and nonbusiness interactions that are pivotal to making an economy based on innovation work. We interviewed a sampling of business leaders in Massachusetts, who told us that Massachusetts is attractive because it has a highly skilled workforce and resources for research, but also is expensive. Effective transportation infrastructure can play a role in reducing expenses by making areas with affordable housing more accessible, reducing gridlock, and easing the commute for workers. By pitching in to maintain our roadways and transit systems, we can individually save money on maintaining our motor vehicles as they endure less wear and tear. In the words of one of the business leaders we interviewed, “transportation infrastructure is a baseline for economic development affecting the decisions of outside investors and transportation problems will be considered when choosing a location.” Below, we present a few examples of how transportation affects economic development.

“We are terrified that something dire may happen to this bridge [Longfellow]. Our university has an unusually high transit mode share and we are very interested in public transit.” –  
*Theresa Stone, Executive Vice President and Treasurer, MIT.*

**Life Sciences Cluster** – Several industries, including higher education, finance, manufacturing, tourism, and healthcare comprise the pillars of the Massachusetts economy. In recent years, Massachusetts also has earned recognition as being at the center of arguably the world’s most advanced life sciences industry cluster. With just

over two percent of the U.S. population, Massachusetts accounts for 10 percent of National Institutes of Health research funding, 15 percent of life sciences patents, and companies headquartered in the State account for eight percent of the entire world's pipeline of new drugs.<sup>13</sup> The key to Massachusetts' success is a high concentration of life sciences assets, including academic medical centers, researchers, entrepreneurs, venture capitalists, biotechnology, medical device, and pharmaceutical companies. Transit provides this cluster with access to labor and mobility for face-to-face meetings while allowing it to build in a heavily urbanized environment. Without transit, the already congested Boston-Cambridge urban core would be in constant gridlock and the expansion of the life sciences industry in the area would be untenable. Competition for the life sciences industry is intense and transportation infrastructure is an issue, particularly with regards to labor access, that could push the industry to expand elsewhere.

**Davis Square** - The Red Line expansion to Somerville's Davis Square, opened in 1984, and has shown how a quick and convenient subway link to Boston's downtown can reinvigorate an inner suburban neighborhood. Located just over four miles from downtown Boston, Davis Square has attracted a diverse mix of restaurants, coffee shops, and cultural facilities. Davis Square's amenities and its accessibility also have attracted a number of software, architectural, marketing, and design firms - the types of professional services that bring high-wage jobs. According to the Somerville Assessor's Office, the value of properties nearby the Davis Square and Porter Square Red Line stations are 24 percent higher than the City average on a cost per square-foot basis.<sup>14</sup>

**South Boston Seaport District** - With the Back Bay and Financial District largely built-out, the South Boston Seaport District is considered Boston's growth frontier and one of the only areas within the urban core that can absorb substantial new growth. The growth and transformation of this area would not be possible without the transportation capacity provided by the completion of the Silver Line transit expansion and the direct connections to the Massachusetts Turnpike and Logan International Airport resulting from the Central Artery/Tunnel Project ("Big Dig"). The development of the South Boston Seaport, situated on 1,000 acres just to the east of the Financial District, will be a crucial component of Boston's competitiveness and long-term success as a global business center and convention venue.

## ■ Scope of the Transportation Funding Problem

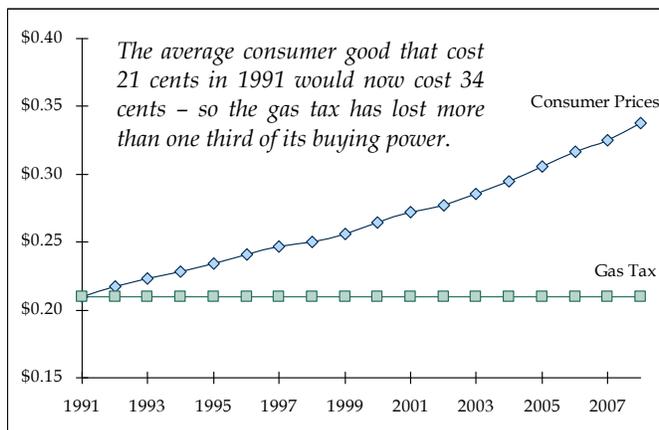
Despite its importance to the Massachusetts economy, transportation has been vastly underfunded for decades. The well intentioned efforts of today's transportation officials are thwarted by the legacy of past choices, leaving untenable funding problems in virtually every state transportation agency. The stark picture was brought into sharp focus by the Massachusetts Transportation Finance Commission's two reports

"In order to have a 21<sup>st</sup> century economy and to be competitive internationally, you need a first class transportation system" - *Gillette representative.*

in 2007. While reforms are clearly needed to make more effective use of revenue from current sources, it is just as clear that new revenues are needed.

There has been progress on a few fronts with respect to addressing some of the thorny issues identified in the Commission's report, especially on the cost-saving side. The Commission's report suggested, however, that cost savings could only close about \$2.5 billion (over a 20-year period) of the expected \$15 to \$19 billion funding gap.<sup>15</sup> The rest of the gap requires new revenue. In addition, the cost situation has only become worse; the credit crunch has brought new challenges to issuing debt, increasing the gap on that score. The decline in driving and shift to more fuel efficient cars is further depressing gas tax revenue (which funds highway programs), and the recession is depressing sales tax revenue (which funds the MBTA).

There have been no new revenues instituted since the Commission's report, although the three bond bills have provided some short-term revenue, they must be paid off somehow by future revenue streams.

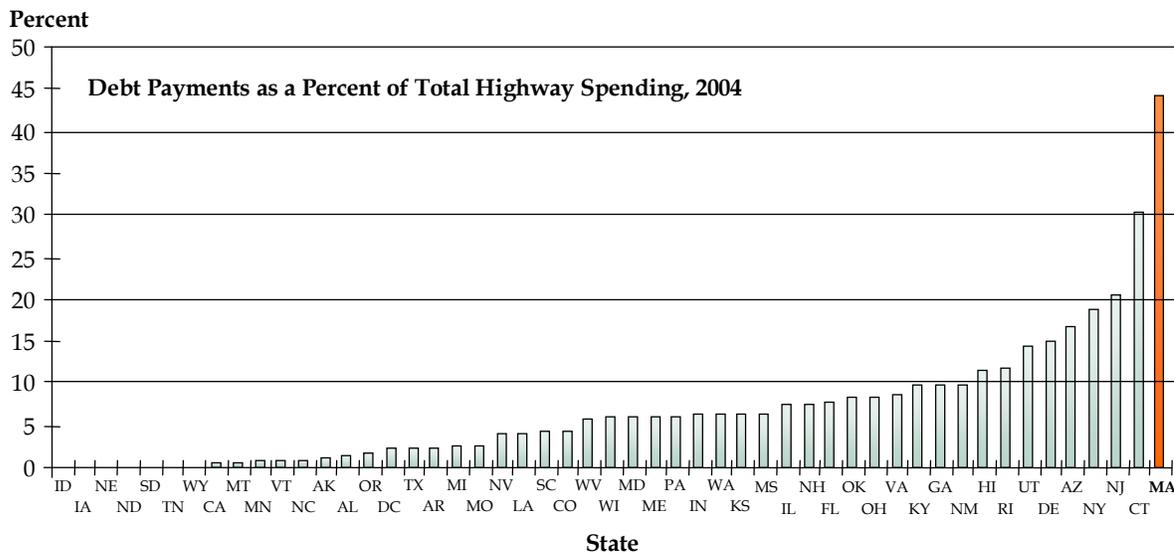


The bridge bond bill, which accelerates bridge projects, should save money in two ways – first by reducing cost increases due to inflation, and second by fixing problems before they get even worse (and more expensive to fix). The average consumer good that cost 21 cents in 1991 would now cost 34 cents – so the gas tax has lost more than one-third of its buying power. There have been proposals for toll hikes and gas tax hikes, but only the toll hikes have been adopted to date.

Although we have not recalculated the Transportation Finance Commission's estimate of the transportation funding gap in Massachusetts, we can confidently state that the gap is even wider today. There are numerous examples of the financial difficulties that each of our State's transportation agencies face, but these two, in particular are illustrative:

- In FY 2006, 65 percent of MassHighway operations were funded by capital dollars, 80 percent of which comes from 20-year bonds. As a result of this practice over many years, Massachusetts spends more of its highway dollars on debt service than any other state (44 percent in 2004).<sup>16</sup>
- The MBTA is facing an operating deficit of \$160 million in FY 2010, and has resorted to paying some employee costs out of capital bond funds. The deficit is forecast to be a cumulative \$357 to \$438 million through FY 2013.<sup>17</sup>

**In 2004, Massachusetts spent a higher share of its highway dollars on debt service than any other state.**



Source: *Transportation Finance in Massachusetts: An Unsustainable System*, Findings of the Massachusetts Transportation Finance Commission, March 28, 2007.

While the anticipated Federal stimulus money may help in the short term, it will not do anything to solve the long-term financial problems facing the State’s transportation system.

**■ Revenue Options for the Future**

In the final section of this report, we explored the potential for increased funding for transportation through increasing the rates of existing revenue sources, as well as opportunities for new revenue sources. We do not make recommendations – rather, we lay out the information to inform the public debate.

There are a few basic points that are helpful to keep in mind when thinking about potential revenue sources for transportation:

While the anticipated Federal Stimulus money may help in the short term, it will not do anything to solve the long-term financial problems facing the State’s transportation system.

- Revenue is necessary in order to adequately maintain, operate, and expand our transportation system. If money is to be spent on a needed transportation project, then revenue must be raised to pay for it.
- Innovative finance can stretch revenue dollars further, but does not eliminate the basic need for a revenue source.

- Debt is appropriate for long-lived capital projects where future generations benefit from today's expenditures. Debt may appear as revenue on this year's balance sheet, but it will have to be paid back, requiring a source of revenue. Debt is not revenue.

We evaluated a variety of tax and fee approaches, considering criteria such as the revenue yield and stability; cost efficiency; equity; economic efficiency; technical feasibility; and political acceptability. We also suggested that elected officials should consider whether the taxes or fees they impose to pay for transportation help or hurt achieving objectives such as: funding the transportation system; encouraging desirable land use patterns (however those may be defined); encouraging reduction in air and noise pollution and greenhouse gas emissions; and being fair to those paying and those receiving benefits.

We evaluated potential adjustments to current revenue sources, such as increasing the motor fuel tax, indexing the motor fuel tax to inflation, increasing vehicle registration and license fees, increasing tolls on existing toll roads and putting tolls on roads that currently are untolled and others. We also looked at potential new sources, such as a sales tax on motor fuels, mileage fees, engine displacement/emissions fees, income taxes, payroll taxes and parking taxes. Our evaluation of potential revenue sources is summarized below:

- **Yield, Adequacy, and Stability** - While some revenue sources appear to provide a stable revenue stream over the long term, some are highly dependent on the economic climate, such as sales taxes and motor fuel taxes, with revenues declining during a recession as economic activity slows down. One of the reasons for the MBTA's current financial problems is the underperformance of the sales tax over the past decade. In addition, the purchasing power of motor fuel taxes tend to decline over time if not adjusted to inflation and it is further eroded by improvements to fuel efficiency of the vehicle fleet.
- **Cost Efficiency** - Of existing and proposed transportation revenues, motor fuel taxes are the most cost-efficient, with a lower number of collection points and low administrative costs. Tolls and vehicle fees, on the other hand, have high administrative costs, in many cases taking over 20 percent of the levies. In the case of tolls, cost efficiency might be improved through the implementation of electronic toll collection systems that completely eliminate cash transactions, but costs will still be considerably higher than motor fuel taxes.
- **Equity** - No tax or fee is perfectly equitable or fair. All have issues that relate to who pays and who benefits. Motor fuel taxes, sales taxes, tolls, and vehicle fees are regressive in that low-income households spend a higher percentage of their income on these taxes, in contrast to income taxes, which are considered progressive because everyone pays according to their income. The equity impacts of a motor fuel tax, however, can be offset by the use of such taxes for funding public transportation. According to Barry Bluestone at Northeastern University's Kitty and Michael Dukakis Center for Urban and Regional Policy, "1 in 9 Massachusetts households does not own a motor vehicle and will pay nothing" and that "half of all subway and rail users and 2/3 of bus riders are from households earning less than \$50,000 annually".

- **Economic Efficiency** – Fees that relate to usage such as the motor fuel tax and tolls are the most economically efficient because they are associated with the actual use of the transportation system, and the rates could be set such that the user pays for their impact on the transportation system (e.g., heavy vehicles and frequent users paying higher fees based on actual road use and wear). Vehicle fees and motor fuel taxes, although collected from transportation users, send weak signals as to the cost of using the transportation system. Other revenue sources, such as sales taxes, property taxes, and income taxes are rated low in this criterion, because there is no direct connection between the revenues and the use of the transportation system.
- **Technical Feasibility** – Existing revenue sources like the gas tax and tolls, are more technically feasible as collection systems already are in place, and new revenue sources can be cost-efficient if they can piggyback onto existing collection systems. Over time, some of the revenue sources that scored the lowest in this criterion could become feasible as they are implemented in other states or levied at the national level (e.g., VMT fees), and as new technologies become available.
- **Political Acceptability** – Most of the existing and proposed transportation revenue sources were rated Medium, as political acceptability is variable and is difficult to assess without considering the political environment at the moment of debating whether they should be implemented. Changing the rate or method at which existing sources are collected is typically easier to do than introducing entirely new collection mechanisms.

In summary, the portion of the Massachusetts motor fuel tax devoted to transportation improvements has not been raised since 1991, and that tax buys one-third less than it did then. During that same period, we have neglected to adequately maintain our transportation system, meaning that fixing the system has become ever more costly, and we have resorted to debt to cover current operating expenses, digging an ever deeper hole. The Federal stimulus package will provide a welcome infusion of cash today, but is not a sustainable solution for our enormous needs. This means that action is needed to make the most efficient use of our resources through reforms and to provide additional revenue to preserve and enhance the transportation system that is so vital to a healthy economy.

### Transportation Funding Sources Evaluated

#### Current Transportation Revenue Sources

- Motor fuel excise (per gallon) tax;
- Motor fuel tax, index to inflation;
- Vehicle registration and license fees;
- Raise existing tolls;
- Toll other highways;
- Transit fees (passenger fares, park-and-ride, etc.);
- State sales tax; and
- General fund.

#### Potential New Revenue Sources

- Sales tax on motor fuels;
- Other motor fuel taxes;
- Personal property tax on motor vehicles;
- Excise tax on vehicle sales;
- VMT fees;
- HOT lanes;
- Container fees;
- Engine displacement and emission fees;
- Parking taxes;
- Property taxes;
- Personal income tax;
- Payroll taxes;
- Carbon taxes;
- Development impact fees;
- Local option sales taxes;
- Joint development fees; and
- Public private partnerships.

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## ■ Sources

- <sup>1</sup> Texas Transportation Institute, *2007 Annual Urban Mobility Report*.
- <sup>2</sup> *ibid.*
- <sup>3</sup> *ibid.*
- <sup>4</sup> FHWA, *Freight Bottlenecks on Highways*. Prepared by Cambridge Systematics, Inc., 2005.
- <sup>5</sup> Data prepared by the Central Transportation Planning Staff (CTPS), April 2008. Transportation improvements in the plan represent the full implementation of the Executive Office of Transportation's State Implementation Plan (SIP), including expanded transit station parking, the Red Line-Blue Line Connector, and Green Line extension
- <sup>6</sup> Massachusetts Office of Travel and Tourism, calendar year 2006.
- <sup>7</sup> Massport Economic Impact Report, 2006. The economic impacts are for businesses that operate on Massport properties
- <sup>8</sup> *Future Mobility in Massachusetts: Meeting the State's Need for Safe and Efficient Mobility*, June 2008  
Prepared by TRIP
- <sup>9</sup> Federal Highway Administration, *Freight Analysis Framework*, 2002.
- <sup>10</sup> Industry output multiplier based on the U.S. Department of Commerce's input-output accounts modified to reflect federal-aid highway construction projects. Model developed by the Boston University Center for Transportation Studies for the Federal Highway Administration
- <sup>11</sup> Includes actual construction jobs, those in industries that supply materials and services to construction projects, and jobs that are supported when those employed at the construction site or in supplier industries spend their incomes. ARTBA Economics and Research, November 2008
- <sup>12</sup> Ishaq Nadiri and Theofanis Mamuneas, *Contribution of Highway Capital to Industry and National Productivity Growth*. U.S. Department of Transportation, Federal Highway Administration, Office of Policy Development. Washington, D.C., 1998.
- <sup>13</sup> MassBiotech and Massachusetts Technology Collaborative
- <sup>14</sup> In 2004, the cost per square foot of residential space was \$73.20 in the parts of Somerville in proximity to the Red Line stations. This compares to a \$59.18 average for the City
- <sup>15</sup> Massachusetts Transportation Finance Commission, *Transportation Finance in Massachusetts: An Unsustainable System*, [http://www.eot.state.ma.us/downloads/tfc/TFC\\_Findings.pdf](http://www.eot.state.ma.us/downloads/tfc/TFC_Findings.pdf), March 2007
- <sup>16</sup> *Transportation Finance in Massachusetts: An Unsustainable System*, Findings of the Massachusetts Transportation Finance Commission, March 28, 2007
- <sup>17</sup> Massachusetts Public Interest Research Group, *Derailed By Debt*, Fall 2007, [http://www.masspirg.org/uploads/\\_5/1M/\\_51MmCAMJhbc0\\_WD6dElFw/MASS-MBTA-Funding-1.3.pdf](http://www.masspirg.org/uploads/_5/1M/_51MmCAMJhbc0_WD6dElFw/MASS-MBTA-Funding-1.3.pdf).



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