

Strategy # 12: Expand Coordinated Transportation

A healthy, competitive region with a high quality of life demands an efficient and affordable transportation network – one with the flexibility to meet ever-changing needs. Metro Boston can achieve this vision by coordinating land use with creation of new transportation choices. This strategy describes the actions that actors across all levels of government must take to create such a network.

Metro Boston prides itself on “transportation firsts” like the creation in the late 1800’s of what eventually became the MBTA subway system. The region can also be justly proud of the dramatic improvements in subway service and the restoration of commuter rail toward the end of the 1900’s. However, the past several years have seen transportation resources disproportionately focused on a single, major project: the Big Dig. The Big Dig brought tremendous benefits to travel throughout New England, and it re-knit Boston’s financial and government center to the waterfront and North End. Nonetheless, dozens of other worthwhile projects – both local and regional in scope – were put on hold during its execution, and the paucity of current resources leaves these projects in limbo.

Metro Boston must find a way to re-evaluate these projects and fund the prompt execution of those that are critical to the region’s mobility and economic advantage. This will require money, generated by reform of the current project delivery system and the raising of new revenues. Public agencies must find a way to deliver projects more quickly – from concept to design to execution. Proponents must be mindful of the operating costs of every new roadway and transit line that is built, and must plan for those operating costs *before* they are built.

Most importantly, the region must make land use and mobility goals the master of transportation improvements, and not the other way around. New transit lines, extra lanes, and trails should be built *only* if they support the sustainable land use goals of MetroFuture. The region must be particularly mindful that some transportation improvements, in the long term, can generate the very traffic and congestion they are intended to overcome. They can spur patterns of sprawl which the region has rejected in this plan. Avoiding such outcomes requires state agencies, regional entities, municipalities, and the private sector to coordinate transportation, land use, and environmental protection efforts far better than they do today.

A. Integrate land use and transportation planning

MetroFuture is founded on the principle that growth should be focused in areas where transportation infrastructure already exists, and transportation investments should be similarly focused to support that growth. Meanwhile, slower growth in low-density areas will reduce the demand for roadway expansion projects in those areas. As a result, new growth will have the transportation infrastructure it needs, and there will be less competition between building new infrastructure and maintaining and improving existing facilities. The region will be able to capitalize on past investments, the development community will have more certainty that projects in smart growth locations will have adequate infrastructure, and existing residents will see more benefits as their local transportation system is improved and diversified.

Unfortunately, the region often takes the opposite approach to making transportation investments. Dispersed growth creates a demand for roadway widening projects and new interchanges, which in turn stimulates additional development, especially in low-density areas. Uncontrolled growth, dispersed land use patterns, and the lack of transit accommodations create additional traffic that quickly overtakes the capacity of the new capacity. The result is that scarce transportation resources were spent on a project that does not reduce congestion or increase mobility. Scarce resources are also inefficiently used when spent on transit extensions into areas where land use controls prohibit the compact transit-oriented development needed to maximize utilization of the new service.

Aligning land use and transportation requires public officials and stakeholders to take a broader view of individual projects. One immediate way that this can be done is to implement comprehensive corridor planning in areas where major investments are planned or will be needed as a result of anticipated major development. Corridor planning coordinates transportation improvements with a plan for development that will use the capacity most efficiently.

Even in the absence of a comprehensive corridor plan, proposed improvements should be rigorously evaluated to ensure that they are coordinated with and supportive of sustainable land use plans. Establishing and enforcing stronger land use criteria for the region's Transportation Improvement Program will allow resources to be focused on those projects that will use capacity most efficiently. Effective project evaluation demands more comprehensive and robust data analysis and modeling, including better information about travel patterns and development, new computer models, and a set of evaluation measures that measure project performance to create a "feedback loop" that will inform future investment decisions.

In order to conduct coordinated planning, land use and transportation planning organizations should be structured so they are responsive to regional concerns and fully independent of state government. Diversified membership of the Boston Metropolitan Planning Organization will support decisions that are responsive to concerns about land use, equity, economic development, and environmental justice. When transportation and land use analysis are both fully integrated with each other and functionally independent of state agencies, the problem-solving capacity of the planning process is increased.

Because not all transportation planning decisions occur at the regional level, there is also a need to build capacity at the local level and to reform state and federal earmarking practices. Local officials and staff need support to evaluate the transportation impacts of land use plans and development proposals and to apply innovative tools to mitigate those impacts through design and enforceable developer commitments. At the state level, an earmark reporting process will be an important first step to eliminating the process of using legislative appropriations to fund transportation projects without regard for sustainable land use plans.

1) Implement a comprehensive corridor planning process

Corridor planning is a process to formally coordinate land use plans, transportation investments, and transportation demand management strategies

along key roadway or transit lines. With support from the Commonwealth, the Boston MPO should commit to a full corridor planning process whenever:

- A major public transportation investment is planned for a particular corridor, regardless of mode;
- Significant private or private development is anticipated in a particular corridor; or
- A corridor is acutely failing meeting the transportation needs of the surrounding area.

Corridor planning should be a coordinated effort involving municipalities, MAPC, and state transportation agencies. In order to be most effective, corridor planning should be conducted (or at least begun) before the specifics of any new transportation project are determined. The final product should be a consensus plan that identifies the infrastructure investment (if any) needed to address the needs of the corridor; as well as a binding land use plan that will preserve the capacity added by any such investments. Each plan should be developed consistent with the goals and objectives of MetroFuture, and each plan should provide the affected municipalities with the necessary tools and resources to grow responsibly and to preserve critical resources.

1.a The Executive Office of Transportation and Public Works (EOTPW) should provide funding for Regional Planning Agencies (RPAs) to conduct corridor planning efforts

2) Strengthen Transportation Improvement Program (TIP) evaluation criteria

The Boston MPO should adopt project evaluation criteria that explicitly address the alignment between proposed projects and local zoning, land use plans, and the regional plan. The highest ranking should go to those projects that support a land use plan that will efficiently utilize new capacity to support sustainable growth. Projects that promote unsustainable growth patterns inconsistent with MetroFuture should be given a very low priority, and the MPO should work with those proponents to revise the project design and land use plans to support sustainable growth.

Each year, over a half a billion dollars in state and local transportation funding is programmed through the annual Transportation Improvement Program (TIP). However, land use impacts are not clearly quantified, and play a small role in the overall project ranking. As a result, the MPO spends millions of dollars on projects that generate unsustainable land use impacts, while deferring other projects needed to support compact growth.

Even those unsuitable projects that are not actually prioritized by the MPO end up costing money. Because projects—even those with very land use scores or transportation benefits—are never outright rejected by the MPO, they may remain on the list for many years. Municipalities invest money and effort designing and advocating for a project that is not likely to be funded.

Stronger land use and economic development criteria will allow the MPO to make determinative decisions about whether proposed projects are consistent with MetroFuture. These criteria will require an assessment of zoning and land use controls, secondary land use impacts, and relationship to other projects. Proponents should be expected to demonstrate that every major investment is preceded by or accompanied by land use, alternative mode, and TDM efforts to reduce single occupancy autos.

The MPO should also adopt a policy to reject proposals that fail to meet a minimum threshold based on these proposals. As a correlate to these stronger criteria and rejection policy, MAPC and CTPS should provide technical assistance to help proponents revise project design and land use plans to improve the potential for funding.

The MPO should also consider a general moratorium on new highway interchanges inconsistent with MetroFuture objectives of focused growth. Creation of new interchanges stimulates more dispersed growth, which causes more congestion on nearby local roadways, which then requires additional transportation investments.

2.a The MPO should strengthen land use and economic development criteria to be aligned with MetroFuture’s principles and best practices

2.b The MPO should make it standard policy to reject (not defer) projects that score below an evaluation threshold

2.c The MPO should strongly discourage TIP consideration for construction of new interchanges on existing limited access highways

3) Improve data modeling and analysis to support transportation decision-making

The region needs a robust analytical infrastructure to support informed and coordinated transportation decision-making. The MPO should invest in comprehensive data and analysis tools that reflect the relationships among transportation, land use, and travel behavior. Better performance evaluation is also needed to assess whether projects achieved their mobility, safety, environmental, or other objectives, creating a “feedback loop” that will inform future investment decisions.

Currently, MPO staff base their analysis on a transportation survey that was conducted in 1991, and on application of a computer model that has difficulty accounting for smart growth land use patterns, secondary land use impacts, and pedestrian and bicycle facilities.

Improvements to the region’s travel demand model are critical for more effective transportation planning. A revised or new model should have the capacity to account for the density, diversity, and design of new development; it should also

be able to estimate the potential for “induced demand” that may arise as a result of construction. CTPS and MAPC have long agreed on the need for revisions to the model, and CTPS is now actively planning for an entirely new travel modeling system. Development of this model should be guided by an independent committee that includes MAPC and experts from academic institutions, research centers, and the private sector.

A new transportation survey is fundamental to a revised travel demand model. Thanks to advocacy by MAPC and CTPS, the Executive Office of Transportation and Public Works is currently negotiating with a private sector consultant to conduct a statewide household travel demand survey. This effort should be fully funded and, like the travel demand model, would benefit from an independent committee to provide advice on survey design and analysis.

A comprehensive database of development projects under construction, planned, permitted, or simply envisioned would also help to support proactive transportation investments.

The MPO should also develop a project performance measurement so that each project can be assessed as to whether it had the intended effect on the efficiency, safety, and environmental impacts of the region’s transportation system. This information will provide a mechanism to incorporate lessons learned into future design, construction, and operation.

3.a The Unified Planning Working Program (UPWP) should include support for an independent committee to advise the adoption of a new travel demand model

3.b The EOTPW should maintain full funding for the statewide transportation survey and convene an independent committee to support survey implementation

3.c MAPC should create and maintain a comprehensive development database

3.d The MPO should implement transportation performance measures to assess the effectiveness of transportation investments

4) Ensure that the MPO structure promotes accountability and diversity of opinion

Consistent with MetroFuture’s emphasis on public engagement and communication, the Boston MPO should seek opportunities to broaden diversity of membership and depth of participation. Meeting the region’s complex transportation needs requires consideration of many disparate issues: mobility for underserved and disadvantaged populations, economic growth, environmental resources, and municipal finance. An MPO that draws voting membership from similarly diverse constituencies will be well-equipped to represent and evaluate

the region's multidimensional transportation needs and sometimes divergent interests.

Membership on the MPO is currently limited to state agencies, MAPC, four cities, and three towns. The Regional Transportation Advisory Committee provides a formal mechanism for participation of other interest groups and advocacy organizations, but does not have voting rights at the full MPO. Furthermore, the workings of the MPO can seem opaque to many stakeholders, who may not understand how to participate or may feel that such participation is futile.

The MPO should consider expanding its membership to include business, labor, institutional and/or non-profit representatives; state environmental, economic development, and housing officials; as well as the representation of Environmental Justice constituencies. Such an expansion would bring a greater diversity of perspectives to the MPO and would help to demystify the programming process among many important stakeholders.

Substantively, several improvements could assist the MPO process, such as the election of officers and committee chairs by the full MPO, delivery of materials and action items with more lead time, greater clarity about the MPO process to members of the public and local officials

4.a The MPO should establish a commission to investigate expanding and diversifying membership

5) Conduct regional transportation and land use planning as an integrated, regionally-controlled activity

To be effective, Metro Boston's regional transportation planning and land use planning should be fully integrated activities, conducted independent of state agency control. Such integration would help ensure that sustainable land use plans support efficient transportation investments, and vice versa.

In a 2006 study of 50 large MPOs across the country, the Brookings Institute identified the Boston MPO as one of four that was "state-run" and "largely guided and staffed by the state government." The Boston MPO (like all MPOs throughout the state), is always chaired by the Secretary of Transportation or his designee.

Unlike the other regions in the states, Metro Boston's transportation and land use planning are physically and procedurally separated. The Central Transportation Planning Staff (CTPS) is responsible for most vehicle-based and transit analysis and planning, while MAPC undertakes most land use analysis. Both MAPC and CTPS have responsibilities for bicycle and pedestrian planning. Both agencies engage high-quality professional staff who work hard to meet the needs of their members, clients, the region, and the Commonwealth. CTPS is also hired to bring their knowledge and expertise to bear in other parts of Massachusetts.

In all other regions of the state, the Regional Planning Agency – an agency fully independent of state government – provides planning services to the MPO, in regard to both land use and transportation. This allows for a more fully unified perspective in decision making and problem solving for each region.

The state Transportation Reform Act of 2004 makes this responsibility explicit, “...regional planning agencies in the commonwealth ...shall serve as the principal source of transportation planning for local and regional transportation projects.” The Reform Act has yet to be implemented in Metro Boston, where the RPA (MAPC) receives neither adequate resources nor primary responsibility for regional transportation planning. Efforts should be made to ensure that organizations serving the MPO are fully and functionally independent of state direction, enabling both the MPO and the Commonwealth to discuss all issues before the body and to negotiate occasional differences, with everyone fully and independently informed.

5.a The members of the Boston MPO should all work together to develop a new Memorandum of Understanding regarding MPO operations and staffing

6) Build local capacity to integrate land use and transportation planning

Greater local planning capacity is necessary to support the creation of sustainable land use plans, the development of efficient transportation projects, and comprehensive review and mitigation of development proposals and their transportation impacts. The land use decisions that drive transportation are, for the most part, made locally, and municipalities are the proponents of many transportation projects, especially roadway projects. Municipal officials and staff must have a better understanding of issues such as cumulative impacts, secondary land use impacts, and transportation demand management; and they need access to a wider variety of tools such as impact fees, a mitigation toolkit, enforceable mitigation agreements, and design standards that support alternative modes.

Currently, many local officials and staff review projects have little capacity to address transportation issues in a comprehensive and coordinated manner. Municipal master plans, where they exist, have a section on “circulation,” but few master plans contain quantitative analysis of factors such as trip generation or mode split. Local boards may require traffic studies for large or complex development proposals, but may be unable to interpret the results (even with the assistance of a consulting engineer) or evaluate the cumulative impacts of multiple developments. Permit approvals may be conditioned on the implementation of mitigation measures such as a transportation demand management program, but lack mechanisms to enforce those agreements or monitor the effectiveness of the mitigation.

Where congestion or safety issues exist, cities and towns may seek project development assistance from the MPO, state agencies, or private consultants.

However, the divided structure of state agencies and the roadway-oriented culture of the engineering industry often preclude the creation of solutions that fully integrate land use changes and alternative modes with roadway capacity expansion. As a result, municipalities end up with auto-oriented solutions that fail to creatively meet their needs, do not represent best practices of context-sensitive design, and have little chance of being funded by the MPO.

Comprehensive integration of land use and transportation planning at the local level begins with the application of planning and decision support tools described in the strategies on Coordinated Plans (1) and Compact Growth (5). These tools can estimate the transportation impacts of alternative scenarios and allow for the creation of land use plans designed to maximize use of existing infrastructure and increase the potential for alternative modes such as transit, walking, and biking. These plans, with specific expectations for the density, design, and diversity of development, will establish a capital planning framework for mitigation even before development proposals are made.

Cities and towns also need new tools to evaluate and mitigate the transportation impacts of new development. With the assistance of a “mitigation toolkit,” municipalities could critically assess traffic impacts, establish specific targets for transportation outcomes such as trip generation, and identify the mitigation measures that will most effectively meet those targets. Those measures might include capital improvements and/or transportation demand management techniques, both funded directly by the developer or through impact fees. Legally binding developer agreements and monitoring will be necessary to ensure success and compliance.

6.a MAPC should develop a mitigation tool kit

7) Reform federal and state legislative earmarking systems

Comprehensive integration of land use and transportation planning requires a rationale, predictable, and transparent system for designing and selecting projects. Accomplishing such a system requires elimination of earmarks that fund transportation projects through legislative appropriations. As an interim step, improved transparency in the state legislature’s earmarking process would reduce unanticipated and costly changes and delays.

The ability to accurately plan for and implement transportation improvements is affected by unexpected projects that are funded through earmarks, outside of established planning mechanisms. It is understandable why legislators, on both the state and Congressional level, like earmarking, especially when dollars are scarce and the transportation programming system can seem opaque. Nonetheless, earmarking has few real benefits. On the state level, bond bills are filled with earmarks – but it is the Governor who actually decides how to spend bond money, leaving proponents and municipalities with a feeling of having been tricked or misled.

Transportation investments cannot serve a smart growth agenda if they adopted principally through legislative deal-making. Rather, the legislative branches of government should appropriate money and establish priorities and broad guidelines for choosing projects. Then, they should stand aside and let the executive branch of the Commonwealth along with the MPO decide which projects best serve the region's land use, mobility, equity, and economic goals,

The country and the Commonwealth need rationale, predictable, and transparent systems for selecting transportation projects – and earmarking should not be a substitute for that system. Until all legislators agree to renounce earmarks, it is difficult – perhaps even imprudent – for a single state or an individual legislator to back away from the earmarking system. In the long run, the region and the nation would best be served by the elimination of both state and federal earmarks.

As an interim and supporting step, the state can bring more transparency to the earmark process by establishing reporting requirements for earmarks, including itemized lists of projects, sponsors, costs, purpose, and benefits.

7.a The Legislature should adopt an earmark reporting system

B. Prioritize transit and transportation alternatives

MetroFuture recommends compact development in smart growth locations: around city and town centers, on reused commercial and industrial land, and near transit. These sustainable growth patterns lend themselves to transportation alternatives such as transit, walking, bicycling. Greater use of these alternatives will result in fewer vehicle miles traveled, fewer greenhouse gas emissions, increased mobility, and better health outcomes. These benefits will be realized only if the region invests in new transit projects, creates new transit services in suburban areas, improves the efficiency and experience of transit, and builds an integrated network of sidewalks and bike paths. Throughout all these improvements, it will be critical to consider and address the needs of transit-dependent residents and neighborhoods.

Continuation of the region's auto-oriented approach to transportation will result in more congestion and will fail to capitalize on the opportunities of compact growth. The region's current situation demonstrates that highway projects ultimately fail to improve mobility or congestion regionwide. Adding roadway capacity may temporarily relieve congestion at the site of the improvement, but it also attracts new development and additional drivers that create more congestion on nearby roadways or even the road that was improved.

A new paradigm of transportation priorities are necessary to create the comprehensive transportation alternatives that the region needs. Regional investments to strengthen the framework of the existing transit system are necessary to create the capacity to support significant new ridership. Strategic extensions of the system (accompanied by transit-oriented land use plans) and creation of new suburban transit services will increase access and connectivity. Transit providers also need to provide high-quality station design and customer service in order to compete with the private auto.

Transit and non-motorized travel can be made safer and more efficient by implementing roadway design best practices that accommodate all modes and establishing priority for transit through dedicated lanes in congested locations. Ultimately, walking and biking should not be considered “alternative” modes but essential components of the transportation system, by the engineers and public works officials charged with designing and maintaining bicycle and pedestrian facilities. Opportunities to create new bicycle, pedestrian, and transit connections can be preserved by protecting existing rights of way.

Pay-as-you-drive automobile insurance, while not a transportation alternative per se, is an important and complementary strategy that can provide strong incentives to choose transportation alternatives instead of the auto.

8) Invest in projects that expand and add capacity to the existing transit system

The existing mass transit system provides the framework around which future growth and transit services can be organized. The region needs to make investments that will increase the capacity of the existing system, improve its operations, and expand the network to serve more of the region. These capital investments will create opportunities for more frequent service, more “reverse commute” service from the Inner Core to suburban stations, fewer transfers, and direct access to the system for more people and locations.

Currently, the MBTA’s core system provides robust service, but is limited in many ways. The lack of any circumferential service in the Inner Core requires all transfers to occur at a limited number of downtown stations, resulting in less-convenient trips and overloading those stations. The Blue and Silver Lines lack key connections, forcing riders to make multiple connections. Limited station capacity at North and South Stations and limited track capacity leading to those stations reduces the potential for reverse commute service, express service, or more frequent service. Recent improvements have been made to improve operations of the core system, including new 6-car trains and stations for the Blue Line, and low-floor Green Line vehicles.

Improvements to the core system will improve the existing network as the framework for regional growth and will ensure that the system has the capacity to serve significant new growth in the Inner Core. Examples of such improvements include

- Extension of the Green Line to Medford
- Extension of the Blue Line to Lynn
- Urban Ring
- Silver Line Phase III (connection of Washington Street and Seaport lines)

The region should also take steps to enhance the commuter rail system, which links the Inner Core with more suburban areas. Example of such improvements include:

- Expansion of commuter rail capacity at South Station

- North-South rail link to fully integrate services which now terminate at North and South station
- Electrification of the commuter rail system

Furthermore, the region must expand and improve the suburban transit system, both rail and bus. Potential transit locations in suburban areas often lack the focused planning and implementation resources available in the urban core. Consequently, suburban areas that now have population and employment densities to merit consideration for transit delivery do not have the means available to plan or provide it. Other critical suburban transportation issues, such as at-grade crossings which can tie up traffic in suburban downtowns and along secondary roadways, must also be tackled.

Some of these projects are closer to fruition than others. It is likely that all of them will be expensive. They cannot be accomplished without additional revenues from the Commonwealth, and without federal participation. (See Sub-strategy C in this chapter.) Nevertheless, they are critical projects – critical to the region’s economic competitiveness, and critical to residents’ quality of life. State agencies, the MPO, municipalities, neighborhood stakeholders, and institutional advocates must all collaborate to advance these projects and find ways to implement them cost-effectively.

9) Establish “first mile/last mile” services around commuter rail stations

In order to make the existing commuter rail network more useful, the region needs to develop local transit services that connect employment and housing to commuter rail stations. These connections would serve local residents, employees, shoppers, visitors, and tourists. Such services could also connect destinations to each other, increasing transportation options even for those users who are not riding the train. Employers and businesses have strong incentives to support transit services because they can provide transit access to their location for a much larger population—a suburban employment location with reliable shuttle service to the commuter rail station will be much more attractive to workers living in the Inner Core than one which requires those workers to drive.

Currently, many commuter rail stations work well for residents who can drive or be dropped off at the station, but are difficult to access for residents without a car. Meanwhile, many employment locations lack connections to nearby rail stations, making it impossible for workers to use transit. Some major employers currently provide shuttle services for their employees, but do not serve the general public.

Creation of new connecting services will require a variety of different approaches and strategies. In some cases, it may be appropriate for the MBTA or a regional transit authority to create or expand service. In other situations, community-based transit service may be most feasible, either operated by a municipality or through public-private partnerships with employers and institutions.

Transportation Management Associations (TMAs) can help to provide the organizational structure for such public-private partnerships.

The Boston MPO's Suburban Mobility program provides three years of matching funds for new local transit services. The program is likely to be oversubscribed in the coming year and should be increased to meet demand. Furthermore, the region must develop a means to provide longer term support for successful transit projects started with Suburban Mobility funding, either through expansion of MBTA or RTA suburban transit programs or other new delivery mechanisms.

9.a The MPO should increase funding for the Suburban Mobility program

9.b The MBTA should evaluate a "First Mile" shuttle program

9.c Municipalities should offer developers incentives to provide shuttle connections

9.d Employers should join or create Transportation Management Associations (TMA) and provide shuttles

10) Improve the transit experience through high quality stations, stops, and customer service

High quality customer service, transit stations, and bus stops can make transit more attractive, increasing transit ridership and supporting transit oriented development. Stations and stops should be clean, safe, well-lighted, and protected from the weather. Signage and information should clearly indicate transit route, schedule, and fare, as well as real-time vehicle arrival information. Stations should be integrated into the surrounding area, with entrances and exits located near key destinations; and nearby development also oriented toward the station. Customer service and service quality are critical to the ridership growth necessary for increased farebox revenues. More importantly, the provision of reliable, convenient, and respectful service to transit-dependent residents is an important component of regional equity.

One component of the year 2000 Forward Funding legislation called on the MBTA to establish standards for the effectiveness and quality of each transit mode and to measure and report on comfort, communication, convenience, rider satisfaction, reliability, security and environmental benefits. These standards were either never established or are not readily or consistently available to the public. Consistently reported service quality standards and ridership targets would identify opportunities for improvement, demonstrate progress, and provide a mechanism for accountability. Benchmarks should be regularly presented to the public and reviewed by the MBTA Advisory Board. Similar requirements should apply to RTAs serving the region.

10.a The MBTA should develop station access guidelines and plan

10.b The MBTA and RTAs should establish regular performance evaluation and benchmarking program

11) Create dedicated lane capacity for transit and alternative modes

Bus, pedestrian, and bicycle service need dedicated corridors and networks if they are to compete with the single occupancy vehicle as an efficient transportation option. “Road space reallocation” involves dedicating road space to transportation alternatives such as transit or bicycle, and managing roadways to encourage more efficient and equitable transportation.

Road space reallocation can be particularly appropriate on congested roadways. Automobile transportation requires several times as much road space per passenger-mile than other modes, so motorists impose far more congestion on other road users than people who travel by other modes. For this reason, it tends to be both more equitable and efficient to give priority to more space efficient modes on congested roads, so travelers who require less road space are not delayed by congestion as much as travelers who require less road space.

Municipalities should seek opportunities to create high occupancy vehicle lanes in critical congested corridors. HOV lanes could serve both transit vehicles as well as multiple-occupant automobiles. Such lanes could be continuous, or they could be “queue jumper” lanes, which allow buses and multiple-occupant autos to bypass congestion at intersections, improving transit travel time and creating incentives for carpooling and ride-sharing.

The MBTA and regional transit authorities should work with communities that have existing transit corridors with intensive ridership to convert roadway lanes to dedicated lanes for buses. Dedicated lanes will allow for faster and more predictable travel times, enabling transit agencies to achieve more frequent headways with a fixed number of buses. Improved service will attract more customers, taking pressure off the remaining roadway lanes.

To reduce delay and improve service and customer satisfaction, the MBTA, RTAs, state transportation agencies, and member municipalities should implement signal priority on transit corridors. Although this is a more modest step than full lane conversion, it can have some of the same benefits.

11.a MBTA should establish a policy requiring analysis of dedicated lanes and signal priority as a condition of increased service frequency along existing routes

11.b The Boston MPO should allocate funds for a study to identify corridors that are top candidates for transit signal priority

12) Incorporate “complete street” best practices in roadway development and design efforts

The region needs to implement roadway design best practices that will foster bicycling and walking, improve safety, and enhance community character. From the heart of Boston to the region’s most low-density suburbs, roadways should be designed and operated to enable safe access for all users of all ages and abilities, including pedestrians, bicyclists, motorists and transit riders. This does not mean that all roadways in the region should be built the same, but that the needs of diverse users should be considered and accommodated in the design process. The outcome will be roadways that include features such as sidewalks, bike lanes, transit stops, safe crosswalks, and median islands.

Like most regions, Metro Boston has a long history of constructing or reconstructing roadways using designs that prioritize high-speed auto travel, ignore the needs of pedestrians and bicyclists, and degrade community character. Fortunately, this history is changing: the MassHighway Department Project Development & Design Guidebook is the culmination of a comprehensive planning effort that included state, regional, and local representatives. It represents state-of-the-practice updates to outdated automobile-dominated engineering guidelines.

The new guidebook allows for significantly more flexibility in design requirements, particularly lane and shoulder widths; reflects the latest methods for accommodating the needs of all users, including pedestrians and bicyclists; emphasizes context sensitive design to ensure compatibility with community surroundings; and provides much needed guidance on the project development process. The guide must be used for all projects built with state funds or on state highways. As with any guide, however, the complete application best practices depends on the judgment of designers and the commitment of project proponents.

To ensure that the guidebook is integrated into all levels of project development and planning, municipalities should incorporate the principles of the guidebook into all local roadway projects, even those built with local funds. EOTPW also needs to make efforts to improve the capacity of engineers in public agencies and the private sector to implement the guidebook, through training and certification. The MPO should also establish adherence to the guiding principles of the guidebook as a criteria for TIP evaluation. Because best practices for roadway design are a rapidly evolving field, EOTPW should establish a program to measure application and effectiveness of the guidebook, in order to inform regular updates and revisions.

12.a Municipalities should incorporate principles of the new Highway Project Development & Design Guidebook in all state and locally funded projects.

12.b EOTPW should strengthen the prequalification process for consultants to include principles of the Guidebook

12.c MPO should establish adherence to the guidebook as a criteria for TIP evaluation

12.d EOTPW should establish a project evaluation and benchmarking program to support periodic updates to the guidebook

13) Stabilize and coordinate funding sources for bicycle and pedestrian infrastructure and programs

The region needs to bolster support for pedestrian and bicycle programs, both to create physical facilities and to create the “professional infrastructure” necessary to develop high quality projects. Consistency of funding, more efficient funding programs, and technical support are needed to guide and encourage cities and towns to pursue more bicycle and pedestrian projects.

The significant and consistent funding for roadways and highways in Metro Boston has created a professional engineering and design culture (both public and private) oriented toward promoting, designing, and building roadway projects. Similarly, most municipalities are well-acquainted with roadway funding programs and contracting, but are unfamiliar with the funding, design, and operation of pedestrian and bike facilities. Funding streams for non-motorized programs are frequently fragmented and not guaranteed from one development stage to the next.

Limitations on funding are partly due to the fact that Massachusetts has not fully accessed the federal funds available for non-motorized modes, opting instead to access more funding for road and highway projects. In fact, Massachusetts regularly ranks near (or at) the bottom in national survey of states, in obligating Congestion Mitigation funds (41st) and Transportation Enhancement funds (52nd—ranking includes DC and Puerto Rico). The funding that is available can only be used for certain purposes and projects. Smaller projects are rarely funded, and municipalities received little technical support and no funding for project design. With limited support available to address the complicated design, environmental, and right-of-way issues faced by bicycle and pedestrian projects, municipalities are often reticent to initiate these projects.

Greater funding and continuity of funding programs for non-motorized transport will help support the development of institutional and industrial capacity to design and build non-auto projects effectively. A strong regional commitment to fully accessing available federal funding (even at the expense of available roadway funding) is key to this continuity. With a commitment to stable funding, the MPO should also establish stronger evaluation criteria for

non-motorized programs to drive innovation and creativity on the part of project proponents and designers. This innovation can be supported by technical assistance to cities and towns as well as direct support for the design of selected projects. Increased funding can also be directed to new programs that would fund small projects with a big impact (such as bike lane striping or crosswalk marking) or for a new municipal funding program dedicated to pedestrian and bicycle improvements, as a supplement to Chapter 90.

13.a The Boston MPO should establish a policy to fully access all available Congestion Management and Air Quality (CMAQ) and Transportation Enhancement (TE) funds

13.b The MPO should develop a well-defined program for selecting CMAQ projects

13.c EOTPW and the MPO should provide Transportation Enhancements proponents with active technical assistance.

13.d MassHighway should allow initial project design to be funded with Transportation Enhancement grants

13.e MassHighway should set aside some portion of the CMAQ and TE grants to fund smaller-scale bicycle and pedestrian projects

13.fMAPC should develop a proposal for a new funding program comparable to Chapter 90, for transit and alternative modes

14) Maintain and manage bicycle and pedestrian facilities and traffic as full-fledged transportation linkages

Like all other transportation infrastructure, pedestrian and bicycle facilities must be maintained and managed so that they operate safely and efficiently. Bike lanes, multi-use paths, and sidewalks (both publicly and privately owned) need to be kept in a state of good repair, cleared of snow, and made safe through the enforcement of traffic laws. Greater safety can also be achieved through education and enforcement of traffic laws, as they apply to both motorists, bicyclists, and pedestrians. Better monitoring and reporting of pedestrian and bicycle crashes and injuries will also help cities, towns, and regional agencies take action to resolve problems.

Snowy and icy sidewalks, multi-use trails, and bike lanes disrupt travel for all users, especially those in a wheelchair or people with strollers and carts. When sidewalks are not cleared, pedestrians are forced onto the street where pedestrian-automobile crashes are far more likely to occur. Even in good weather, pedestrians and bicyclists are at risk from motorists who do not share the road. However, it is difficult to identify problem areas or to target improvements or enforcement due to the poor quality of state data on pedestrian and bicycle crashes and injuries, (including frequency, number, location, and cause.)

Municipalities can ensure the safety and function of pedestrian and bicycle facilities by developing maintenance and operations plans for sidewalks, multi-use trails, and bike lanes. These plans should also establish and enforce requirements for maintenance of privately-owned sidewalks, in order to ensure access along the public right of way and onto public accessible property such as shopping centers. Bicycle parking facilities are also an important part of bicycle infrastructure and should be widely available; municipalities should require bike parking facilities in all new development and should take advantage of MAPC's regional bike parking program to purchase discounted parking equipment.

Under Massachusetts law, bicyclists are considered drivers of vehicles with rights to use the public roads and the responsibilities to follow the same traffic laws as motorists. In 2005, the Municipal Police Training Committee voted to incorporate training on bicycle laws into their "In-Service Legal Update" program, which provides professional development training for veteran officers. A proposed "Bicyclist's Bill of Rights" would clarify the rules and responsibilities for bicyclists and requiring bicycle law training for all police officers. Improved reporting forms and strong financial incentives for complete reporting by municipalities would increase the quality and availability of data on pedestrian and bicycle crashes.

14.a Municipalities and transportation agencies should develop and require maintenance and operation plans for paths, sidewalks, shoulders, and bicycle lanes

14.b All municipalities should participate in the Regional Bike Parking Program

14.c The Legislature should adopt a Bicyclist's Bill of Rights and Responsibilities

14.d The Registry of Motor Vehicles and MassHighway should establish stronger requirements and an improved reporting system for pedestrian and bicycle crash data

15) Preserve and fully utilize existing rights of way

Rail rights of way are a valuable and increasingly rare resource that should be preserved and utilized. Rights of way constantly face encroachment from development and other competing uses. Once rights of way are fragmented, it is nearly impossible to return to viable track use.

The Commonwealth needs to establish strong policies and resources to preserve these rights of way. The region should also seek opportunities to create new bus ways along trail/rail rights of way. Trail design and development should consider incorporating a wide enough right of way to include a dedicated bus service lane. Regional and state transportation planning should evaluate existing and former railroad right of way for its potential to include dedicated bus routes.

15.a EOTPW should develop a stronger rail right of way preservation policy and funding plan

15.b The MBTA should develop a policy directive that allows and promotes transit-with-trail design

16) Provide pay-as-you-drive insurance

Pay-as-you-drive automobile insurance provides discounts based on actual vehicle mileage, with the highest discounts for those who drive the least. Pay-As-You-Drive pricing can help achieve several public policy goals including fairness, affordability, road safety, consumer savings and choice, and reduced traffic problems. It helps reduce traffic congestion, road and parking facility costs, and environmental impacts. It reduces the need for cross-subsidies currently required to provide “affordable” unlimited-mileage coverage to high-risk drivers. It can particularly benefit lower-income communities that currently pay excessive premiums.

Vehicle insurance is a significant portion of total vehicle costs, averaging about \$800 per vehicle-year in the U.S. A typical motorist spends almost as much on insurance as on fuel. It is the largest vehicle cost for many lower-income motorists. Insurance is currently considered a fixed cost with respect to vehicle use; a reduction in mileage does not usually provide a comparable reduction in insurance premiums. As a result, current insurance pricing overcharges motorists who drive less than average and undercharge those who drive more than average each year in a price category. Since lower-income motorists tend to drive less than average, current insurance pricing is regressive. It forces lower-income motorists on average to subsidize the insurance costs of higher-income motorists.

Pay-As-You-Drive insurance reflects the market principle that prices should be based on the cost of providing a good or service. Research indicates that within existing price categories, annual claims increase with annual vehicle mileage. Mileage is just one of several factors that affect crash rates. It would not improve actuarial accuracy (i.e., how well premiums reflect insurance costs for a particular vehicle) to use mileage instead of other rating factors, for example, to charge all motorists the same per-mile insurance fee, but accuracy improves significantly if annual mileage is incorporated in addition to existing rating factors. Any other price structure overcharges low-mileage motorists and undercharges high-mileage motorists within a rate class. An EPA study found that pay-as-you-drive insurance applied throughout a region could reduce congestion delays by 10%-25%.

16.a The Commonwealth should begin a pilot program that encourages insurance carriers to offer a pay-as-you-drive insurance options to motorists

C. Establish stable and sufficient financing for all modes

Metro Boston and Massachusetts need to develop significant additional resources to support the operation, maintenance, and expansion of the region’s transportation system. Increased and diversified revenue streams are necessary to address the \$15 to \$19 billion shortfall that the Commonwealth faces over the coming 20 years, just to maintain the existing transportation system. Support is also needed for the expansions, enhancements, and transportation alternatives necessary to support the region’s economy, environment, and quality of life. There is no single solution that will close the state’s funding gap and provide the resources to create new infrastructure. The region and the state need to develop diversified revenue sources that include increased fuel taxes, strategic application of user fees and tolls, transit fares, and local revenue generation.

Institutional reform is also critical, since each dollar saved through reform increases the amount available for maintenance, operation, and expansion. Of paramount importance is stabilization of MBTA finances to reduce that agency’s crushing debt burden and control the amount of money spent on health care and pensions. Reforms throughout the state’s transportation agencies can also help to control costs. For example, MassHighway must end the practice of paying for personnel and operating expenses through bonded funds, where they are paid off at a higher cost over a period of 20 years or more. Comprehensive asset management and efficient project delivery are critical for making the most of limited transportation funds, and are described in other sections of this Strategy.

Other innovative financial mechanisms can support a more robust transportation system. Local or regional revenue generation through taxes or fees would provide municipalities with additional flexibility and control over their own infrastructure needs, would promote greater coordination between local land use decisions and transportation, and would bolster the overall transportation system.

17) Increase statewide transportation revenue generation

Massachusetts needs an immediate source of new revenue that can be used to reduce the maintenance backlog and expand infrastructure to support sustainable land use patterns. New revenue streams should be diversified, dedicated to transportation so they are stable, reasonably related to transportation uses, and adaptive to increases in materials and labor costs.

State Gasoline Tax (cents/gallon)		
	Tax Rate	Last Increase
Connecticut	.49	2007
New York	.40	2007 (annual review)
Rhode Island	.31	2002
Maine	.29	2007(indexed)
National Average	.28	
Massachusetts	.21	1991
Vermont	.20	1997
New Hampshire	.19	1995

The FHA Highway Statistics Series

The gas tax in Massachusetts (currently 21 cents per gallon, not including a 2.5 cent Underground Storage Tank tax) has not been raised since 1991, during which time it has lost much of its purchasing power.

17.a The Legislature and Governor should increase the gas tax

17.b Unused portion of funds from the Underground Storage Tank program, if any, should be rededicated to transportation.

18) Stabilize and strengthen finances of the MBTA and regional Transit authorities

Due in part to debt assumed from Big Dig mitigation projects, 30% of the MBTA operating budget is dedicated to debt relief. The MBTA is so overwhelmed with debt and the cost of the employee pension program that it cannot serve the basic needs of its ridership or properly maintain its infrastructure, let alone finance needed expansion projects.

The Blue Ribbon Commission that designed Forward Funding did not foresee the drop in sales tax revenue when they dedicated a portion of that revenue to manage the MBTA's operating expenses. The decrease in the sales tax has made it impossible for the MBTA to reduce its debt burden, and operating and maintenance has suffered. Action must be taken to address the overwhelming burden of debt service and the ballooning cost of employee benefits to ensure the continued financial viability of the MBTA and its daily operations.

The states RTA's also find themselves in a position of flat revenue streams and increased costs. Every year they are making the hard choices to cut back on service. RTA's provide the primary transit option for many communities in the region and are an integral element of the suburban system that collects riders using the commuter rail. Their continued stability, including secure funding streams, are vital to the maintenance and expansion regional transit network.

18.a The Legislature should take action for the Commonwealth to assume a portion of the MBTA's debt

18.b MBTA should reduce the rate of growth of fringe benefits costs by reforming health care and retirement policies

18.c MAPC should assist the MBTA and the RTAs in exploring the possibility of joining the Group Insurance Commission (GIC)

18.d The Legislature should "current fund" RTAs

19) Implement tolling strategies to reduce congestion and raise revenue

Massachusetts and Metro Boston should make greater use of tolls and other pricing mechanisms to reduce congestion and generate revenue to support transportation system maintenance and alternative modes. While the gas tax is

important and should be increased, there are many reasons to move to a more diversified revenue system with a larger share of tolls and user fees:

- As residents move to more fuel-efficient vehicles, fuel tax revenues will decline over time;
- If applied equitably, road pricing mechanisms such as tolls charge users more precisely for what they use; and
- Strategic pricing mechanisms can encourage more efficient use of infrastructure capacity and can generate revenue to fund alternatives.

However, the existing application of tolls in Metro Boston is neither equitable nor strategic. Currently, only motorists traveling into or out of the Inner Core on I-90 and Route 1 pay tolls, while motorists entering or leaving via other routes pay no tolls. In 1998, the Turnpike Authority established a schedule for regular toll increases to meet operating expenses and bond commitments. Proposed increases in excess of the scheduled increase, combined with elimination of tolls elsewhere on the Turnpike, would shift an inequitable burden onto certain motorists, while failing to raise sufficient revenue or encourage more efficient use of infrastructure capacity.

In pursuit of needed revenue as well as greater equity, the Commonwealth should establish open-road tolling on all limited access highways, automatically charging drivers based on the number of miles they travel on the highway system. Given the current state of technology and anticipated improvements, this goal should be achievable within five years.

For both existing and new tolls, the state should evaluate the application of congestion pricing structures. Congestion pricing strategies set the cost of the tolls based on time of day and congestion levels, with higher prices for congested peak periods, and lower prices for off-peak periods. Congestion pricing can be revenue neutral, or the revenue generated could support complementary transit systems that help to reduce congestion and the negative environmental impacts of single occupancy vehicle travel.

19.a Massport and Turnpike Authority should regularly review tolls and make reasonable increases as scheduled and necessary to meet operating expenses and bond commitments

19.b The Massachusetts Turnpike Authority and Massport should implement congestion pricing on their highway, tunnel, and bridge assets

19.c EOTPW should develop a plan to implement mileage-based fees and open road tolling within the next five years.

20) Eliminate agency-level inefficiencies and redundancy

Transportation agencies should fund operating personnel and expenses through operating rather than capital budgets.

In FY 2004, Massachusetts spent 44 percent of its highway funds on debt service, by far the highest in the nation. According to the Transportation Finance Commission, the Commonwealth spent \$162 million in bonded capital funds for Mass Highway operations in 2006, including salaries for 1,000 people. Using so much debt means that more and more of the revenue stream in the future will be devoted to paying off the debt, rather than paying for new maintenance or construction needs.

Ending this practice and keeping personnel in the operating budget would save the Commonwealth \$825 million over the first 20 years, and additional hundreds of millions in the long term.

20.a The EOTPW should phase out the practice of using capital funds for operating expenses as soon as possible

21) Increase local and regional revenue generation for transportation

Local governments and residents should be provided the tools to generate funds to improve transportation and transit opportunities. See also Implementation Strategy #2, “Strengthen Municipal Finance.”

21.a MAPC should work with stakeholders to develop legislation that would allow local and regional tax referenda

21.b Municipalities should make use of District Improvement Financing to help fund infrastructure improvements

21.c Municipalities should make use of impact fees

22) Maintain fares as a significant source of revenue for the MBTA and regional transit authorities

Transit provision is a vital function of the region’s economic and social health. Some populations are dependent on transit as their primary means to access to jobs, healthcare, and services. The MBTA and regional transit authorities should not be expected to fund themselves independently. Subsidy from the Commonwealth is reasonable and necessary, but it is also important that transit passengers pay a meaningful share of the service operating cost.

22.a The MBTA and the RTAs should institute regular and predictable increases in fares to keep pace with inflation

22.b The MBTA and the RTAs should consider instituting off-peak pricing for transit to encourage increased ridership and more efficient use of transit infrastructure.

D. Promote an efficient and transparent project delivery system

Transportation finance resources will remain scarce into the foreseeable future, demanding that the MPO and other state agencies use those resources efficiently. Costs can be

controlled by adopting transportation programs that are appropriately scaled to the level of expected revenue, utilizing innovative project delivery methods, and implementing dispute resolution mechanisms that keep projects progressing. Project delivery must also be constantly assessed to enable continuing improvement and demonstrate the accountability necessary to restore public confidence.

The existing inefficiencies in the project delivery system are crippling the region's ability to make improvements. Every dollar that is lost due to delays, conflicts, or inefficient construction practices is a dollar that cannot be spent to build the infrastructure this region needs. Inefficient project delivery also creates a vicious cycle, as delays and cost overruns have a ripple effect on projects further down the pipeline, driving up their costs. Even worse, the general public sees a process in which money is being spent inefficiently, and is less willing to support new revenue options such as tolls and taxes, in turn delaying future construction projects.

Efforts to improve project delivery must begin with realistic and fiscally-constrained transportation programs that are structured to minimize the ripple effect of delays and overruns. Projects should be evaluated earlier in the process and those that are either not ready or inconsistent with sustainable land use objectives should be rejected with recommendations for improvements. Project design funding can help to improve the readiness of programmed projects, as can improvements to state-level bidding and procurement process. The state should also apply project delivery innovations that are commonplace in other states, such as design-build contracts and the use of a dispute review board to resolve conflicts between agencies and contractors. All of these improvements should be documented through a detailed, publicly accessible, and dynamic performance measurement system that can document which projects are being delivered on time and under budget, and which are not.

23) Adopt a realistic and financially constrained regional and state Transportation Improvement Programs

In order to use limited funds wisely, the MPO and the state must develop Transportation Improvement Program (TIP) priorities that accurately reflect the availability of funds. A realistic transportation program will ensure that state and federal funds can be fully accessed, fewer projects will be delayed, and cost overruns will have a minimal ripple effect on other projects.

The TIP is the mechanism by which the MPO programs funding for improvements over a four-year period. It programs federal-aid funds for transit projects, and state and federal-aid funds for roadway projects. The TIP is financially constrained: the MPO can only include projects for which funds are expected to be available. However, actual cost of construction routinely exceeds the programmed cost, due to delays, extensions, and redesigns. The TIP is revised numerous times each year to account for these overruns, which occur due to the inclusion of:

- projects that are not ready for construction;
- more projects than available funding can support; or
- more projects than MassHighway has the capacity to plan and construct.

The inclusion of borderline projects in the program's "out years" is also costly and undermines the effectiveness of the transportation planning process. Inclusion of poorly ranked projects encourages unrealistic expectations and unnecessary spending by municipal proponents, who often base their planning and MPO advocacy efforts on the belief that projects will eventually be funded.

The statewide TIP (STIP) prepared by the Executive Office of Transportation, is a compilation of all the regional priorities. However, the Federal Highway Administration recently disapproved the STIP based on a determination that that the plan was not financially constrained. As a result, the disbursement of federal transportation funding to the state was held up and dozens of projects were delayed, leading to even higher costs.

A more accurate assessment of project readiness will help the MPO to program money for construction only to projects that are mature. A pre-approval process accompanied by access to design funding would improve the quality and readiness of projects reviewed by the MPO. This process should be structured to reject projects that do not meet a basic criteria threshold. Approved projects would be eligible for funding for design, and rejected projects would receive recommendations on how they could be revised to improve consideration. Such a process would limit the number of inappropriate projects reaching the MPO and would improve the readiness of those that do advance.

In the long term, the MPO should consider adopting controls to reduce "over-programming" of future years. Such controls might state that projects programmed for the out years should consist of no more than a certain percentage of expected funding levels for those years. As a result, the programming process would be less vulnerable to cost overruns or funding constraints.

23.a The MPO should develop a pre-approval process that is a condition for further consideration in the TIP process

23.b The MPO should develop a program to provide design funding for approved projects and technical assistance for rejected projects

23.c The MPO should regularly and publicly evaluate the TIP to identify the number of projects that have been delayed and the costs of delay

24) Utilize public-private partnerships and other alternative project delivery methods where appropriate

Around the country, state transportation agencies are exploring various types of innovative project delivery, including partnerships with private construction or asset management firms to promote cost savings and efficiencies, reduce risk, and/or leverage expertise and experience. One example of these Public-Private-Partnerships (PPP) is the State of Indiana's leasing an interstate highway to a private firm to toll, maintain, and operate in exchange for funding directed

towards other state transportation activities. A smaller and more common example of PPPs is the consolidation of design-bid-build process to one construction firm. The Federal Highway Administration is increasingly promoting these partnerships through pilot programs and new guidance.

Massachusetts' experience with Public-Private-Partnerships has been mixed. PPP's have been utilized by the MBTA for operation and management of the commuter rail system. The operator, Mass Bay Commuter Railroad Co. (MBCR), has been more successful than the MBTA in addressing capital planning and expenditure issues on the commuter rail. However, MBCR has also been criticized for poor service quality; and the MBTA finds itself with limited alternatives now that MBCR is in place and running the service. Modern Continental was contracted to reconstruct and operate Route 3 north of Route 128, but the operation portion of the contract was never executed because of Modern Continental's liquidity issues.

These examples and experiences in other states demonstrate that the advantages of PPPs are also accompanied by considerable risk. Successful application of PPPs for complex, expensive, and high-profile projects requires considerable institutional capacity to plan, negotiate, and manage these arrangements. The Commonwealth's transportation agencies should build this capacity through a series of smaller, standardized pilot projects where contracting and operational models can be tested. The experience and practices developed through these pilot projects can then be applied to efforts of increasing scale and complexity.

24.a EOTPW should convene a reform committee to review the bid, design, and construction process for transportation projects with a mandate to implement time and cost saving reforms.

24.b EOTPW should develop a pilot program to use design-build contracts on common projects (such as footprint-bridge and roadways)

25) Increase transportation agency capacity to design and construct high-quality projects

The region needs transportation agencies with the professional capacity to plan, design, and construct state-of-the-art transportation improvements. Staff at MassHighway, the MBTA, EOTPW, and other state agencies should be experts in and advocates for innovative, multi-modal transportation projects. A culture of problem-solving will help to create more responsive solutions to transportation challenges and will build public confidence in transportation agencies.

Over recent years, the professional capacity of many transportation agencies have been depleted by staff cuts. For example, MassHighway staff declined by 45% from 1990 to 2006. Outsourcing has shifted some of the responsibilities and costs of project planning and design to private firms. Staff reductions in and of themselves are not necessarily bad, but the overall capacity of the agency appears to have declined. A 2003 Federal Highway Administration report found

that staffing levels in 2001 were “well below the minimum needed to fulfill the necessary construction and materials testing functions of the statewide construction program,” and that “there are a significant number of personnel who lack the necessary training and qualifications to perform inspection, sampling, and testing of construction materials.”

Furthermore, the cost of contracting for technical and professional services may exceed cost of in-house staff, especially considering the time and staff costs associated with procurement and contracting. Private engineering firms are also more likely to bring an engineering-driven, mode-specific focus to project design, with less consideration for the community context and broader public policy principles. Through persistent outsourcing, agencies lose their ability to sustain a creative, solution-oriented professional culture.

26) Implement dispute avoidance and resolution systems for transportation projects

Massachusetts’ transportation agencies should adopt a Dispute Review Board (DRB) process that reduces costly and time consuming conflicts between agencies and contractors.

26.a EOTPW should require the use of dispute review boards for all state funded projects over a certain size

27) Implement comprehensive transportation performance analysis and reporting

Massachusetts transportation agencies must develop comprehensive systems to assess project delivery and operation. Such a system will have both internal and external purposes: internally, it will help create a “feedback loop” to help transportation agencies improve project delivery and public policy; externally, it will demonstrate accountability and pursuit of efficiency necessary to restore public confidence in the transportation system. Only with detailed reporting and demonstration of increasing efficiency will the public be willing to provide the revenue necessary to maintain and expand the transportation system.

Massachusetts’ 2008 Transportation Bond Bill was an important first step in establishing performance measurements and reporting requirements. The resulting MassHighway Scorecard is a valuable document but does not provide a detailed and comprehensive accounting of agency activities. It presents aggregate spending figures and descriptions of selected projects, but does not include project-specific spending and progress information or explanations for delays and overruns

The Executive Office of Transportation should establish a more comprehensive and detailed reporting system to assess the performance of individual departments, divisions, and projects.

27.a The EOTPW should establish quarterly, project-level reporting requirements for all transportation agencies

E. Establish a comprehensive maintenance program for safety and future cost savings

Aggressive preventative maintenance of the transportation system is a safety and cost saving issue.

28) Develop a comprehensive asset management/life-cycle cost system

In order to minimize the need for long term maintenance investments, improve user satisfaction, and maximize system performance, the Commonwealth should create a comprehensive asset management system for its current transportation inventory. This plan would be a data driven monitoring system that would evaluate current conditions and performance and identify capital investment needed to maintain a satisfactory performance level. Management systems have already been partially implemented for some of the Commonwealth's building (CAMIS by DCAM and FAMIS by DCR) and bridge (PONTIS) assets. The next step needs to be taken to guarantee the degree of annual maintenance funding needed to address issues raised by the management systems and prevent higher long term expenses. In addition to CAMIS, FAMIS, and PONTIS, priority funding should be allocated to install management systems for roads, bridges, rail lines, rolling stock, and supportive assets. Integral to any transportation asset management plan is the commitment to invest in systematic preventative maintenance. The agencies and secretariats of the Commonwealth should also consider developing centralized coordinated systems on similar assets. The Department of Capital Management uses the CAMIS system to manage its assets, while the Department of Conservation and Recreation manages its buildings with the FAMIS system. CAMIS AND FAMIS are run on the same base software. These systems and their data should be linked centralized to maximize their effectiveness and efficiency. The PONTIS system should be extended to all state agency controlled bridges in the Commonwealth. It currently manages MassHighway and MBTA bridges but does not include all DCR bridges.

¹ Based on the State of Washington DOT Gray Notebook

28.a EOTPW and the transportation agencies should develop and implement a comprehensive transportation asset management/life-cycle cost system

28.b MAPC should work with stakeholders to develop legislation that mandates allocation of maintenance funding to cover costs over the life of each project.

28.c EOTPW should incorporate asset management reporting into the comprehensive quarterly performance report

29) Reduce the backlog of structurally deficient bridges

The emergency bridge plan proposed by the Governor and approved by the legislature in July of 2008 represents strong action on a crisis felt around the country. The program will repair or replace between 250-300 bridges over the next 8 years at an expense of \$3 billion. The program is funded, for the most part, by new bonding. These bonds are backed by future gas tax earnings and anticipated federal revenues. The program will cause the Commonwealth to take on a sizeable amount of new debt in an environment where Massachusetts already ranks highest in the nation in percentage of highway funds spent on debt service. Consistent funding sources should be identified or new funding sources should be developed to ensure that this and other maintenance programs become routine.

Provisions of the bridge bond bill containing detailed transparency and oversight were removed from the plan. The need for this emergency capital funding stems from a lack of ongoing maintenance and oversight. This program is an opportunity to turn the page on an era of decaying and neglected infrastructure. A comprehensive monitoring and reporting system would set the proper tone going forward. EOTPW and MassHighway should employ the originally identified transparency and oversight provisions in the implementation the accelerated bridge repair program.

30) EOTPW should address the inherent disincentive in the current agency budget process

Currently, system maintenance is a function of a transportation agency's operating budget. In this era of limited resources and increased costs, agency leaders are often forced to decide between funding programs and personnel or routine maintenance. Programs and personnel are much higher in the eye of the public and elected officials, deferring maintenance offers much less resistance. This practice is further encouraged by the fact that if maintenance is deferred to the point that an asset requires a complete overhaul (the Longfellow Bridge for example) or fails its rehabilitation is funded through capital funds. These emergency capital funds are under the control of DCAM or the Commonwealth, and would not affect the agency operating budget. In effect Agencies are disincentives to maintain their assets.

A system of incentives should be developed to reward agencies and managers that prioritize needed maintenance and reduce long term costs. The newly deployed asset management systems should be used to implement this reward system.

F. Improve the competitiveness of rail freight

Rail freight has an important role to play in balancing modes. By directing more commerce onto the rail system, the region can reduce congestion, preserve capacity, reduce emissions, limit the maintenance costs on roads and bridges, and cut costs paid for goods imported into the region. Historically, residential resistance, lack of investment, limited capacity, and competition from passenger rail have limited the competitive viability of rail freight versus truck freight. With the recent increase in gas prices and increased congestion and degradation of the region's road network, it is time to reevaluate rail as a viable freight option. At the very least, the region should ensure that existing rail freight capacity is not further diminished.

31) Conduct statewide freight priority needs assessment

Efficient freight provision should be an economic development priority of the Commonwealth. Rail and truck freight is facing encroachment from residential and commercial development. Routes are increasingly fragmented. The state's unbalanced reliance on truck freight over rail is exacerbating existing congestion and roadway maintenance issues. A comprehensive statewide priority needs assessment is needed. EOTPW is currently conducting a Statewide Freight plan. This planning process should incorporate asset need assessment elements including:

- Conduct a statewide freight asset inventory
 - Establish infrastructure investment priorities
 - Establish freight corridors and focus investment and freight preservation within these corridors
 - Review and amend current truck freight tolling rates in relationship to roadway impacts
 - Recommend appropriate locations to separate freight and passenger rail
 - Establish freight project evaluation and benchmarking
 - Recommend methods for improving the communication among the Commonwealth, MPOs, RPAs, municipalities, and private freight carriers
 - Develop recommendations to improve the freight connection from the Port of Boston and Connolly Terminal to the state's main railways
 - Assess the viability and benefit of creating double-stacking routes
- MPOs and the state should jointly develop freight project evaluation criteria linked to state plan

31.a EOTPW should complete the Statewide Freight plan currently underway

32) Establish double-stacking priority

While the double-stacking assessment is taking place, policies should be implemented to ensure that the Commonwealth's freight corridors are not further constricted in regard to double-stacking access. New construction over rail rights of way must allow for double-stacking clearance. In addition, double-stacking consideration should be incorporated into the bridge repair program. Bridges within potential double-stacking corridors should receive some priority for reconstruction (that includes double-stacking) over bridges of similar condition.