Making the Shift:

How TMAs in Massachusetts Leverage Private Sector Resources to Achieve State Goals and Public Benefits

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For
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Executive Summary

There are more than 125 Transportation Management Associations (TMAs) in the U.S., which range widely in size, scope, and structure. They differ in their offered services, funding mechanisms, and memberships and partnerships. Despite their diversity, however, TMAs have become important players in transportation demand management (TDM) efforts in Massachusetts and across the nation at the state, regional, and local levels

TMAs in Massachusetts provide services to more than 300 companies and property owners in 40 municipalities. Since 2004, Massachusetts' TMAs have collaborated through MassCommute, their professional association. MassCommute is a platform for TMAs to share best practices; coordinate advocacy, outreach, and programming efforts; and promote the work of the TMAs as a collective whole. **The role of MassCommute is distinctive; no other state possesses such an organization**. In 2008, MassCommute negotiated a memorandum of understanding (MOU) with the State to provide base funding for all of its member TMAs. TMAs use this public funding—$50,000 annually—to leverage private and institutional funds through their memberships and partnerships to improve transportation opportunities for commuters. **Since 2009, Massachusetts TMAs have leveraged $2.9 million in public funds with $75,850,826 in private funds (including shuttle investments), making TMAs an excellent return on investment for public dollars.**

Key Benefits TMAs Deliver to Massachusetts

- Reduce vehicle miles traveled (VMT) and greenhouse gas emissions
- Leverage private and institutional investments in local TDM
- Save commuters time and money
- Drive demand for public transit
- Reduce single occupancy vehicle (SOV) trips
- Mitigate traffic congestion
- Deliver savings to state and local communities on road maintenance
- Encourage biking, walking, and ridesharing
- Design and implement transportation initiatives
- Enhance, promote, and complement MassRIDES
- Add value to state and local policies by improving designs and supporting implementation

TMAs in Massachusetts support and advance the state's transportation and climate policies and programs, such as: the Global Warming Solutions Act, Healthy Transportation Compact, GreenDOT Policy and Mode Shift Goal, Rideshare Regulation, and MassRIDES. **In 2014, TMAs in Massachusetts collectively helped reduce vehicle trips by 7,006,265, or about 110 million miles, which is equivalent to taking nearly 9,000 cars off the road.[i] This impact relates to approximately 42,000 tons of CO_2 reduction**.

Massachusetts' TMAs provide significant benefits to commuters, employers, transit agencies, municipalities, and the state. Along with state and employer programs, TMAs form an efficient statewide network of TDM delivery. These "three tiers of effective TDM"—regional, local, and employer-specified TDM programs—should not be perceived as competitors but as partners who collaborate to establish and support a complementary network of transportation options throughout the Commonwealth. TMAs are the local experts, advocators, and implementers employed in heavily trafficked areas to promote multi-modal commuter options, mitigate congestion, and improve the local environment and economy.

To build upon the successes of TMAs in Massachusetts, MassCommute offers the following recommendations:

- Expand and Enforce Existing Trip Reduction and Congestion Mitigation Policies.
- Utilize TMAs to Achieve State Transportation and Climate Goals.
- Enhance Coordination between the Statewide Travel Options Program and TMAs to Maximize Private Investment, Avoid Duplication of Service, and Increase Overall Effectiveness of TDM Programs.
- Employ TMAs to Pilot Transportation Initiatives Based on the Ability to Reach Commuters and Build on Existing Relationships With Area Workplaces and Employers.
- Dedicate State Funding to Leverage Private Sector Funding for Existing and Future TMAs.

I. What is a TMA?

According to the Community Transportation Association of America, more than 125 transportation management associations (TMAs) are now operating in the United States.[ii] Despite their prevalence, there is no single, universally-accepted definition of a TMA. Organizational structure, legalities, service offerings, and membership composition all contribute to various definitions of TMAs. Many contextual factors, including local transportation services and challenges, public policies, and stakeholders, also shape TMAs into unique and differing structures.

Several national and local transportation organizations and agencies have posited their own definitions of a TMA. These definitions share common elements, namely that TMAs promote transportation demand management (TDM). Notable definitions of TMAs include the following:

> Transportation Demand Management (TDM) encompasses an array of strategies, such as commute trip reduction activities, parking management, rideshare matching, and shuttle services, aimed at increasing the efficiency of transportation systems.

- "An association of public and private entities concerned with traffic congestion and transportation issues in a specific geographic area. TMAs allow businesses to pool their resources in executing commuter support strategies. The TMA may also act in an advocacy role with local government on behalf of its membership."[iii]
  —Transportation Research Board of the National Academies.
- "An organized group applying carefully selected approaches to facilitating the movement of people and goods within an area. TMAs are often legally constituted and frequently led by the private sector in partnership with the public sector to solve transportation problems."[iv] —The National Center for Transit Research.

"Independent organizations formed and governed by their members who may include employers, developers, and property owners/managers in partnership with government entities. They work with stakeholders to establish policies, programs, and services to address local transportation needs. TMAs realize their potential to reduce traffic congestion, improve air quality, and support economic development in their service areas through transportation demand management (TDM) strategies such as ridematching. TMAs advocate on behalf of their members for multimodal transportation system improvements and enhancements that improve access and mobility. TMAs are established within defined geographic areas to address the transportation needs of their members. As public-private partnerships, TMAs are funded through a combination of private sector funding (membership dues, fees, and grants) leveraged by private funding."

MassCommute

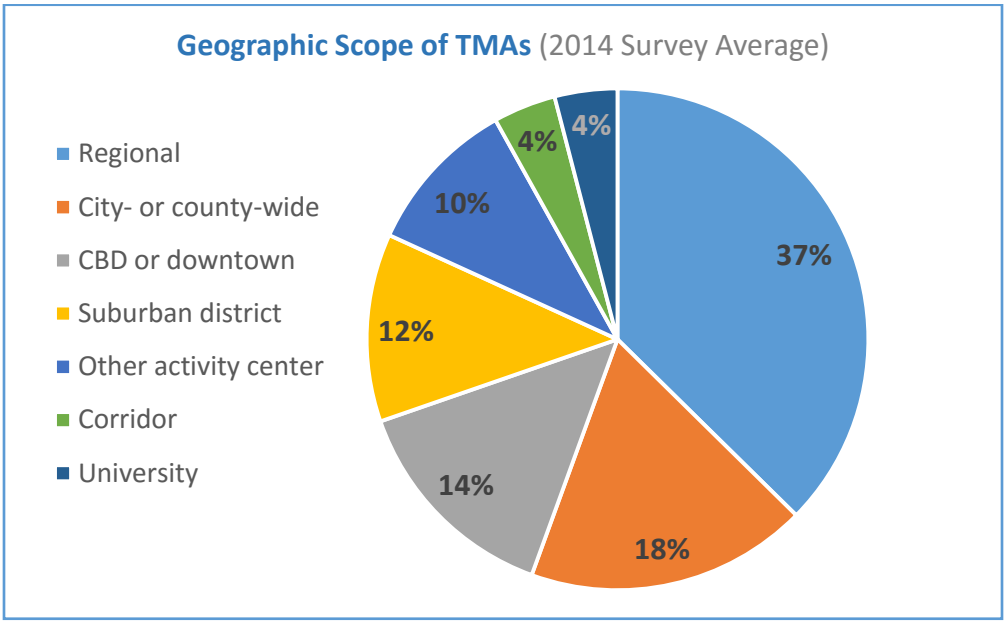
Characteristics of TMAs

The Center for Urban Transportation Research, UrbanTrans, and the TMA Council of the Association for Commuter Transportation regularly conduct surveys of TMAs to better understand their organizational characteristics.[v] The 2014 TMA Survey revealed the following:

Purpose and Focus

- The key motivations of TMAs are: improving the viability of non-SOV access, congestion, collaboration/efficiency, general growth trends, and climate change.
- The majority of TMAs cited commuters as the population they most target with their services. Others focus on students, residents, shoppers, and visitors.
- TMAs serve a range of geographic scopes, ranging from regional (37%) to downtown or a specific business district to university.

A Single-Occupancy Vehicle (SOV) is a motor vehicle occupied solely by its driver.



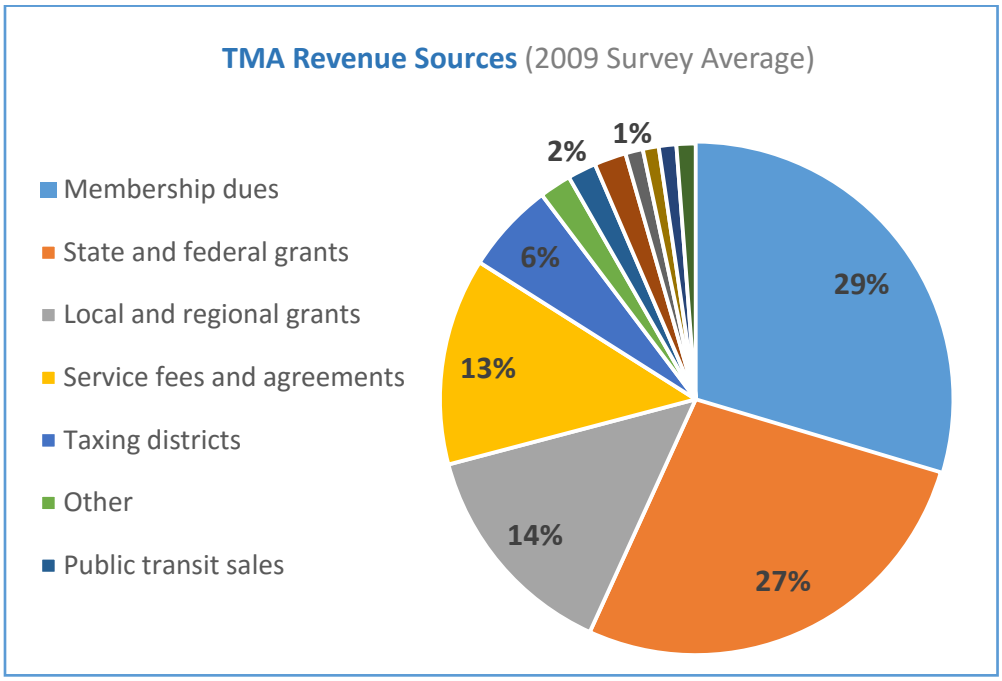
Services

- The top services provided by TMAs are guaranteed/emergency ride home programs, promotional materials and events, rideshare matching, employer transportation coordinator (ETC) training, cycling program assistance, newsletters and social media, advocacy, subsidized transit passes, and telework assistance.
- 22 percent of TMAs provide members with a shuttle or transit pass.

Structure and Composition

- Nearly all TMAs have members from multiple types of organizations. The most prevalent organizational members are: private sector employers, government agencies, property managers and developers, and non-profit organizations.
- More than 80 percent cited that all organizational participation in their TMA is voluntary.
- Nearly 40 percent of TMAs are a subsidiary, or internal department, of a parent organization, such as a local government agency, business association, or public transit organization.

Budgets and Funding Sources

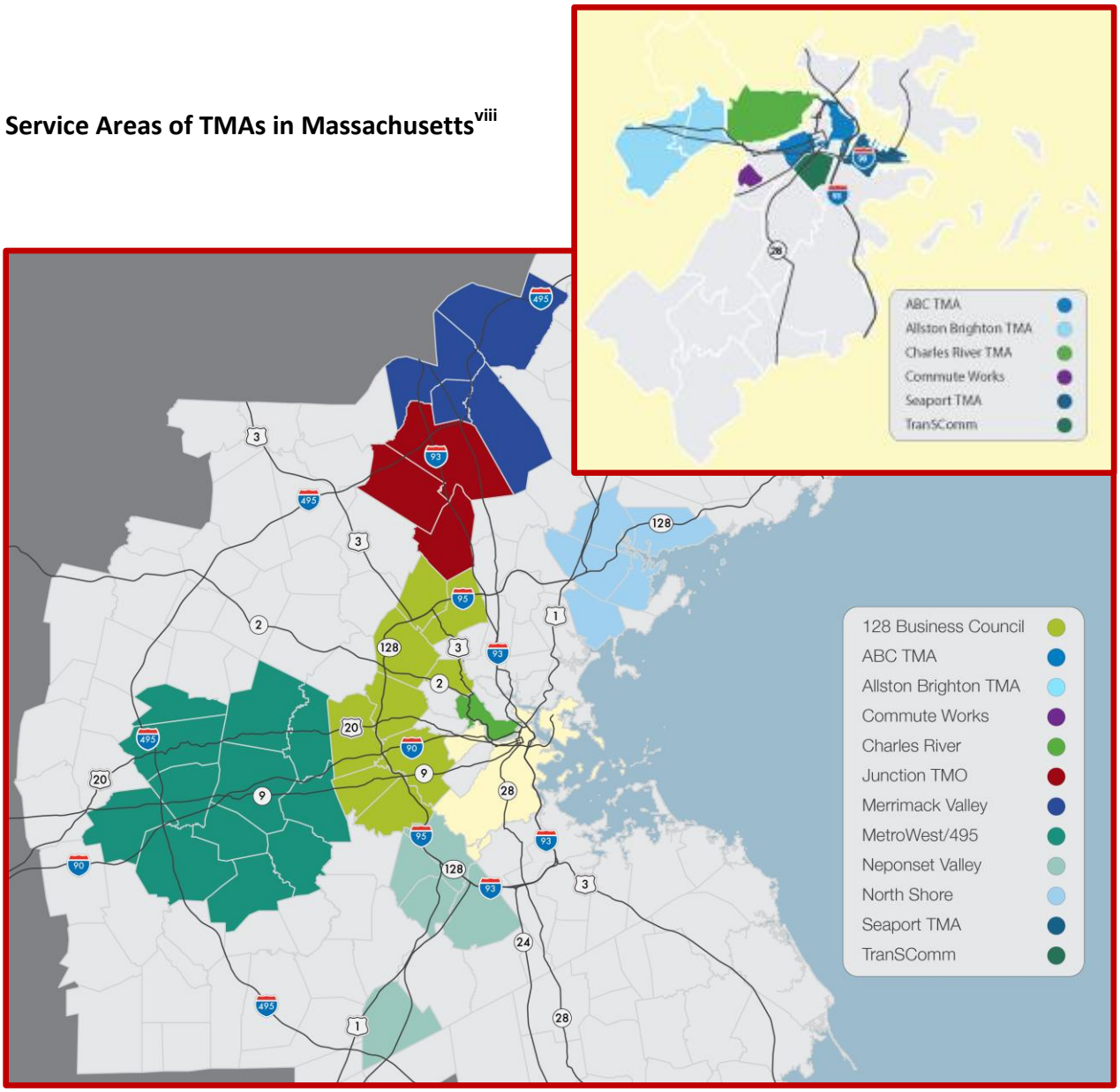


- TMAs rely on a mix of revenues, primarily including: membership dues (29 percent), state and federal grants (27 percent), local and regional grants (14 percent), and service fees and agreements (13 percent). Additional revenue sources include: taxing districts, other, public transit sales, shuttle or transit revenue, advertising and sponsorships, other grants, parking fees, and vanpool revenues.[vi]
- Respondents' annual budgets range from less than $50,000 to more than $5 million. More than half of TMAs reported an annual budget between $100,000 and $499,999.

II. TMAs in Massachusetts: Model and Benefits

There are currently 12 TMAs in Massachusetts that are part of the statewide TMA council, MassCommute (*Appendix A*). Collectively, they provide services to more than 300 companies, buildings, and property owners in 40 municipalities across the Commonwealth.[vii] These TMAs are located in downtown areas, suburban office parks, and along major roadways and corridors. They serve hospitals, universities, large financial institutions, small nonprofits, supermarkets, biotechnology facilities, governmental entities, and many other employers, representing over 270,000 commuters.

Service Areas of TMAs in Massachusetts[viii]



History of TMAs in Massachusetts

Massachusetts' first TMA, the 128 Business Council, was established in 1987 as a response to a transportation impact study of an increasingly congested section of Route 128 West. Local businesses formed the TMA to mitigate traffic in the area and provide member employers with more environmentally friendly transportation options. As the 128 Business Council ramped up its membership and services in the ensuing years, other TMAs began to form in Boston neighborhoods and surrounding suburban areas. The impetus for establishing these organizations included increased traffic congestion, plans for major new development, or (in several cases) some combination of the two.

CommuteWorks, the Longwood Medical and Academic Area TMA formed by MASCO began in 1989 with a Federal Urban Mass Transit Administration (UMTA) grant to boost alternatives to driving alone in a rapidly developing 215-acre combined urban campus of hospitals, colleges, cultural and research institutions.

In 1991, companies and institutions located in the increasingly congested Boston Medical Center area established Transportation Solutions for Commuters, Inc. (TranSComm) TMA to coordinate transportation education and opportunities in their neighborhoods. The Neponset Valley TMA was formed in 1995 after employers at the Canton Commerce Center joined together to launch the RaiLink Shuttle to transport employees from Quincy Adams Station to businesses on Dan Road in Canton. In 1996, A Better City TMA (ABC TMA), then known as the Artery Business Committee, and the Seaport TMA were formed to represent the interests of downtown and South Boston Waterfront employers for multi-modal commuter transportation planning and implementation efforts during the Central Artery/Tunnel project, better known as the *Big Dig.*

History of TMA Funding in Massachusetts

In addition to private-sector employer interest and investment, federal funding and new public policies related to TDM also helped lay the groundwork for establishing TMAs in the late 1980s and early 1990s. In the mid-1980s, the Federal Transit Administration (then the Urban Mass Transportation Administration) launched the Suburban Mobility Initiative, which provided grants to organizational partnerships engaged in TDM implementation in suburban areas. The program was intended to "promote the development of new institutional arrangements that encourage innovative plans toward solving suburban mobility problems… [and] to stimulate public/private financing options towards new transit development."[ix] This funding was augmented by federal and state air quality and congestion funding initiatives. Meanwhile, cities, developers, and landowners also began entering into fee-for-service commuter trip reduction agreements with TMAs.

During this same period, environmental and transportation regulations also began to support TDM strategies and goals. The U.S. Environmental Protection Agency's amendments to the Clean Air Act in 1990 included an Employee Commute Options provision, which required large employers in areas with poor air quality to reduce SOV use through TDM measures. The Intermodal Surface Transportation Efficiency Act of 1991 codified TDM as a regional congestion planning mechanism and supported a multi-modal approach to transportation planning nationwide. The Act also authorized the Congestion

Mitigation and Air Quality (CMAQ) Improvement Program, which provided federal grant funding for environmentally motivated transportation projects to be distributed by state transportation departments and metropolitan planning organizations.

CMAQ funding proved to be a critical resource for establishing or enhancing programs of nearly all of Massachusetts' TMAs. However, by 2000, Massachusetts' CMAQ program funds were reduced in size and combined with TDM funds. These alterations fostered competition between municipalities, TMAs, and other transportation programs in their efforts to secure funding from a diminishing source.

MassCommute

During the late 1990s, directors of Massachusetts TMAs began to meet several times each year to collaborate and strategize on optimal organizational roles and partnerships. This informal council enabled TMAs to closely coordinate on outreach and programmatic efforts. TMAs were also better able to advocate for funding by demonstrating their value in terms of their collective membership bases, investments leveraged from the private and institutional sectors, transportation and environmental impacts, and extensive network of community-based knowledge.

In 2004, this informal council of TMAs became MassCommute, a 501(c)(4) nonprofit organization. MassCommute's mission is to:

> "*Collaborate, Advocate, and Inform*. MassCommute works collaboratively with state agencies and other partners to develop programs and events aimed at promoting Transportation Demand Management (TDM) measures; advocates on behalf of TMA members on important legislation and regulatory reform issues that impact our members and their employees; and informs TMAs about important state-wide and federal transportation issues affecting their member organizations."[x]

Through MassCommute, the state's TMAs signed a memorandum of understanding (MOU) with MassDOT and the State Executive Office of Transportation and Public Works to foster efficiency and avoid overlap in delivering the commuter transportation services in Massachusetts. The MOU assigned $25,000 in funding to each Massachusetts TMA for 2008 and an additional $50,000 for 2009. Follow-on MOUs were signed in 2010 and 2014 to continue state funding to TMAs until December 31, 2015.

Although formed over a decade ago, MassCommute remains the only known state association of TMAs in the United States. MassCommute allows TMAs to coordinate events, programs, and outreach activities across the state, and facilitates mutual support by sharing best practices and marketing materials. Its notable programs include the MassCommute Bicycle Challenge, which celebrated its 20th anniversary in 2014, and its ongoing cooperation and partnership with state agencies to host and promote Car-Free Week, now known as the Massachusetts Clean Air Challenge, and the annual Excellence in Commuter Options (ECO) Awards.

Massachusetts' Transportation and Climate Initiatives

Massachusetts is a national leader for implementing progressive and ambitious climate policies and programs. In particular, the state is widely recognized for its leadership in working to promote energy efficiency and renewable energy, and reduce its greenhouse gas (GHG) emissions. Rising concentrations of greenhouse gases, including carbon dioxide (CO_2), in the atmosphere have instigated climate change in Massachusetts and around the world, such as increasing temperatures, rising sea levels, and more frequent severe weather events. In Massachusetts, the leading source of GHG is the transportation sector.[xi] Consequently, the state has implemented numerous policies and programs toward reducing transportation-related GHG emissions, and promoting a transportation system that is efficient, healthy, and multi-modal.

Massachusetts Global Warming Solutions Act (GWSA)

Enacted in 2008, the GWSA established mandates for GHG emission reductions in accordance with leading climate science and provided a framework for addressing climate change in the Commonwealth. Specifically, the GWSA requires GHG emissions to be reduced 25 percent below 1990 levels by 2020 and 80 percent by 2050.[xii] Pursuant to the GWSA, the Massachusetts Executive Office of Energy and Environmental Affairs published the *Clean Energy and Climate Plan for 2020*[xiii] in 2010. The Plan advocated for reducing vehicle miles traveled by supporting public transit and improving infrastructure to encourage walking and biking. Under the Plan, the transportation sector is tasked with meeting 7.6 percent of the total 25 percent GHG reduction goal for 2020.

Healthy Transportation Compact (HTC)

Signed in 2009, the Healthy Transportation Compact (HTC) is an inter-agency initiative to "achieve positive health outcomes through the coordination of land use, transportation, and public health policy."[xiv] Members of the Compact include the Secretary of Transportation, Secretary of Health and Human Services, Secretary of Energy and Environmental Affairs, Secretary of Housing and Economic Development, MassDOT Administrators, and the Commissioner of Public Health. The HTC is tasked with reducing GHG emissions, increasing bicycle and pedestrian travel, implementing a policy of complete streets for all users, and initiating public-private partnerships that support healthy transportation.[xv]

GreenDOT Policy and Mode Shift Initiative

Massachusetts' GreenDOT Policy Directive emerged as a result of the GWSA, the HTC, and other environmental stewardship policies. Launched in 2010, GreenDOT is a comprehensive sustainability initiative with three primary goals: reduce GHG emissions; promote health transportation options; and support smart growth development.[xvi] The subsequent 2012 GreenDOT Implementation Plan presents a series of tasks and targets toward these objectives, including the Mode Shift Goal, which aims to triple the share of bicycling, transit, and walking throughout the Commonwealth by 2030. Other stated goals and tasks include: increase the efficiency of transportation systems operations for improved air quality; increase bicycle parking and access to transit to facilitate a multi-modal transportation system; encourage walking, biking, and transit as active transportation; expand commuter options programs; and collect data regarding factors influencing mode choices.[xvii]

Massachusetts Environmental Policy Act (MEPA) / Transportation Impact Guidelines (TIA)

Any project that requires a permit, financial assistance, or a land transfer from a state agency is subject to the Massachusetts Environmental Policy Act (MEPA), which mandates that such projects "take all feasible measure to avoid, minimize, and mitigate damage to the environment."[xviii] Assessment for MEPA related to transportation is subject to the Transportation Impact Guidelines (TIA), established by MassDOT and the Massachusetts Executive Office of Energy and Environmental Affairs. Consistent with the GWSA, GreenDOT, and the Healthy Transportation Compact, the TIA emphasizes commitment to multi-modalism by requiring that project representatives analyze bicycle, pedestrian, and public transit access and implement a TDM program (through engagement with TMAs, if applicable). The TIA explicitly states: "Proponents should note that MassDOT expects them to maximize project-generated travel by non-single-occupancy vehicle (non-SOV) modes by maximizing transportation choice, providing robust connectivity for non-SOV modes, and promoting Transportation Demand Management."[xix]

Massachusetts Rideshare Regulation

The Rideshare Regulation (310 CMR 7.16), part of Massachusetts' Air Pollution Control Regulations, requires large facilities to develop plans toward reducing SOV trips by 25 percent. Aside from setting goals and tracking their progress, facilities subject to the regulation must also implement, publicize, and maintain incentives for alternate transportation modes, such as: carpool and vanpool matching, preferential parking, bicycle incentives and infrastructure, and transit information and services.[xx] The Massachusetts Department of Environmental Protection implements the Rideshare Regulation.

MassRIDES

MassRIDES is the statewide commuter options program that aims to reduce traffic congestion, improve air quality, and increase mobility. MassRIDES is overseen by the Massachusetts Department of Transportation and is currently implemented by contracting firm, AECOM. The program provides companies and institutions around the state with commuter options services, including but not limited to: marketing and educational materials, ridematching and vanpool formation, and guidance on implementing commuter benefit programs and incentives. Through an agreement with MassCommute, MassRIDES provides a guaranteed ride home program to vanpoolers and employees at partner locations outside of TMA service areas. NuRide, its web-based tool, facilitates ridematching and issues travel rewards. Its Safe Routes to School program encourages students and parents to walk or bike to school by providing partnering schools with: technical assistance, implementation, marketing, and evaluation services. With funding from the state and federal government, MassRIDES' services are provided at no cost to partnering organizations. At present, more than 300 Massachusetts organizations are partnered with MassRIDES.[xxi]

Municipal Transportation Policies and Programs

Many Massachusetts municipalities have implemented their own policies to augment the state's transportation and air quality initiatives. For example, under the City of Boston's zoning code, developers of large projects (50,000 square feet) must enter into a Transportation Access Plan Agreement (TAPA) with the city's Transportation Department. Intended to decrease auto-use, ensure transportation accessibility, and engage the local community, TAPAs require developers to implement TDM measures, such as:

- Membership in a Transportation Management Association,
- Promoting and subsidizing public transportation,
- Reducing parking supply and increasing parking fees,
- Facilitating carpooling and vanpooling,
- Encouraging bicycling, and
- Improving pedestrian, bicycle, and public transportation facilities.[xxii]

Similarly, the City of Cambridge's Parking and Transportation Demand Management (PTDM) Ordinance requires developers of non-residential projects that will result in additional parking spaces to implement TDM measures, and in some cases, commit to reducing the mode-share of SOVs.[xxiii] The city's zoning code also requires bicycle parking as part of new development in an effort to "support the ongoing viability of bicycle travel as a transportation option that mitigates the impacts of automobile use."[xxiv]

TMAs Support Massachusetts' Transportation and Climate Initiatives

TMAs in Massachusetts support the state's aforementioned transportation and climate initiatives through various roles and activities. Although each organization is a relatively small entity on its own (TMA staff numbers range from one to five), together the state's TMAs provide a range of meaningful benefits to commuters, employers, policymakers, transit providers, and the general public.

TMAs Reduce Vehicle Miles Traveled, Greenhouse Gas Emissions, and Transportation Expenditures

In 2014, Massachusetts TMAs served *279,643 employees* and had *4,525,049 shuttle passenger trips*. In that same year, the collective work of the TMAs helped *reduce vehicle trips by 7,006,265*, or approximately 110 million miles of vehicle travel, equivalent to more than 18,000 round-trips from Boston to Los Angeles. Vehicle trip reductions provide substantial financial and environmental benefits to those both directly and indirectly involved with TMA services. Some of the primary benefits include:

- *9,837,192 gallons of gas saved*, which is equivalent to taking *20,367 cars* off the road for an entire year. [xxv]
- *42,000 tons of CO_2* reduced.[xxvi]
- *Over $34,000,000 saved* by commuters through reduced fuel costs.[xxvii]
- *Over $6,500,000 saved* by commuters on routine maintenance and wear-and-tear.[xxviii]
- *Over $5,000,000 saved* by commuters through reduced depreciation of their cars.[xxix]

TMAs Mitigate Traffic Congestion and Deliver Savings on Road Maintenance

Vehicle trip reductions foster a host of other benefits beyond fuel savings and greenhouse gas reductions. By helping to remove cars from the road, TMAs reduce congestion and shorten commute times; saving commuters both time and money.

A reduction in vehicle miles traveled also means less wear-and-tear on roads, which can help the state and municipalities save on highway and road maintenance. Data from the Federal Highway Administration indicates that state and local spending on improvements and highway and road maintenance equates to approximately one to two cents per vehicle mile traveled. Assuming just half of this cost is due to vehicle travel (and the other half to the natural aging and weathering of the

roadways), the reduction in vehicle miles traveled due to *TMA programs helped save the state and local municipalities approximately $500,000 to $1,000,000 in 2014*.[xxx]

"The NVTMA is a very active group in pursuing better commuter options and services for all the area towns and businesses. One of the biggest challenges facing TMAs is getting area towns and businesses information about commuting options available to them. Commuting information is critical for helping towns improve their infrastructure and transit systems and for businesses looking to expand their employee base and offer employment opportunities to Massachusetts residents. Expanding roadways and highways is costly. Most roadway and highway improvements that are completed take too long and are often surpassed by the area population and commuters. TMAs provide a crucial role in assisting all regions by promoting commuting options that benefit the environment, municipalities, and private businesses."

Dennis Kenny, OneBeacon Insurance Group
Member of the Neponsett Valley TMA

TMAs Encourage Biking and Walking

TMAs reduce GHG emissions, ease congestion on public transit, and promote healthy lifestyles by continuously supporting biking and walking to work. For example:

- ABC TMA's Workout to Work program provides prizes to commuters who bike, walk, or jog to work and log their miles online and since program inception has recorded more than 1.3 million vehicle miles prevented. CommuteWorks, Merrimack Valley TMA, North Shore TMA, and Junction TMO also administer programs that reward and incentive active commuting.
- ABC TMA, Allston-Brighton TMA, CRTMA, CommuteWorks/Medical Academic and Scientific Community Organization (MASCO), Seaport TMA, and TranSComm actively promote Hubway, the bikeshare program owned by the cities of Boston, Brookline, Cambridge, and Somerville. TMAs conduct Hubway education and outreach activities, and many offer discounted Hubway passes to incentivize its use.
- MassCommute organizes the MassCommute Bicycle Challenge each year in alignment with Bay State Bike Week to promote biking amongst educational institutions, businesses, and municipalities. The 2014 MassCommute Bicycle Challenge featured 3,700 participants who collectively logged more than 150,000 miles of biking. MassCommute TMAs also host bike breakfasts, tune-up events, and its popular Bike Bash during Bike Week.

"On a day-to-day basis, I feel our staff values the Workout to Work program the most. This program adds an element of challenge to the monotony of the commute and provides motivation to choose healthier commuting options... We have hosted events at our office and visited neighboring ABC TMA events that have convinced employees that riding a bike to work in Boston is safe, healthy, economical, and FUN! As a direct result of these events and the Workout to Work program, a number of fellow employees have also become fellow bike commuters"

"As the [Employee Transportation Coordinator] for my company, I can assure you that if we did not have the services provided by the ABC TMA our firm would not be able to sustain the behaviors and actions that the TMA supports. We do not have the capability to provide the support structure that ABC delivers and we do not have the resources to provide the services they offer."

Essek Petrie, HNTB
Member of the ABC TMA

TMAs Drive Demand for Public Transit

Massachusetts' TMAs provide transportation services—including shuttles, guaranteed/emergency ride home provisions, and transit subsidy and reward programs—that drive demand and support the use of public transit. In 2014, ABC TMA's member survey revealed that **about 16 percent of respondents would have driven alone to work one or more day per week if not for the guaranteed ride home provision**. These services fill gaps in public transit service areas, offer alternatives in the event of unforeseen circumstances, and monetarily incentivize alternative transportation habits. TMAs alleviate obstacles to public transit use and provide commuters with complementary and coordinated services to further drive demand for public transit.

> *"All the programs are great, but the most meaningful for us is the Guaranteed Ride program. People love knowing they have the flexibility to get home at a moment's notice with this meaningful program."*
>
> Guido Costa, Putnam Investments
> Member of the ABC TMA

Some TMAs also offer programs which incentivize commuters who drive to work to "try transit" for a period of time by subsidizing transit passes and providing monetary benefits, or working with employers to provide transit passes rather than parking.

TMAs also promote public transit use through education and outreach efforts. TMAs' promotional activities are widely broadcasted**. In 2014 alone, Massachusetts' TMAs held more than 250 member forums, attended more than 300 informational events, and distributed thousands of promotional emails, newsletters, social media posts, and blog entries about public transit and transportation options for a better commute.** Aside from casting wide net, TMAs also conduct targeted outreach for member organizations. For example:

- TranSComm, a TMA that serves the Boston University Medical Center, supplies public transit information to medical patients and Boston Medical Center, Boston University Medical Campus faculty, staff and students, and the Boston Healthcare for the Homeless staff. This includes information on MBTA's THE RIDE, a door-to-door paratransit service for those who are unable to use buses and trains.

TMAs also work with public transit providers to improve service offerings, thereby setting the stage for higher public transit demand.

- In 1997, the ABC TMA partnered with the MBTA Advisory Board to launch Transit*Works*. Transit*Works* aimed to build public support for the MBTA and boost ridership by improving its quality and rider experience. For more than a decade, Transit*Works* conducted rider surveys, performed quality service analyses, and advocated widely for public transit use and support.
- CommuteWorks regularly shares information on public transit issues faced by commuters to the

> *"Whereas MassDOT…realizes that TMAs extend Commonwealth grant investment by soliciting significant private-sector and institutional employer matching funds for the provision of customized, in-depth TDM programming at the local or corridor level; and recognizes that successful TMAs and programs continue to provide significant services to the Commonwealth."*
>
> Memorandum of Understanding between the Massachusetts Department of Transportation and Transportation Management Associations of MassCommute, 2010

Longwood Medical and Academic Area of Boston with the MBTA to help them improve service. The information is collected from employees through an online feedback form available on the CommuteWorks website and shared with the MBTA through quarterly meetings.

TMAs Leverage Private and Institutional Investment for Local TDM

The majority of TMA funding in Massachusetts comes in the form of membership dues. These private and institutional sector TDM investments benefit members of TMAs, as well as everyone using the state's transportation infrastructure and environment. Importantly, Massachusetts' TMAs have used relatively small amounts of public funding to leverage additional funds from their member organizations. **The national survey (cited on page 2) indicated that, on average, TMAs receive about 30 percent of their revenue from membership dues and 50 percent from public grants and taxes.** Conversely, Massachusetts TMAs received about 65 percent of their revenue from membership dues and service fees in 2014 and just 35 percent from non-member public sources. In this way, TMAs offer an excellent return on investment for public dollars.

> *"Our commitment and partnerships with the North Shore TMA and other community organizations are key to providing exceptional commuter services to City employees, residents and visitors to Beverly."*
>
> Mayor Michael Cahill, City of Beverly

TMAs Design and Implement Employer Transportation Initiatives

Massachusetts' TMAs collaborate with independently-operated employer programs to decrease traffic congestion and improve air quality.

- In 2014, the Neponset Valley TMA partnered with NSTAR to implement a new shuttle system connecting its Westwood headquarters to the nearby MBTA Commuter Rail station. NSTAR previously used a taxi service to transport employees to the station, but a coordinated shuttle system is expected to save the company time and money. In the long-term, the Neponset Valley TMA aims to integrate neighboring employers into the shuttle system.
- The Seaport TMA is currently working as a collaborator and mediator toward the consolidation of several private employer shuttle services operating to and from the South Boston Waterfront. The TMA intends to make the local transportation network more efficient and more widely utilized by commuters while also reducing traffic congested caused by these shuttles.

> *"As a large employer with thousands of employees in the Boston area, it is important that we provide them with the best and most expedient means of accessing the workplace. The TMA provides many options and timely information for our employees to help make their commute more convenient and less stressful."*
>
> John Durnan, John Hancock Financial
> Member of the ABC TMA and Seaport TMA
> Member of the Seaport TMA Board of Directors

TMAs Enhance, Promote, and Complement MassRIDES Services

Massachusetts' TMAs work hand-in-hand with the statewide travel options program, MassRIDES. As outlined in their MOU, MassRIDES and TMAs collaborate on the following efforts:

- Promoting a single, statewide ridematching system
- Coordinating vanpool services
- Implementing guaranteed/emergency ride home and other TDM programs
- Creating marketing materials, professional development opportunities, and recognition events
- Developing a process for the establishment of new TMAs in underserved areas

TMAs continually promote MassRIDES services at outreach events and in marketing materials. Similarly, if an employer within an area served by a TMA approaches MassRIDES about participating in its program, MassRIDES will refer that employer to the relevant TMA. This synergy amplifies the message of both entities toward the collective goal of decreased congestion and vehicle emissions while leveraging the strengths of both groups.

> *"Whereas MassDOT recognizes the value of MassCommute (the statewide TMA Council) and a sustainable network of TMAs that provide advocacy and education for their members and develop customized, in-depth commuter programs and services to employees/tenants of their members,*
>
> *Whereas, efficiencies can be gained, and overlap and duplication of effort avoided, through the coordination of efforts of the MassRIDES Program with those of the MassCommute TMAs;*
>
> *Whereas, enhanced cooperation between the MassRIDES Program and the TMA is aligned with state transportation policy and with MassDOT's mission to improve the delivery of transportation services in the Commonwealth;*
>
> *Therefore, it is the policy of MassDOT to encourage, support, and promote cooperation between MassRIDES and the TMAs in developing and executing programs and services to educate commuters and to promote shared-ride and non-motorized modes of travel; and to encourage and support the development of new TMAs, where feasible, in cooperation with MassCommute.*
>
> *The benefits of such cooperation will be: increased transportation system efficiency, greater effectiveness in communicating information to commuters, decreased congestion and vehicle emissions, reduced vehicle miles traveled, increase ridematching and ridesharing, broader transportation options for employees, and better use of resources resulting in increased services for residents and employees in currently underserved areas of the Commonwealth."*
>
> Memorandum of Understanding between the Massachusetts Department of Transportation and Transportation Management Associations of MassCommute, 2010.

TMAs Improve State Policy Design and Implementation

TMAs are key players in designing and implementing Massachusetts' transportation and air quality policies. For example:

- In 2012, MassCommute worked with the Massachusetts Department of Environmental Protection to streamline the reporting and surveying processes of its Rideshare Regulation, which now has an automated reporting form, modified surveying methods, and user-friendly environmental calculators and spreadsheets to assist with compliance. In addition, TMAs in Massachusetts offer their members Rideshare Regulation compliance services.

- TMAs provided input during the formation of the Transportation Impact Assessment (TIA) Guidelines under the Massachusetts Environmental Policy Act. These Guidelines recognize partnership with TMAs as an approved means of evaluating and mitigating environmental impacts.

TMAs Collect Quantitative and Qualitative Commuter Data

Through their programs, TMAs collect commuter data that is employer-specific and updated at least once per year. TMAs are highly confident in the accuracy of their commuter data due to their close employer relationships and proactive data collection methods. These data are a powerful tool for the state and its municipalities to better understand commuting behaviors and to align transportation efforts accordingly. These data are also useful in tracking progress made toward mode shift and environmental goals. Furthermore, as federal programs are increasingly employing performance-based funding models, such data are crucial components in Massachusetts' bids to obtain federal funds.

TMAs Adapt to Infrastructure Changes, New Technologies, and Emerging Program Models

As small organizations with locally defined constituencies, TMAs are able to quickly respond to changes in the local community or to emerging models and technologies for transportation service delivery. TMAs are, therefore, prime candidates to experiment, implement, and evaluate new strategies and technologies to help commuters.

- 128 Business Council was an early adopter of transit tracking applications using GPS. Commuters are able to access near real-time data on the location of buses via the TMA's Ride Systems website or mobile application. Ride Systems also uses past trip data in combination with GPS data to inform commuters of their expected departure and arrival times. Additionally, 128 Business Council offers free onboard Wi-Fi. Passengers can use their time aboard the shuttle to be more productive, something that is not possible when driving alone in an automobile.

TMAs Advocate for Changes in the Transportation Infrastructure to Enable Multi-Modal Commuting

TMAs advocate for transportation infrastructure that supports safe and efficient multi-modal commuting opportunities. For example:

- The Merrimack Valley TMA collaborated with local municipalities to reduce congestion by influencing transportation infrastructure design, most notably the timely widening of a River Road bridge.
- The North Shore TMA worked with the MBTA to implement a pilot program that was subsequently adopted on the Newburyport/Rockport commuter rail line to allow bicycles during peak commuting hours on major segments of this commuter rail line. This enables commuters to ride the train for the bulk of their commute, and then use their bikes for the remainder – typically the first and last two to three miles of their commute.
- The Seaport TMA's advocacy led to a new crosswalk at an intersection that was dangerous for pedestrians. A traffic signal is planned for this intersection as well.
- MASCO advocated for and assisted in obtaining state or federal funding for improved commuter rail stations and services at Yawkey and Ruggles Stations

"The TMA and Town have a mutual interest in development and promoting alternative transportation options throughout the community with the goal of reducing the number of single-occupancy vehicles and improving quality of life. Town staff develop ideas and programs to meet resident and business requests and the TMA offers their expertise and guidance to help implement those initiatives that work towards achieving Town goals."

"The implementation of the shuttle service along Hartwell Avenue has helped to increase the marketability of the area's office and lab space by offering potential businesses a new transportation amenity that helps attract the talented workforce from urban areas… Getting this service established and ensuring its continued success is a key component to spur future development and enhance the economic activity of this area."

David Kucharsky, Transportation Planner, Town of Lexington
Member of the 128 Business Council

TMAs Catalyze and Support Municipal Transportation Programs

Massachusetts' TMAs maintain close working relationships with municipal government representatives in their service areas. A number of TMAs even boast local government agencies among their memberships. TMAs aid public officials by conducting transportation surveys, developing and implementing transportation programs, and tracking the associated results. For example:

- The 128 Business Council worked with the Town of Lexington to design and pilot a new commuter shuttle service connecting residents and commuters with MBTA service.
- In Dedham, the Neponset Valley TMA worked as a consultant to town officials in transforming the local, private bus service from a system with low ridership and reliability to a more streamlined system with greater amenities and rider demand.

"TMA services are an important part of redevelopment for us to offset traffic impact and give employers transportation choices."

"Although not connected to the TMA, it was our interaction through the TMA and [their] insight that has shaped our shuttle service. We are thrilled to be launching our new shuttle service this spring… We foresee this being the tipping point towards development of additional transportation options for the Town."

Richard McCarthy, Jr., Planning Director of the Town of Dedham
Member of the Neponset Valley TMA

TMAs Develop and Enact Municipal Transportation Plans and Policy

TMAs also help municipalities design and implement plans and policies related to TDM. For example:

- North Shore TMA assisted the City of Beverly in drafting a transportation mitigation policy for new development along the Route 128 corridor, and also helped draft the associated guidance for developers.
- Merrimack Valley TMA partnered with the Town of Andover to design and implement parking and transit-oriented development plans. The TMA also worked with Andover to strategize TDM measures that mitigate commuter congestion from the wave of development along I-93 and I-495.

- Through the Three Rivers Interlocal Council (TRIC), Neponset Valley TMA coordinates regularly with the Metropolitan Area Planning Council and public officials from Canton, Dedham, Dover, Foxborough, Medfield, Milton, Norwood, Randolph, Sharon, Stoughton, Walpole, and Westwood. TRIC tackles a range of planning efforts, but focuses primarily on studying and improving regional transportation opportunities. In late 2014, Neponset Valley TMA and partners hosted a forum that brought together various stakeholders to engage in presentations, panel discussions, and breakout sessions related to regional transportation planning.
- ABC TMA participated in the creation of Boston's Transportation Access Plan Agreement (TAPA), which requires large development projects to implement traffic mitigation or TDM measures. The ABC TMA also supports transportation planning and policy by publishing relevant reports, such as its 2014 publication, *Establishing an Effective Commute Trip Reduction Policy in Massachusett*s.

"The City of Salem is committed to doing all that we can to reduce traffic and congestion on our local streets. The North Shore TMA is a critical partner in our efforts and integral to our work developing infrastructure to accommodate the multi-modal transportation needs of the people who live, work, and come to visit Salem. Our combined efforts to date have yielded improved safety at intersections, bike lanes and bike share programs, improved pedestrian access to the Salem Depot, and, of course, enhanced facilities at the Salem Ferry. We are proud of the strides we've made in Salem to provide and promote alternatives to driving to and within Salem."

Mayor Kim Driscoll, City of Salem

TMAs Raise the Quality, Impact, and Accessibility of Regional Transit Authorities

TMAs collaborate with regional transit authorities on strategic initiatives to improve regional public transit services while also expanding their impact and accessibility.

- MassCommute staff conducted a public survey to provide qualitative and quantitative insights related to the MBTA's late-night service pilot initiative.
- The MetroWest/495 TMA helped establish the MetroWest Regional Transit Authority (MWRTA), which today provides public transit services to 11 municipalities in Massachusetts' MetroWest region. Prior to the MWRTA's formation, public transit in the area consisted of limited MBTA service combined with commuter buses independently-operated by area municipalities. The Metrowest/495 TMA partnered with local municipalities, businesses, and residents to transform this sporadic public transit coverage into a coordinated regional transit authority with a network of bus and paratransit offerings.

The many benefits of TMA's are presented in the box below.

The Many Benefits TMAs Deliver to Massachusetts

TMAs benefit state transportation agencies, infrastructure, and commuters (both those who are employed by member organizations and those who are not) in myriad ways. These benefits include:

- Reducing commuters' vehicle miles traveled and greenhouse gas emissions.
- Saving commuters time and money.
- Driving demand for public transit and reducing single-occupancy vehicle trips.
- Mitigating traffic congestion.
- Delivering savings to state and local communities on road maintenance.
- Encouraging biking and walking.
- Leveraging private and institutional investments in local TDM programs.
- Designing and implementing employer-led transportation initiatives.
- Enhancing, promoting, and complementing MassDOT's MassRIDES program.
- Adding value to state policies by improving designs and supporting implementation.
- Collecting quantitative and qualitative commuter data for TDM planning and program evaluation.
- Testing new technologies and program models so state agencies are better informed when making transportation decisions and investments.
- Advocating for changes in the transportation infrastructure to enable multi-modal commuting.
- Developing, enacting, and supporting municipal transportation plans, policies, and programs.
- Raising the quality, impact, and accessibility of regional transit authorities.

A Closer Look: 128 Business Council

Built to wrap around Boston's western side, Route 128 was among the first circumferential highways in the United States. In the 1950s, the highway was expanded to match the shift of businesses and residents from downtown areas to suburban settings. Due in part to the nearby higher education institutions, the land along this growing highway was rapidly developed into office parks for technology companies. The agglomeration of such companies provided Route 128 with a new moniker—*America's Technology Highway*. The number of vehicles that traveled Route 128 each day ballooned from 30,000 in 1955 to more than 150,000 by the 1980s.[xxxi]

Affected by the congestion, local employers **GTE Laboratories, Polaroid**, and **The Nelson Companies** joined together to commission a traffic study. As a result, these employers established the 128 Business Council (128BC) in 1987 to reduce traffic and improve air quality through alternative transportation solutions and environmental practices.

128 BUSINESS COUNCIL
UNLOCKING THE GRID

- Established in 1987
- Forty members, representing nearly 150 employers, including Bentley University, COSTCO, Genzyme, and Town of Lexington.
- Nine municipalities in its service area: Burlington, Lexington, Lincoln, Needham, Newton, Waltham, Wellesley, Weston, and Woburn.
- Operates nine shuttles, which provide nearly 200,000 passenger trips each year.
- Nearly $300,000 in membership dues leveraged from $50,000 MassDOT funding.

Although Route 128's tech boom has waned, the corridor is still the fastest growing area in metropolitan Boston.[xxxii] 128BC operates nine shuttles along the corridor to minimize congestion associated with this growth. As a last-mile (or gap) service for commuters using the public transit operated by the Massachusetts Bay Transportation Authority (MBTA), the routes and schedules of 128BC's shuttles are closely coordinated with MBTA's transit offerings. 128BC's shuttles connect commuters employed in Bedford, Lexington, Needham, Newton, and Waltham to numerous MBTA bus, subway, and commuter rail stations. All shuttles are available to TMA members and the general public.

128BC provides additional services to its member companies and surrounding communities beyond shuttle operations. Other TMA services include: ridematching, a guaranteed ride home program, commuter benefit events, transportation advocacy programs, customized transportation planning, and environmental regulation compliance. 128BC also partners with the municipalities of Arlington, Lexington, and Weston to provide transportation consultation services, including hosting outreach events, conducting transportation surveying and mapping, and developing plans and programs.

In 2014, 128BC provided services to nearly *26,000 member employees*, which collectively resulted in the *reduction of 170,000 vehicle trips*, or about *1.4 million vehicle miles traveled*. This impact is equivalent to the *reduction of 642 tons of CO_2 emissions*. That same year, 128 BC helped nearly 400 employees to reduce SOV commuting or to adopt an alternative transportation mode entirely. The TMA also hosted dozens of promotional events and registered over 700 new participants in MassDOT's NuRide (ridematching) system.

A Closer Look: Charles River TMA

The Charles River TMA (CRTMA) was established in 1995 with federal CMAQ support. Founding partners—including Cambridge Technology Partners, the Massachusetts Institute of Technology (MIT), and Hyatt, among others—launched CRTMA as a platform for local businesses to collaborate on commuting initiatives, and to promote accessibility to, and within, the rapidly redeveloping Kendall Square area.

- Established in 1995.
- Twenty-four members, including **Alexandria REE, Biogen, Biomed Realty, Boston Properties, Forest City, MIT, and Novartis**.
- Service area: Cambridge.
- Operates EZRide Shuttle; about 2,200 riders per day.

In the late 1990s, CRTMA partnered with local developers to start a shuttle service centered on Kendall Square's burgeoning business district. With support from the City of Cambridge, this shuttle service expanded into the EZRide Shuttle. Launched in 2002, EZRide Shuttle connects eastern Cambridge to Boston's North Station, a major transit hub with MBTA commuter rail, subway, and bus lines. Ridership on the Shuttle has grown from 200 per day at its inception to about 2,200 riders today. While the majority of riders are associated with member organizations, the general public accounts for about 15 percent of total ridership. The EZRide Shuttle's route and schedule is coordinated with MBTA transit and serves as a last-mile option to supplement these public services. Since 2009, CRTMA has used NextBus GPS tracking, in addition to a steady stream of Twitter updates, to provide real-time shuttle service information to users.

The CRTMA also promotes other alternative commuting options, such as walking and biking, car-sharing and bike-sharing, and carpooling and vanpooling. CRTMA conducts outreach at community events, develops and disseminates materials on transit opportunities, and offers personalized transportation surveying and planning to employers. CRTMA's emergency ride home program further incentivizes alternative travel modes. At present, about 2,000 participants are registered for this program.

With a dense, rapidly developing urban area home to numerous large employers, and proximity to several public transit hubs, the CRTMA is set in an ideal context for a TMA. This setting is further enhanced by the active involvement of the City of Cambridge, which has expanded the TMA's influence on congestion mitigation, air quality improvement, and environmental sustainability. While public funding was instrumental in the TMA's establishment and shuttle launch, the CRTMA exemplifies Massachusetts TMAs' ability to leverage private investment from public funds. The $50,000 allocation from MassDOT provides significant programmatic support to CRTMA's $150,000 in annual TMA membership dues shuttle operations are budgeted separately.

In 2014, CRTMA provided services to *50,000 member employees*, which collectively resulted in the *reduction of 480,000 vehicle trips*, or about *6.6 million vehicle miles traveled*. This impact is equivalent to the *reduction of 2,911 tons of CO_2 emissions*. That same year, CRTMA helped more than 500 employees to reduce SOV commuting or to adopt an alternative transportation mode entirely.

A Closer Look: North Shore TMA

- Seven members: **Axcelis, Cell Signaling, City of Beverly, Cummings Center, Eastern Bank, Footprint Power, North Shore Community College and Salem State University.**
- Five municipalities in its service area: Beverly, Danvers, Lynn, Peabody, and Salem.
- More than $50,000 in membership dues & $10,000 in-kind contributions leveraged from $50,000 MassDOT funding.

In the early 2000s, redevelopment to Route 128 and its surroundings combined with widespread SOV use fostered congestion-related issues for North Shore's cities, employers, employees, and residents. In 2006, municipal representatives from Beverly, Danvers, Lynn, Peabody, and Salem began meeting with nearby employers to discuss transportation options. With financial support from the Boston MPO and the City of Salem, these discussions led to the formation of the North Shore TMA in 2008. The Northeast Transit Planning and Management Corp., a Massachusetts-based consulting firm, operates the North Shore TMA along with the Junction Transportation Management Organization and the Merrimack Valley TMA. This ownership structure facilitates knowledge-sharing and cost-sharing between the three organizations.

Due to its relatively small membership size, the North Shore TMA is able to provide members with personalized and in-depth transportation consulting services. Footprint Power, a new member of the TMA, plans to convert and downsize the Salem Harbor Power Station from a coal-fired to a natural gas-fired plant. This multi-year project is expected to bring as many as 500 construction workers to the Salem site. In addition to its array of member services, North Shore TMA is working with Footprint Power to develop a traffic mitigation plan for this redevelopment project. Similarly, North Shore TMA is collaborating with two of its newest members—Salem State University and North Shore Community College—to conduct a transportation survey and focus groups, map non-SOV transportation options, and launch a new education and outreach plan for all transportation efforts at these educational institutions.

The North Shore TMA also maintains close partnerships with the municipal governments in its service area. The TMA worked with the City of Beverly to develop transportation demand management language for a development impact amendment to their local zoning ordinance and draft guidance for developers and property owners, and is currently working with Beverly and Salem to regionalize the Salem Spins bike-share program. Previously, the North Shore TMA partnered with area municipalities to convince the MBTA to permit bicycles on commuter trains during peak periods between both the Rockport and Montserrat Stations and the Newburyport and North Beverly Stations. This enables commuters to MBTA rail for some of their commute and bicycles for the remainder.

In 2014, the North Shore TMA provided services to *10,000 member employees*, which collectively resulted in the *reduction of 23,000 vehicle trips*, or about *243,000 vehicle miles traveled*. This impact is equivalent to the *reduction of 113 tons of CO_2 emissions*. That same year, the TMA helped 160 employees to reduce SOV commuting or to adopt an alternative transportation mode entirely.

A Closer Look: Seaport TMA

- Established in 1996.
- Thirty-seven members, including **Boston Children's Museum, CBRE, Fidelity Investments, Foley Hoag, Massport, and the Seaport Companies.**
- Service area: South Boston Waterfront.
- Nearly $150,000 in membership dues leveraged from $50,000 MassDOT funding.

The South Boston Waterfront, or Seaport, neighborhood underwent significant construction during the Central Artery/Tunnel Project in the 1990s and early 2000s. The $14 billion project brought traffic into the area via the submerged I-90, launched the MBTA's Silver Line, and initiated various streetscape planning efforts. Amid this redevelopment, employers in the area—including Fidelity Investments, Seaport Companies, and P&G Gillette—formed the Seaport TMA to serve as a local advisory and advocacy group on transportation issues and to promote alternative commuter options.

The South Boston Waterfront remains among the most rapidly developing neighborhoods in Greater Boston. To ease traffic congestion, the Seaport TMA implements and manages various transportation services and programs. Its Guaranteed Ride Home program incentivizes alternative forms of commuting by ensuring participants receive a free taxi ride if unexpected circumstances arise. Its Try Transit program offers employees and tenants $50 per month for three months to shift from an SOV commute to public transit. Through its Carpool program, those who use the TMA's ridematching system can receive gas cards for up to six months. Its bicycle commuter group brings members together to share routes, advocate for multi-modal infrastructure, and learn about maintenance and safety measures. Members also receive discounts to car-sharing services and bicycle repair shops, and can consult with the TMA on customized transportation opportunities. The Seaport TMA was also a primary contributor to the South Boston Waterfront Sustainable Transportation Plan, released in January 2015, which was conducted in partnership with MassDOT, Massport, the Massachusetts Convention Center Authority, the City of Boston, and other key stakeholders.

As many employees of the South Boston Waterfront depend on the MBTA's subway and bus lines for their commutes, the Seaport TMA often interacts with MBTA representatives. The TMA currently serves as both collaborator and mediator with the MBTA and private bus line operators to form efficient transit solutions that promote the Commonwealth's environmental and transportation goals while simultaneously navigating relevant labor and traffic laws. Its previous advocacy efforts have resulted in infrastructural alterations to improve pedestrian accessibility, including new crosswalks and signal retiming at dangerous intersections.

In 2014, the Seaport TMA provided services to *17,000 member employees*, which collectively resulted in the *reduction of 625,000 vehicle trips*, or about *16.7 million vehicle miles traveled*. This impact is equivalent to the *reduction of 3.9 million tons of CO_2 emissions*. The TMA also hosted dozens of member forums and registered 70 new participants in the MassDOT (ridematching) NuRide system and 140 in the Guaranteed Ride Home program.

III. Effective TMA Models From Across the U.S.

The following examples illustrate the breadth of roles and relationships that TMAs assume within the context of state, regional, and local TDM efforts. Despite their differences, all TMAs featured below use a collaborative approach to improve commuter transportation by promoting multi-modal opportunities.

Boulder Transportation Connections; Boulder, Colorado

The City of Boulder, Colorado, works hand-in-hand with the local TMA, Boulder Transportation Connections (BTC), to implement activities that support the city's goal of reducing SOV trips 25 percent by 2025. Since its establishment in 1989, Boulder's transportation planning division, GO Boulder, has transformed the city into a model of alternative transportation by engaging in long-term planning, supporting the area's transit network through innovative programs and incentives, developing and maintaining more than 300 miles of bicycle and pedestrian paths, and collaborating with local and regional transportation groups. As the local TMA, BTC, is an especially close collaborator.

While GO Boulder develops citywide plans and programs, BTC works with Boulder employers to assess their transportation issues and needs, create personalized plans to leverage the city's transportation programs, and support the implementation of these plans to benefit employees and the community. BTC also serves as a marketer, educator, and evaluator of the city's various transportation initiatives and opportunities. In return for these individualized employer services, GO Boulder's TDM program provides BTC with more than $125,000 each year.

BTC is also an active collaborator with the Denver Regional Council of Governments (DRCOG). Serving both as a metropolitan planning organization and a governmental council representing more than 50 municipalities, DRCOG occupies an important role in Colorado's TDM efforts. DRCOG is funded primarily with federal Congestion Mitigation and Air Quality Improvement Program (CMAQ) dollars, as administered by the Colorado Department of Transportation. One of DRCOG's oldest programs is *Way to Go*, in which it partners with seven local TMAs, including BTC, to "reduce traffic congestion, improve air quality, and make life better for the region's residents."[xxxiii] Through *Way to Go*, commuters and employers have access to free, or very low-cost, services such as: regional ridematching; guaranteed ride home; and resources and tools related to biking, walking, public transit, and carsharing. BTC receives about $80,000 in grant funding from DRCOG each year to act as the local implementer of the *Way to Go* program in Boulder.

Unlike many TMAs across the country, BTC's partnerships with the city government and regional council of governments means it does not need to charge membership dues for any of its services.

Greater Valley Forge TMA; King of Prussia, Pennsylvania

The Greater Valley Forge (GVF) TMA, like 20 percent of TMAs nationwide, reduces SOV trips by operating a shuttle system. Since they first started operating in 1990, GVF's shuttles—which serve businesses, residents, universities, local governments, and parks—have made more than one million trips. In 2013, ridership from GVF's four shuttles totaled nearly 200,000. In addition, GVF advocates for transportation-related public policy and infrastructural improvements at the local and state levels. The TMA also engages in grassroots advocacy efforts through its affiliated foundation, Communities in Motion, which works to "build awareness for efficient and sustainable transportation in southeastern Pennsylvania through education and community outreach."[xxxiv]

GVF raises revenue largely from the dues of its 125 member organizations, shuttle fees, and advertising sponsorships. GVF also receives funds for the consulting work it provides to public entities, such as promotional services for the Southeastern Pennsylvania Transportation Authority (SEPTA) and TDM research and analysis performed in partnership with the Pennsylvania Department of Transportation (PennDOT). GVF receives additional support through PennDOT's TMA Assistance Program. Although GVF is a 501(c)(4) organization, its Communities in Motion Foundation is a 501(c)(3) entity that accepts public donations and grants.

TMAs in Pennsylvania are subcontracted to perform marketing and outreach services for state and region-wide rideshare programs. Despite this shared role and their aligned purposes, Pennsylvania's TMAs are not close collaborators, partly because they compete for state financial support.

GVF serves 39 municipalities and works closely with about 20, including two municipalities that founded the TMA 25 years ago. GVF partners with local governments on transportation planning, hosting meetings and coalition-building, developing zoning ordinances, and establishing and managing shuttles.

At the state level, GVF works most closely with PennDOT and the Department of Environmental Protection. GVF helped host Bike to Work and Air Quality Awareness campaigns in return for grant funding. Pennsylvania's Secretary of Transportation, Leslie Richards, is a GVF board member, indicative of the high level of respect held for GVF's contribution to the state's transportation goals.

TMA of San Francisco Connects; San Francisco, California

San Francisco's planning code provides significant incentive for businesses to join the Transportation Management Association of San Francisco (TMASF) Connects. Intended to abate congestion, the planning code was amended to require sponsors of new construction or major renovation projects in rapidly developing areas of the city to prepare a transportation management program, gain approval from the city's Director of Planning, and then implement the program in consultation with a "provider of transportation brokerage services."[xxxv] Membership in TMASF Connects serves as compliance for this code and other TDM ordinances in the Bay Area. TMASF's membership is comprised of 73 multi-tenanted buildings in downtown San Francisco, which collectively represent about 2,000 organizations, 80,000 commuters, and more than 24 million square feet of real estate.

In addition to developing and implementing specialized TDM plans, TMASF provides members with tenant education and training, Leadership in Energy and Environmental Design (LEED) certification guidance, and other resources and informational events related to traffic and sustainability. These services help commuters avoid driving alone, and less than 8 percent of commuting trips to member buildings are SOV trips.[xxxvi] There is a strong and growing demand for TMASF Connects' services, and the organization is funded entirely by membership fees from private and institutional organizations. TMASF Connects collaborates with public transit providers, local government, and state agencies toward promoting non-SOV commuting opportunities. There are 27 public transit agencies in the Bay Area, and TMASF has provided marketing, outreach, and event planning services to all of them since its establishment in 1989. TMASF has worked with local and state agencies to conduct plans, polls, and research related to TDM efforts. For about 20 years, the TMA has also provided marketing and outreach support to the California Department of Transportation.

More than a decade ago, 511 replaced RIDES for Bay Area Commuters as the regional rideshare program in Greater San Francisco. 511 offers ridematching, employer resources, and commuter rewards programs, but its primary role is to provide commuters with up-to-the-minute traffic, transit, rideshare, and bicycling information. While TMASF Connects worked closely with RIDES for Bay Area Commuters on TDM initiatives, 511s technology-driven services have diminished its partnership with TMA's Similarly, as the number of TMAs in California has dwindled in recent years, so too has the collaboration amongst the states TMAs.

TransManage; Bellevue, Washington

TransManage was established in 1986 as a division of the Bellevue Downtown Association. The city's zoning code was updated at this time to allow for a much higher level of density than had previously been permitted. Due to the resultant congestion, the city also launched its first development-conditioned transportation management program (TMP), which required certain property owners to create and implement plans toward mitigating SOV commuting trips. Since its formation, TransManage has provided contract services for many downtown owners to comply with the TMP. As Bellevue has "evolved from a bedroom community to a major regional center"[xxxvii] in recent decades, TransManage's role in addressing the city's transportation issues has grown as well.

TransManage and Washington's other TMAs work closely with municipalities and employers to implement the state's Commute Trip Reduction (CTR) program. Enacted in 1991, the CTR Program is intended to "improve transportation system efficiency, improve air quality, and to conserve energy through employer-based programs that encourage employees to find alternatives to drive-alone commuting."[xxxviii] The CTR Efficiency Act of 2006 enhanced the program by requiring the local governments of Washington's most congested areas to implement CTR plans and ordinances for large employers. The Washington State Department of Transportation and the governor-appointed CTR Board oversee the CTR Program. To comply with these regulations, Bellevue developed a three-pronged TDM Partnership that includes the City, King County Metro (the area's public transit provider), and TransManage. Through this Partnership, TransManage provides employer and resident outreach, policy and planning support, and program development and implementation for the City of Bellevue and King County Metro.

As a division of the local downtown association, TransManage is able to leverage the partnerships and resources of its well-established parent organization. This structure has helped the TMA to collaborate more closely with the municipal government. Today, TransManage receives about 50 percent of its annual budget through public sources, including grants from the City of Bellevue, King County Metro, and other public transit providers. The remaining 50 percent is derived from contract services the TMA provides to owners of downtown buildings.

Within the centralized nature of Washington's TDM policy and program, the state's TMAs occupy similar roles and responsibilities to the municipalities in their service areas. As public funding is distributed at the local level, there is little competition for financial resources between TMAs. In addition, because Washington TMAs do not provide shuttle services, there is little competition between TMAs and the state's public transit providers. These elements, in combination with a strong state and local regulatory environment, set the stage for robust collaboration among the TMAs in Washington.

Summary of Effective TMA Models From the U.S.

These examples of successful TMAs offer diversity in their organizational structure, funding mechanisms, and primary services:

- **Boulder Transportation Connections** – In Boulder, Colorado, close connections between the TMA and local and regional governments provide a mutually beneficial working relationship toward developing, implementing, and promoting TDM measures. With grant funding from local and regional government agencies, the TMA is able to provide cost-free services to residents and organizations throughout Boulder.
- **Greater Valley Forge TMA** – Outside of Philadelphia, Pennsylvania, GVFTMA supports, and is supported by, state transportation and environmental agencies, while also operating shuttle services in collaboration with businesses, institutions, and municipalities.
- **TMA of San Francisco Connects** – San Francisco, California's primary TMA thrives off the city's strong TDM regulatory environment. With high and increasing private sector demand for its services, TMASF Connects operates without financial support from the local or state government.
- **TransManage** – Bellevue, Washington's CTR Program has catalyzed close working relationships between the state's TMAs and the local governments and transit providers in its service areas. As a result, cities like Bellevue, have developed a multi-tiered network for TDM program implementation.

While their structure, funding, and services vary, these examples share a primary the common element: public support through local and state initiatives to boost TDM.

IV. Three Tiers for Effective Transportation Demand Management

MassRIDES, TMAs, and independently operated employer transportation programs have similar goals and provisions, but they offer varying levels of specialization and support when it comes to TDM. MassRIDES offers basic transportation services to employers across the Commonwealth. TMAs, and other local TDM efforts, provide tailored services to partner organizations within specific, targeted geographic areas. Independent employer programs offer fully-customized transportation services for a single organization. Having regional, local, and employer-specific entities performing aligned tasks is not as redundant as it may appear. In fact, **the presence of all three can form a coordinated, efficient mechanism to reduce congestion and improve air quality.**

State and Regional TDM Programs

In 2010, the Transportation Research Board of the National Academies found that more than 90 percent of state transportation departments are involved in TDM efforts.[xxxix] As state, and sometimes regional, governments influence the planning, financing, development, and regulation of the transportation sector, their involvement in TDM efforts is invaluable.

State and regional TDM programs commonly offer the following services: planning and regulation to support TDM, funding for public transit and other non-SOV transportation provisions, transportation taxations, and inter-jurisdictional transportation planning and implementation. These efforts may also extend into commute trip reduction programs and incentives, as is the case in Massachusetts and Washington. Although many states take a decentralized or hybrid approach to TDM implementation, Massachusetts' is more centralized in nature due to the statewide rideshare program, MassRIDES.

Local TDM Programs

TDM programs confined to a localized geographic area, such as those implemented by TMAs, are able to provide a heightened level of knowledge and attention to their participants. Local TDM service providers may lack the broad political and financial resources available to state- and region-wide programs, but they are boosted by the agility and customization provided by the smaller size of their organization and constituencies. **TMAs, and other local TDM service providers, can also take advantage of economies of scale to fund programs and expand their educational and informational outreach within a given service area, while bridging the gap between governmental agencies and local stakeholders**.

Local TDM efforts are well-suited to improve transportation opportunities and behaviors for employers and commuters within highly congested geographic areas. Services provided by local TDM providers include: ridematching, individualized commute planning, negotiation with transportation agencies, collaboration among local stakeholders, incentive programs to promote non-SOV commuting, emergency ride home programs, and in-depth program development toward the attainment of transportation and environmental goals.

Local TDM programs are typically implemented by those with an intricate understanding of the local context and who possess productive relationships with local stakeholders. As described by Andrea Leary, executive director of three Massachusetts TMAs and former managing director of MassCommute:

> "One of the most important aspects of TMAs is the advocacy they provide based on the in-depth knowledge of their service area. This is a critical piece of who they are and what they do. They are experts in their area. […] Oftentimes it's difficult to get that through a state program or a one-off transportation consultant for a larger company because they do not have the luxury of focusing in one specific area."[xl]

Like many other states, Massachusetts is home to many privately-operated transportation services, such as bus operators, ridesharing applications, and informational services. These organizations can play a significant role in reducing SOV trips, but they do so with narrower transportation offerings and capabilities, and thereby have a lesser impact than TMAs. Patrick Sullivan, managing director of MassCommute and director of policy and outreach at the 128 Business Council, stated:

> "While the shuttles are such an emphasis for us, and such a large part of what we do every day, we never lose sight of the fact that we have people who are carpooling and commuting by bike and even walking, and we provide a variety of resources for those commuters, too. […] TMAs provide a unique and much-needed service in terms of working directly with employers and working with commuters to reduce traffic during those peak times when traffic is at its worst—in the morning and in the evening."[xli]

Rob Henry, executive director of Pennsylvania's GVF and president of the Association for Commute Transportation's Board of Directors, further expands on the broad scope and benefits of TMAs:

> "The TMA model has always been 'we're here to help you.' It's about person-to-person relationships […] No matter what the technological advances are, you still need that people element. I think TMAs serve that unique role. The other thing that I think sets TMAs apart is that they are nonprofits working to make the region better, make the economy function well, increase mobility, and provide more options. At the end of the day, our goal is just to make the region a better place."[xlii]

Employer TDM Programs

Motivated employers may implement independently operated TDM programs to improve their employees' commutes, reduce required parking space, or to align with their environmental objectives. Such programs are often informed, or directly supported, by state and local TDM efforts. Conversely, such programs may also be implemented in the absence of established TDM efforts on a broader level. Given the focus on a single organization, independently operated employer programs are able to delve deeper into the obstacles confronting non-SOV commuting behaviors and to develop, and continually improve upon, tailored programs to overcoming these obstacles.

Relative to local TDM programs, solo employer programs are able to design effective and responsive programs and incentives with an even greater understanding of their specific and unique issues and opportunities. As a drawback, **employer programs are not able to directly collaborate with key stakeholders toward achieving economies of scale and may force an employer to launch and manage an initiative outside its area of expertise.**

Synergies: Three Tiers for TDM

According to Phil Winters, TDM Program Director at the Center for Urban Transportation Research, a cost-effective and efficient TDM network in a metropolitan area requires all three tiers of TDM programming, and collaboration among these entities is critical. Winters explains:

> "I would view the TMA as a preferred customer of the regional TDM program for three reasons. First, TMAs are often located in the highest concentrations of employment and have established relationships with these employers coveted by the regional program. TMAs know the problems faced by employers in their area. Second, TMAs minimize duplication of services by helping deliver the regional TDM programs' basic services such as ridematching and vanpooling that work best due to economies of scale. Finally, many TMAs supplement these regionally-provided services by providing more personalized services to employers and commuters in their activity center, such as shuttles, that often aren't practical for a regional TDM program to provide."[xliii]

Regional, local, and employer-specific TDM programs should not be perceived as competitors, nor should they be in competition with public or private transportation providers. An antagonistic dynamic among these entities would severely limit their collective ability to improve congestion and pollution mitigation efforts. Each tier of TDM has unique capabilities, differing levels and scopes of services, and varying contexts under which they thrive. Their collaboration establishes a comprehensive, complementary network of transportation opportunities that shift the growing population away from SOVs toward a more efficient, environmentally sustainable, and economic transportation network.

V. Recommendations for Boosting TMAs' Impact in Massachusetts

TMAs provide commuter transportation and air quality benefits to organizations and individuals within their service areas. MassCommute magnifies the impact of each individual TMA in Massachusetts by creating an umbrella organization with a unified message and mission, and by enabling cost- and knowledge-sharing opportunities to achieve economies of scale. In addition, coordination among individual TMAs, MassCommute, and transportation agencies enables greater efficiency in developing and delivering non-SOV transportation services across the Commonwealth. These partnerships are mutually supportive and optimize efforts toward the following common goals: decreasing congestion and vehicle emissions, improving transportation system efficiency, and increasing transportation options for residents and employees in the Commonwealth. To build upon TMA successes in Massachusetts, MassCommute offers the following recommendations:

Expand and Enforce Existing Trip Reduction and Congestion Mitigation Policies

More stringently enforce existing TDM policies, such as the Massachusetts DEP Rideshare Regulation, TIA Guidelines, and the City of Boston's TAPA Guidelines, to make progress toward achieving climate and mode shift goals, and to maintain the integrity of these policies. As recommended in a recent report by the Metropolitan Area Planning Council (http://www.mapc.org/tdm), in order to achieve maximum success, TDM policy and programs such as these need to be carefully planned, implemented, and monitored. With established policies for non-achievement or non-compliance of program goals or failure to implement a TDM program, combined with cooperative relationships between municipalities and developers (which can be facilitated by the local TMA), enforcement can become a final recourse.

Utilize TMAs to Achieve State Transportation and Climate Goals

Increase the role of TMAs as stakeholders at the statewide level by more closely incorporating them into state, regional, and local policies and programs to strengthen partnerships, minimize overlap, unify communications, improve commuter data collection and analysis, and accelerate progress toward the achievement of climate and transportation goals

Increase Coordination Between TMAs and the Statewide Travel Options Program

Enhance coordination between TMAs and MassRIDES so that TMAs serve as geographically defined local entities, or administrators, in areas of high congestion. This would increase the efficiency of TDM delivery in Massachusetts by enabling TMAs to capitalize on their partnerships with local stakeholders and MassRIDES to focus its resources more broadly on areas where TMAs are not present.

Employ TMAs to Pilot Transportation Initiatives

Tap into the education and outreach capabilities of TMAs by using them as *pilots* of new transportation services, technologies, and data collection standards. Their organizational agility and close connections with local businesses and institutions make TMAs ideal for launching pilot initiatives, collecting performance data, and improving upon the initiatives to inspire a long-term impact.

Dedicate State Funding to Leverage Private Sector Funding for Existing and Future TMAs

Provide initial multi-year funding to future TMAs to catalyze in-depth commuter transportation services in more areas of the Commonwealth. Increase annual funding for existing TMAs to expand their transportation impacts, and leverage additional private and institutional dollars for TDM efforts.

To learn more or to connect with MassCommute TMAs, visit www.masscommute.com or contact masscommute@masscommute.com.

Appendix A: TMAs in Massachusetts

TMA	Areas Served	Website	Director	Contact Information
128 Business Council	Burlington, Lexington, Needham, Newton, Waltham, Wellesley, Weston, Woburn	www.128bc.org	Monica Tibbits-Nutt	781-890-0093 128bc@128bc.org
ABC TMA	Boston (Downtown/Financial District, Back Bay)	www.abctma.com	Allison Simmons	617-502-6248 asimmons@abettercity.org
Allston Brighton TMA	Boston (Allston, Brighton)	www.allstonbrightontma.com	Allison Simmons	617-502-6248 asimmons@abettercity.org
Charles River TMA	Cambridge	www.charlesrivertma.org	Jim Gascoigne	617-324-6119 info@charlesrivertma.org
CommuteWorks/ MASCO	Boston (Longwood Medical & Academic Area)	www.masco.org/directions/commuteworks	Stacey King	617-632-2796 sking@masco.harvard.edu
The Junction TMO	Andover, Tewksbury, Wilmington (I-93 Junction Area)	www.junctiontmo.com	Courtney Goldberg	978-247-3100 director@junctiontmo.com
Merrimack Valley TMA	Andover, Haverhill, Lawrence, Metheun, North Andover	www.merrimackvalleytma.com	Andrea Leary	781-639-6262 andrealeary@verizon.net
MetroWest/ 495 TMA	Ashland, Framingham, Holliston, Hopkinton, Hudson, Marlborough, Sherborn, Southborough, Sudbury, Wayland, Westborough	www.metrowest495tma1.org	Stephanie Hirshon	508-879-5600 stephanie@metrowest.org
Neponset Valley TMA	Canton, Dedham, Foxborough, Norwood, Westwood	www.neponsetvalleytma.org	Karen Dumaine	781-404-5023 director@neponsetvalleytma.org
North Shore TMA	Beverly, Da[nv]ers, Lynn, Peabody, Salem	www.northshoretma.org	Andrea Leary	781-639-6262 andrealeary@verizon.net
Seaport TMA	Boston (South Boston Waterfront)	www.seaporttma.org	Lauren Grymek	617-385-5510 info@seaporttma.org
TranSComm	Boston (Boston University Medical Center area)	www.bumc.bu.edu/transcomm/	Michelle Tse	617-638-7473 mictsewy@bu.edu

[i] Based on 13,476 miles driven per year.
Source: Federal Highway Administration (FHWA). "Average Annual Miles per Driver by Age Group." https://www.fhwa.dot.gov/ohim/onh00/bar8.htm.

[ii] The Community Transportation Association of America. "National Directory of Transportation Management Associations." http://web1.ctaa.org/webmodules/webarticles/articlefiles/16_TMADirectory.pdf.

[iii] Transportation Research Board of the National Academies. "Employer and Institutional TDM Strategies: Travel Response to Transportation System Changes." TCRP Report 95: Transit Cooperative Research Program.

[iv] National Center for Transit Research. "TMA Handbook: A Guide to Successful Transportation Management Associations." http://www.nctr.usf.edu/clearinghouse/pdf/tma_handbook_final.pdf.

[v] The TMA Surveys include respondents from around the world. However, more than 80 percent of the 2009 and 2014 survey populations reported on a TMA in the United States.

[vi] Revenue source information is from the 2009 TMA Survey conducted by the Center for Urban Transportation Research, UrbanTrans, and the TMA Council. The 2014 TMA Survey did not include a detailed breakdown of revenue sources.

[vii] MassCommute. "Who We Are: Mission." http://www.masscommute.com/mission/.

[viii] MassCommute. 2015.

[ix] Transportation Research Board of the National Academies. "Suburban Mobility Initiatives."

[x] MassCommute. "Who We Are: Mission."

[xi] Massachusetts Department of Environmental Protection. "Massachusetts Annual Greenhouse Gas Emissions Inventory: 1990-2011 with partial 2012 data." 2014. http://www.mass.gov/eea/air-water-climate-change/climate-change/massachusetts-global-warming-solutions-act/.

[xii] Massachusetts Executive Office of Energy and Environmental Affairs. "Massachusetts' Progress towards Reducing Greenhouse Gas (GHG) Emissions by 2020. http://www.mass.gov/eea/air-water-climate-change/climate-change/massachusetts-global-warming-solutions-act/.

[xiii] Massachusetts Executive Office of Energy and Environmental Affairs. "Massachusetts Clean Energy and Climate Plan for 2020." 2010. http://www.mass.gov/eea/docs/eea/energy/2020-clean-energy-plan.pdf.

[xiv] Massachusetts Department of Transportation. "Healthy Transportation Compact." 2014. http://www.massdot.state.ma.us/GreenDOT/HealthyTransportationCompact.aspx/.

[xv] Massachusetts Department of Transportation. "Healthy Transportation Compact." 2014. http://www.massdot.state.ma.us/GreenDOT/HealthyTransportationCompact.aspx/.

[xvi] Massachusetts Department of Transportation. "GreenDOT Policy Directive." 2010. http://www.massdot.state.ma.us/portals/0/docs/P-10-002.pdf.

[xvii] Massachusetts Department of Transportation. "GreenDOT Implementation Plan." http://www.massdot.state.ma.us/GreenDOT/GreenDOTImplementationPlan.aspx.

[xviii] Massachusetts Executive Office of Energy and Environmental Affairs. "About MEPA." http://www.mass.gov/eea/agencies/mepa/about-mepa/.

[xix] Massachusetts Department of Transportation. "Transportation Impact Assessment (TIA) Guidleines." http://www.massdot.state.ma.us/main/tabid/1075/ctl/detail/mid/2937/itemid/427/Commonwealth-s-New-Transportation-Impact-Guidelines-Support--Smart--Growth-for-Developers.aspx.

[xx] Massachusetts Department of Environmental Protection. "Massachusetts Rideshare Program: Guidance on Complying with the Regulation." Revised 2014. http://www.mass.gov/eea/docs/dep/air/approvals/guidcomp.pdf.

[xxi] Massachusetts Department of Transportation. "MassRIDES – About MassRIDES." http://commute.com/about-massrides.

[xxii] City of Boston Transportation Department. "Parking in Boston - Development Review." http://www.cityofboston.gov/transportation/accessboston/pdfs/parking_development.pdf.

[xxiii] City of Cambridge Community Development Department. "Parking and Transportation Demand Management Ordinance." http://www.cambridgema.gov/CDD/Transportation/fordevelopers/ptdm.aspx.

[xxiv] City of Cambridge. "Ordinance Number 1357. Bicycle Parking – Proposed Changes to Zoning Regulations." April 25, 2013. http://www.cambridgema.gov/CDD/Projects/Planning/~/media/E5556134769744E09C9BB99748C70F06.ashx.

[xxv] Based on 483 gallons of gas per year per car.

Sources: Federal Highway Administration (FHWA). Table VM-1. http://www.fhwa.dot.gov/policyinformation/statistics/2011/;

American Public Transit Association. "2012 Public Transportation Fact Book." Tables 8, 16, and 21. http://www.apta.com/resources/statistics/Documents/FactBook/APTA_2012_Fact%20Book.pdf.

[xxvi] EPA. "Greenhouse Gas Equivalency Calculator." http://www.epa.gov/cleanenergy/energy-resources/calculator.html.

[xxvii] Based on $3.48 price per gallon for 2014.

Source: U.S. Energy Information Administration. "Petroleum and Other Liquids: Weekly Retail Gasoline and Diesel Prices." http://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_sma_m.htm.

[xxviii] AAA reports this cost to be 5.97 cents per mile for an average sedan and 6.75 cents per mile for an SUV. This $6,500,000 amount is a conservative estimate assuming all 110 million miles were from sedans. Source: AAA. "Your Driving Costs: How Much Are You Really Paying to Drive?" http://exchange.aaa.com/wp-content/uploads/2013/04/your-driving-costs-2013.pdf.

[xxix] *Ibid.* AAA reports depreciation costs (based on miles traveled alone) to vary between $231 for an average sedan per 5,000 miles (4.62 cents per mile) to $275 for an SUV per 5,000 miles traveled (5.5 cents per mile). This $5,000,000 figure is a conservative estimate assuming all 110 million miles were driven in an average sedan.

[xxx] Commute Solutions. "Calculate Your Cost of Driving." http://commutesolutions.org/external/calc.html.

Source Data: FHWA. (a) Annual Vehicle Distance Traveled in Miles and Related Data - 2005 by Highway Category and Vehicle Type; (b) Total Receipts for Highways, by Function, 1945-2004 chart; (c) Funding for Highways and Disposition of Highway-user Revenues, All Units of Government, 2005; (d) Annual Vehicle Distance Traveled in Miles and Related Data - 2005 by Highway Category and Vehicle Type; (e)

Total Receipts for Highways, by Function, 1945-2004 chart; (f) Funding for Highways and Disposition of Highway-user Revenues, All Units of Government, 2005.

[xxxi] 128 Business Council. "About 128BC." http://128bc.org/about-128bc/.

[xxxii] 128 Business Council. "About 128BC." http://128bc.org/about-128bc/.

[xxxiii] Denver Regional Council of Governments. "Way to Go – Commuter Services." https://drcog.org/services-and-resources/way-go-commuter-services.

[xxxiv] Communities in Motion. "About Us." http://www.movingyou.org/#!about_us/csgz.

[xxxv] City of San Francisco. Planning Code §163.

[xxxvi] Transportation Management Association of San Francisco Connects. 2014 Annual Report. http://www.tmasfconnects.org/wp-content/uploads/2012/09/2014-Annual-Report-FINAL1.pdf.

[xxxvii] City of Bellevue. "Bellevue Connect Downtown Plan. Executive Summary." February 2008. http://www.ci.bellevue.wa.us/pdf/Transportation/connect_downtown_plan.pdf.

[xxxviii] Municipal Research and Services Center (MRSC) of Washington. "Transportation Demand Management (TDM)." http://mrsc.org/Home/Explore-Topics/Transportation/Congestion-and-Mobility/Transportation-Demand-Management-(TDM).aspx.

[xxxix] National Cooperative Highway Research Program. "State Department of Transportation Role in the Implementation of Transportation Demand Management Programs. NCHRP Project 20-65 Task 24. Research Results Digest 348. Transportation Research Board of the National Academies. July 2010. http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rrd_348.pdf.

[xl] Andrea Leary in interview with ERG. December 30, 2014.

[xli] Patrick Sullivan in interview with ERG. January 6, 2015.

[xlii] Rob Henry in interview with ERG. January 30, 2015.

[xliii] Phil Winters in email to ERG. January 22, 2015.