

## MEMORANDUM

**To:** Transportation Planning and Programming Committee  
**From:** MPO Staff  
**Date:** May 5, 2011  
**Re:** Investment Strategies for Paths to a Sustainable Region (Part II)

### BACKGROUND

At its April 14, 2011 meeting, the Transportation Planning and Programming Committee (Committee) agreed to allow staff to proceed with the development of different investment strategies for the Long-Range Transportation Plan (LRTP) – Paths to a Sustainable Region. The purpose of this work is to provide the Committee with the information for its decision-making regarding programming of the discretionary and major infrastructure funds available for the LRTP.

Since then, staff has developed three investment strategies as outlined below. In addition, staff did an inventory of past spending from 2008 to 2011 in all investment categories. As outlined in the memorandum from staff to the Committee on April 14, 2011, the investment categories that staff is working with are:

- Transit State of Good Repair
- Transit Maintenance and Modernization
- Transit Operations
- Transit Expansion
- Roadway State of Good Repair
- Roadway Modernization
- Roadway Expansion
- Roadway Traffic Management and Operations
- Freight Expansion
- Bicycle/Pedestrian Expansion
- Clean Air and Mobility Program

### FUNDING AVAILABLE TO THE MPO FOR PATHS TO A SUSTAINABLE REGION

The total amount of federal highway and transit money available in the Boston Region MPO by time period is shown in the Financial Overview table. The Massachusetts Department of Transportation (MassDOT) provided estimates of *highway funding* for the Boston Region's

LRTP in five-year time bands from 2011 to 2035. The estimates include the following funding categories:

- Major Infrastructure Projects
- Regional Discretionary Funding
- Federal Aid Bridge Projects
- National Highway System/Interstate Maintenance Projects
- Statewide Maintenance

In the last LRTP, the two categories – Major Infrastructure Projects and Regional Discretionary Funding, were the only categories in which the Committee was given the responsibility for project selection. However, in the past, only funding from the regional discretionary category has been available to the MPO. For Paths to a Sustainable Region, staff will assume the availability of the Major Infrastructure Projects and Regional Discretionary Funding categories for project selection. Table 1 summarizes this information by 5-year time bands.

The MPO has not yet received estimates for *transit funding* for Paths to a Sustainable Region, so staff developed estimates in order to show the Committee all of the federal funding that is anticipated for the Boston Region and proposed in the LRTP. To make these estimates, staff used the transit funding currently assumed to be available through 2014 and then grew that amount by 3% per year through 2035. The 3% per year assumption was provided by Federal Highway and Federal Transit for revenue projections in the previous LRTP. Staff is also continuing the assumption from the last LRTP that 100% of transit funding will go toward state of good repair, maintenance and modernization, and operations. Any transit expansion would be funded by the Commonwealth or through the MPO's flexing of highway funding to transit. This information is provided to show the MPO the source of *all* future funding.

Using the available estimates of *highway funding only*, staff prepared the three investment strategies as described below. They are designed to provide options that include a range of components highlighting various examples of funding possibilities for MPO consideration. In the development of this LRTP, the MPO is facing the problem of probable serious funding shortfalls and certain severe maintenance and state of good repair needs. These strategies may offer the MPO choices for working within these constraints while still maintaining the existing system, improving mobility in all modes, achieving greenhouse gas reductions, and moving toward the other forward-looking visions and policies the MPO embraces.

## **STRATEGY 1 – CURRENT APPROACH**

### **Programmed Highway Funding – Discretionary and Major Infrastructure**

This strategy proposes that current programming trends continue and that the projects listed in JOURNEY TO 2030 would continue to be funded with highway discretionary and major infrastructure funding in Paths to a Sustainable Region. It is shown in Table 1a. Twelve projects no longer would be carried forward because they are either under construction, advertised for construction or in the FFY 2011 element of the FFY 2011-2014 Transportation Improvement Program (TIP). These projects include:

- Pulaski Boulevard (Bellingham) – Under construction
- East Boston Haul Road (Boston) – Under construction in the spring, funded by MassPort
- Resurfacing at Various Locations (Boston) – Under construction
- Route 128/Route 35 and Route 62 (Danvers) – Under construction
- Route 9 Resurfacing (Natick & Framingham) – Under construction
- Route 85 (Hudson) – in 2011 TIP
- Route 139 (Marshfield ) – in 2011 TIP
- Quincy Center Concourse (Quincy) – Under construction
- Assembly Square Roadway (Somerville) – Under construction
- South Weymouth Naval Access Improvements (Weymouth) – Under construction
- Assembly Square Orange Line Station (Somerville) – Preparing to go out to bid in the spring, also in the 2011 TIP
- Wonderland Parking Garage (Revere) – Under construction

Crosby's Corner (included in the 2011 TIP), Route 18 in Weymouth (included in the 2011 TIP), and the Route 128 Add-a-Lane (in the TIP and under construction) must be included in the LRTP because they are ongoing Advance Construction projects.

The remaining projects and the Clean Air and Mobility Program (\$2 million per year with a 3% increase per year beginning in 2016) were then brought forward and programmed in the same time bands as in the previous LRTP. The cost for each project was calculated taking the current cost and increasing it by 4% per year to its programmed time period.

The 2031 to 2035 time period was left unassigned in all the strategies.

The projects and programs were also categorized and fell into several of the investment categories:

- roadway modernization (52%)
- roadway expansion (34%)
- transit expansion (9%)

- bicycle/pedestrian expansion (2%)
- Clean Air and Mobility Program (2%).

Percentages were calculated to show the total programmed and total unassigned highway discretionary funds. The share of unassigned funds in this strategy ranges from 23% to 40% in the time bands between 2016 and 2030. Staff proposes that this be left unassigned to allow for projects that are likely to be under \$10 million and non-capacity adding.

The percentage of unassigned funding in the first time-period (2011 to 2015) is 15%. This percentage assumes that the MPO will receive funding from both the Major Infrastructure Projects and Regional Discretionary Funding categories.

Information from Table 1a was then brought forward to Table 1b as described below.

### **Unassigned Highway Funding – Discretionary and Major Infrastructure**

In order to allocate the unassigned highway discretionary and major infrastructure funding identified in future years to investment categories, staff used the pattern from past expenditures in the FFY 2008-2011 TIP Target programming to develop percentages for future investments even though TIP targets include only discretionary funding not major infrastructure funding. This is shown in the first three columns of Table 1b. Staff's review of the FFY 2008-2011 TIP expenditures determined that the Committee allocated unassigned highway discretionary funding by the following investment categories:

- Roadway Modernization – 87%
- Bicycle/Pedestrian Expansion – 10%
- Other – 2%
- Roadway Traffic Management & Operations – 1%

These funding percentages were then applied to the unassigned highway discretionary and major infrastructure funding for each 5-year time band through 2030 to determine the assumed allocation of unassigned funding by investment category. Past Clean Air and Mobility Program TIP funding was excluded in this analysis to avoid double counting future investments.

In the roadway modernization and bicycle/pedestrian expansion investment categories, there are both proposed projects and unassigned funds. The unassigned funding forecasts were added to the programmed highway discretionary funding. For example, unassigned roadway modernization forecasts and the funding for the programmed roadway modernization projects listed in Table 1a were combined to determine the total investment in roadway modernization over the entirety of Paths to a Sustainable Region. The same was done for the bicycle/pedestrian expansion investments.

For the other investment categories, the dollar amounts were included as follows:

- Transit – assumed that all transit funding will go to state of good repair, maintenance and modernization, and management and operations (this category has combined the three investment categories)
- Roadway State of Good Repair – sum of the Federal Aid Bridge and National Highway System/Interstate Maintenance Funding from MassDOT estimates
- Roadway Expansion is a total of all roadway expansion projects listed in Table 1a
- Transit Expansion is the total highway funds flexed to transit listed in Table 1a
- Statewide Maintenance is the funding from MassDOT estimates under this category, and it includes activities that are maintenance and non-maintenance, such as ITS, CMAQ, HSIP, Transportation Enhancements, and Safe Routes to School
- Other is the funds that did not fall under one of the other categories such as study and design

Table 1b shows the total federal funding (programmed and unassigned) by investment category between 2011 and 2030 for Paths to a Sustainable Region for Strategy 1 which assumes that current programming trends continue (all numbers have been rounded). It shows that just under 50% of the federal funding into the region would be spent on transit (state of good repair, modernization, or management and operations), 14% on roadway state of good repair, 12% on roadway modernization, 5% on roadway expansion, and approximately 1% on both transit expansion (highway funding flexed to transit) and 1% on bicycle/pedestrian expansion. In addition, 16% of funding would be dedicated to Statewide Maintenance. This spending did not fit into a particular investment category, so it retained its own grouping. The MPO does not have authority over statewide maintenance funding.

The final column of Table 1b shows percentage by investment category for *federal highway funding only*. This column shows that the federal highway funding in the region would be allocated to:

- statewide maintenance (32%)
- roadway state of good repair (28%)
- roadway modernization (25%)
- roadway expansion (10%)
- transit expansion (3%),
- bicycle/pedestrian expansion (2%).

## **STRATEGY 2 – CURRENT LRTP WITH A REGIONAL NEEDS-BASED FOCUS**

### **Programmed Highway Funding – Discretionary and Major Infrastructure**

This strategy proposes highlighting from the current LRTP the large-scale regional solutions to identified regional needs. It focuses mainly on large-scale highway projects from the current

LRTP (both programmed projects and illustrative projects) that address the greatest regional needs. Table 2a lists projects that staff is recommending for this strategy.

Projects that may have met a need at the individual corridor level but did not specifically address the region's needs identified in Chapter 10 – Regional Needs Assessment of the Boston MPO Needs Assessment are not included. This resulted in a regional needs based short list of projects from the current LRTP. Staff then referred to the project evaluation table presented to the Committee at its April 14th meeting which evaluated the projects using the MPO's visions and policies as criteria and chose the large-scale projects that best addressed the visions and policies of the MPO. In addition to retaining the Clean Air and Mobility Program, staff is proposing a new program, the Isolated Intersection Improvement Program, which is derived from the Multimodal Traffic Management and Modernization investment category and is discussed in more detail in Strategy 3. This strategy did not flex highway funding to transit projects. It was assumed that the projects selected for this strategy would remain in the same time bands as they were in the current LRTP.

The projects and programs were also categorized and fell into several of the investment categories:

- roadway modernization (55%)
- roadway expansion (42%)
- transit and bicycle/pedestrian expansion (0%)
- Clean Air and Mobility Program (3%).

Percentages were calculated to show the total programmed and total unassigned highway discretionary funds. The amount of unassigned funds in this strategy ranges from 25% to 79% in the time bands between 2011 and 2030. This strategy provides for more unassigned funding to allow for projects that are likely to be under \$10 million and non-capacity adding.

### **Unassigned Highway Funding – Discretionary and Major Infrastructure**

The unassigned funding was allocated to future time bands using the same procedure as described in Strategy 1. Table 2b shows the total federal funding (programmed and unassigned) by investment category between 2011 and 2030 for Paths to a Sustainable Region for Strategy 2. The first three columns are identical to the table in Strategy 1 assuming the pattern from past expenditures. For future allocations, Table 2b shows that just under 50% of the federal funding into the region would be spent on transit (state of good repair, modernization, or management and operations), 14% on roadway state of good repair, 14% on roadway modernization, 5% on roadway expansion, and less than 1% on bicycle/pedestrian expansion. In addition, 16% of funding would be dedicated to Statewide Maintenance which includes ITS, Transportation Enhancements, CMAQ, HSIP, Safe Routes to School, and other smaller initiatives.

The sixth column (Percentage of Highway Funding in the Region) of Table 2b shows percentage by investment category for federal highway funding only. This column shows that the *federal highway funding* in the region would be allocated to:

- statewide maintenance (32%)
- roadway state of good repair (28%)
- roadway modernization (28%)
- roadway expansion (10%)
- bicycle/pedestrian expansion (2%)

The last column in Table 2b shows the percent change in spending in each of the investment categories from Strategy 1:

- State of Good Repair & Maintenance – no change
- Modernization – Roadway (13%)
- Expansion – Roadway (-6%)
- Expansion – Transit (-100%)
- Expansion – Bicycle/Pedestrian Specific (-2%)
- Clean Air and Mobility – no change
- Traffic Management & Operations – Roadway (67%) (This category has a large percentage increase; however, it only changes from 0.04% to 0.1%)
- Expansion – Freight Specific N/A
- Statewide Maintenance – no change
- Other (67%) (Although this category, which includes study and design, has a large percentage increase it only changes from 0.12% to 0.4%)

This column shows that Strategy 2 would guide the MPO to invest more in the investment categories of Roadway Modernization, Traffic Management & Operations, and Other while resulting in no change or reductions in the other investment categories. Spending in the investment category of Transit Expansion would be eliminated.

### **STRATEGY 3 – NEW MIX OF PROJECTS AND PROGRAMS – LOWER COST/MORE FLEXIBILITY**

#### **Programmed Highway Funding – Discretionary and Major Infrastructure**

Strategy 3, New Mix of Projects and Programs – Lower Cost/More Flexibility, was developed to pull into the LRTP a more diverse set of projects and a more varied set of programs. It is guided by the premise that in times of fiscal constraint, focusing on lower cost projects will provide the

flexibility to address mobility and other needs in many geographic areas of the MPO region, rather than focusing investments in only a few areas.

This strategy still begins with identified regional needs, but instead of looking back to the current LRTP, it looks to the MPO's investment categories and the project evaluation table (discussed above in Strategy 2) that address the greatest regional needs. It also brings to life the programs the Committee considered worthwhile initiating. These programs will allow the MPO to focus funding on lower cost projects in particular areas of benefit. Table 3a lists the projects and programs that staff is recommending for this strategy.

The programs included in this strategy are the programs that the Committee reviewed at an earlier meeting as those that they would consider including in the LRTP. The programs, the investment category in which projects in this program would fall, and examples of projects within the program are described below:

1. Bottleneck Program (included under the Expansion or Traffic Management and Operations investment category) – A bottleneck under this program is a localized section of highway that experiences reduced speeds and inherent delays due to a recurring operational influence. This would include lower cost projects. Staff included \$4 million per year for programming improvements in this program. Examples of projects that could be funded under this program include:
  - Route 53 in Hanover
  - Montvale Avenue in Woburn
  - New Boston Street Bridge in Woburn
2. Complete Streets Program (included under the Traffic Management and Modernization investment category) – Complete streets are roadways designed and operated to enable safe, attractive, and comfortable access and travel for all users, including pedestrians, bicyclists, motorists and public transport users of all ages and abilities. Staff included \$4 million per year for programming improvements in this program. Examples of projects that could be funded under this program include:
  - Needham Street/Highland Avenue in Newton and Needham
  - Trapelo Road in Belmont
3. Isolated Intersection Improvement Program (included under the Multimodal Traffic Management and Modernization investment category) – Staff looked at intersection projects brought to the MPO through the TIP process. These were compared to the CMP priority intersections. It was determined that 188 of the TIP-proposed intersections matched the identified CMP priority intersections. Staff estimates that intersection improvements cost approximately \$1 million/intersection. This results in about \$188,000,000 in intersection improvement needs. Staff included \$4 million per year for programming improvements to CMP priority intersections.



4. MBTA Safety Program (included under the Transit Management and Modernization investment category) – The MBTA system is old and the Authority faces a \$3b backlog of state-of-good repair projects. The MBTA will require additional funding to address safety-critical issues as they emerge, while continuing to attend to the ongoing SGR needs. In addition, some safety-critical projects are not currently funded. This program can fund some of these unmet needs. Staff included \$4 million per year (highway funding flexed to transit) for programming improvements in this program. Examples of projects that could be funded under this program include:
  - Positive train control on the Green Line and commuter rail
  - Restoration of multiple deficient bridges ( mostly on commuter rail)
  
5. Advanced Transit Management Program (included under the Transit Management and Modernization investment category). Staff included \$4 million per year (highway funding flexed to transit) for programming improvements in this program. Examples of projects that could be funded under this program include:
  - Hand-held, real-time, vehicle-location devices for inspectors in the field to help manage bus operations
  - Real-time information and vehicle arrival time technology
  - Automatic passenger counters for rapid transit
  - BRT enhancements on Key Routes (Transit Signal Priority, curb extensions, etc.)
  
6. Management and Operations Program (included under the Multimodal Management and Operations investment category) – The Massachusetts transportation agencies have developed key strategic ITS plans for improving mobility in the region. It is from these plans that projects could be identified. Staff included \$4 million per year for programming improvements in this program. Examples of projects that could be funded under this program include:
  - Incident Management – MassDOT’s highway operations center interface with Massachusetts State Police for real-time incident and congestion management
  - Safety and Security Management – Deploy critical infrastructure surveillance
  - Congestion Management – Freeway-Arterial Integrated Management
  
7. MassDOT Bay State Greenway Priority 100 Program – (included under the Bicycle/Pedestrian Expansion investment category) – This new MassDOT initiative is a blueprint for prioritizing and building an additional 100 miles of shared-use path projects by 2023. It is from this initiative that projects could be identified. Staff included \$2 million per year for programming improvements in this program. Examples of projects that could be funded under this program include:
  - Northern Strand/Bike to the Sea
  - Mass Central Rail Trail

- Bruce Freeman Rail Trail
- Somerville Community Path

The projects and programs were also categorized and fell into several of the investment categories: roadway modernization (52%), roadway expansion (24%), bicycle/pedestrian expansion (4%), a program for transit maintenance and modernization (9%), and the Clean Air and Mobility Program (4%), and a program for management and operations (7%).

### **Unassigned Highway Funding – Discretionary and Major Infrastructure**

The unassigned funding was allocated to future time bands using the same procedure as described in Strategy 1. Table 3b shows the total federal funding (programmed and unassigned) by investment category between 2011 and 2030 for Paths to a Sustainable Region for Strategy 3. The first three columns are identical to the table in Strategies 1 and 2, assuming the pattern from past expenditures. For future allocations, Table 3b shows that 51% of the federal funding into the region would be spent on transit (state of good repair, modernization, or management and operations), 14% on roadway state of good repair, 13% on roadway modernization, 3% on roadway expansion and 1% on bicycle/pedestrian expansion. In addition, 16% of funding would be dedicated to Statewide Maintenance which includes ITS, Transportation Enhancements, CMAQ, HSIP, Safe Routes to School, and other smaller initiatives.

The sixth column (Percentage of Highway Funding in the Region) of Table 3b shows percentage by investment category for federal highway funding only. This column shows that the *federal highway funding* in the region would be allocated to:

- statewide maintenance (31%)
- roadway state of good repair (28%)
- roadway modernization (26%)
- roadway expansion (6%)
- transit state of good repair (4%)
- bicycle/pedestrian expansion (3%)

The last column in Table 3b shows the percent change in spending in each of the investment categories from Strategy 1:

- Transit (2%)
- State of Good Repair & Maintenance – no change
- Modernization – Roadway (6%)
- Expansion – Roadway (-40%)
- Expansion – Transit (-100%)
- Expansion – Bicycle/Pedestrian Specific (46%)

- Clean Air and Mobility (42%)
- Traffic Management & Operations – Roadway (2145%) (This category has a large percentage increase; however, it only changes from 0.04% to 1.9%)
- Expansion – Freight Specific N/A
- Statewide Maintenance – no change
- Other (40%)

This column shows that Strategy 3 would guide the MPO to invest more in the investment category of Roadway Traffic Management & Operations, Roadway Modernization, Bicycle/Pedestrian Expansion, Clean Air and Mobility, Other, and Transit State of Good Repair/Modernization. There would be no change in several categories and reductions in spending in Roadway Expansion. Flexing Highway funding to Transit Expansion would be eliminated.

**FINANCIAL OVERVIEW TABLE: 2011-2030 Federal Transportation Funding Summary**

Federal Funding in the Boston Region	2011-15	2016-20	2021-25	2026-30	2011-30 Total
<b>Federal Transportation Funding in the Boston Region</b>	<b>\$ 2,603,422,000</b>	<b>\$ 2,970,340,817</b>	<b>\$ 3,798,696,995</b>	<b>\$ 4,465,377,400</b>	<b>\$ 13,837,837,212</b>
Federal Transit Funding in the Boston Region	\$ 1,425,000,000	\$ 1,558,498,817	\$ 1,806,724,995	\$ 2,094,489,400	\$ 6,884,713,212
Federal Highway Funding in the Boston Region	\$ 1,178,422,000	\$ 1,411,842,000	\$ 1,991,972,000	\$ 2,370,888,000	\$ 6,953,124,000
<b>MPO Federal Highway Discretionary and Major Infrastructure Funding</b>	<b>\$ 375,600,000</b>	<b>\$ 569,590,000</b>	<b>\$ 815,610,000</b>	<b>\$ 1,018,440,000</b>	<b>\$ 2,779,240,000</b>
<i>Major Infrastructure</i>	\$ 69,930,000	\$ 93,990,000	\$ 141,990,000	\$ 173,490,000	\$ 479,400,000
<i>Regional Discretionary Funding</i>	\$ 305,670,000	\$ 475,600,000	\$ 673,620,000	\$ 844,950,000	\$ 2,299,840,000

**TABLE 1a: Programmed Highway Discretionary and Major Infrastructure Funding - Strategy 1 "Current Approach"**

Project	Town	Investment Category	Current Cost (2011)	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	MPO Funding	*Non-MPO Funding
Route 128 Improvement Program	Randolph to Wellesley	Expansion - Roadway	\$149,000,000	\$149,000,000					\$149,000,000	
Crosby's Corner	Concord and Lincoln	Modernization - Roadway	\$68,189,830	\$68,189,830					\$68,189,830	
*Route 18	Weymouth	Expansion - Roadway	\$31,349,250	\$16,767,211					\$16,767,211	\$14,582,039
*Sullivan Square	Boston	Modernization - Roadway	\$43,300,000		\$41,600,000				\$41,600,000	\$15,377,710
Rutherford Avenue	Boston	Modernization - Roadway	\$49,200,000			\$78,771,000			\$78,771,000	
Needham Street/Highland Avenue	Newton and Needham	Modernization - Roadway	\$18,400,000			\$29,460,000			\$29,460,000	
Route 126/Route 135 Grade Separation	Framingham	Modernization - Roadway	\$58,500,000				\$113,950,000		\$113,950,000	
Trapelo Road	Belmont	Modernization - Roadway	\$16,394,990	\$17,732,822					\$17,732,822	
I-93/Route 3 Interchange (Braintree Split)	Braintree	Expansion - Roadway	\$36,000,000		\$30,508,856				\$47,374,000	
		Modernization - Roadway			\$16,865,144					
I-95/I-93 Interchange	Canton	Expansion - Roadway	\$235,500,000				\$169,730,470		\$458,731,000	
		Modernization - Roadway					\$289,000,530			
I-93/I-95 Interchange	Woburn, Reading, Stoneham, and Wakefield	Expansion - Roadway	\$297,000,000			\$57,060,840			\$475,507,000	
		Modernization - Roadway				\$418,446,160				
I-95 Northbound/Dedham St. Ramp/Dedham St. Corridor	Canton	Expansion - Roadway	\$35,000,000	\$37,856,000					\$37,856,000	
Middlesex Turnpike Phase III	Bedford, Billerica, Burlington	Expansion - Roadway	\$20,800,000		\$27,371,000				\$27,371,000	
Route 1 add-a-lane	Malden, Revere, Saugus	Expansion - Roadway	\$100,000,000				\$194,790,000		\$194,790,000	
Route 53	Hanover	Expansion - Roadway	\$1,000,000		\$1,316,000				\$1,316,000	
New Boston Street Bridge	Woburn	Expansion - Roadway	\$4,900,000		\$6,448,066				\$6,448,066	
Montvale Avenue	Woburn	Expansion - Roadway	\$3,700,000		\$4,870,000				\$4,870,000	
Bridge Street	Salem	Expansion - Roadway	\$10,800,000		\$14,212,000				\$14,212,000	
Assabet River Rail Trail	Hudson to Acton	Expansion - Bike/Ped	\$18,100,000	\$19,580,000					\$19,580,000	
Bruce Freeman Rail Trail	Acton, Concord	Expansion - Bike/Ped	\$18,700,000			\$29,939,000			\$29,939,000	
Green Line Extension College Ave to Route 16	MBTA	Expansion - Transit	\$140,608,000		\$185,031,000				\$185,031,000	
Clean Air and Mobility Program	Regionwide	Clean Air and Mobility	\$2,000,000 per year	\$10,000,000	\$10,936,820	\$12,678,772	\$14,698,171		\$48,313,763	

Programmed Highway Discretionary and Major Infrastructure Funding
Unassigned Highway Discretionary and Major Infrastructure Funding
Total Highway Discretionary and Major Infrastructure Funding

\$319,125,863	\$339,158,885	\$626,355,772	\$782,169,171	\$0	\$2,066,809,691
\$56,474,137	\$230,431,115	\$189,254,228	\$236,270,829	\$0	\$712,430,309
\$375,600,000	\$569,590,000	\$815,610,000	\$1,018,440,000	\$1,180,660,000	\$2,779,240,000

Percentage of Programmed Highway Discretionary and Major Infrastructure Funding
Percentage of Unassigned Highway Discretionary and Major Infrastructure Funding

85%	60%	77%	77%		74%
15%	40%	23%	23%		26%

Modernization - Roadway Funding Programmed
Expansion - Roadway Funding Programmed
Expansion - Bike/Ped Funding Programmed
Expansion - Transit Funding Programmed
Clean Air and Mobility Funding Programmed

\$85,922,652	\$58,465,144	\$526,677,160	\$402,950,530	\$0	\$1,074,015,486	52%
\$203,623,211	\$84,725,922	\$57,060,840	\$364,520,470	\$0	\$709,930,443	34%
\$19,580,000	\$0	\$29,939,000	\$0	\$0	\$49,519,000	2%
\$0	\$185,031,000	\$0	\$0	\$0	\$185,031,000	9%
\$10,000,000	\$10,936,820	\$12,678,772	\$14,698,171	\$0	\$48,313,763	2%

**TABLE 1b: 2011-2030 Federal Transportation Funding Summary - Strategy 1 "Current Approach"**  
**by Investment Category and MPO Discretionary and Major Infrastructure Funding**

<b>MPO Investment Categories (Plus)</b> <i>by primary purpose of projects</i>	<b>2008-11 Unassigned Highway Discretionary Funding</b>	<b>Percentage of Unassigned Highway Discretionary Funding</b>	<b>2011-30 Federal Funding in the Region</b>	<b>Percentage of 2011-30 Federal Funding in the Region</b>	<b>Percentage of Highway Funding in the Region</b>
Transit*			\$ 6,884,713,212	49.92%	
State of Good Repair & Maintenance - Roadway			\$ 1,936,375,000	14.04%	28.0%
Modernization - Roadway	\$ 82,509,954	87.0%	\$ 1,694,008,151	12.28%	24.5%
Expansion - Roadway			\$ 709,930,443	5.15%	10.3%
Expansion - Transit**			\$ 185,031,000	1.34%	2.7%
Expansion - Bike/Ped Specific	\$ 9,300,000	9.8%	\$ 119,400,651	0.87%	1.7%
Clean Air and Mobility			\$ 48,313,763	0.35%	0.7%
Traffic Management & Operations - Roadway	\$ 810,000	0.9%	\$ 6,086,466	0.04%	0.1%
Expansion - Freight Specific			\$ -	0.00%	0.0%
Statewide Maintenance***			\$ 2,190,005,000	15.88%	31.7%
Other****	\$ 2,191,800	2.3%	\$ 16,469,527	0.12%	0.2%
<b>Total</b>	<b>\$ 94,811,754</b>	<b>100.0%</b>	<b>\$ 13,790,333,212</b>	<b>100.0%</b>	<b>100.0%</b>

\*Includes State of Good Repair, Maintenance/Modernization, and Management and Operations for Transit

\*\*All federal funds for transit expansion are flexed from highway discretionary between 2011-30.

\*\*\*Includes items classified by MassDOT as Statewide Maintenance, also includes ITS, CMAQ, HSIP, Transportation Enhancements, Safe Routes to School, etc.

\*\*\*\*Includes funds that don't fit into an investment category, such as study/design.

**TABLE 2a: Programmed Highway Discretionary and Major Infrastructure Funding - Strategy 2 "Regional Needs-Based Focus"**

Project	Town	Investment Category	Current Cost (2011)	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	MPO Funding	*Non-MPO Funding
Route 128 Improvement Program	Randolph to Wellesley	Expansion - Roadway	\$149,000,000	\$149,000,000					\$149,000,000	
Crosby's Corner	Concord and Lincoln	Modernization - Roadway	\$68,189,830	\$68,189,830					\$68,189,830	
*Route 18	Weymouth	Expansion - Roadway	\$31,349,250	\$16,767,211					\$16,767,211	\$14,582,039
I-93/Route 3 Interchange (Braintree Split)	Braintree	Expansion - Roadway	\$36,000,000		\$30,508,856				\$47,374,000	
		Modernization - Roadway			\$16,865,144					
I-95/I-93 Interchange	Canton	Expansion - Roadway	\$235,500,000				\$169,730,470		\$458,731,000	
		Modernization - Roadway					\$289,000,530			
I-93/I-95 Interchange	Woburn, Reading, Stoneham, and Wakefield	Expansion - Roadway	\$297,000,000			\$57,060,840			\$475,507,000	
		Modernization - Roadway				\$418,446,160				
I-95 Northbound/Dedham St. Ramp/Dedham St. Corridor	Canton	Expansion - Roadway	\$35,000,000	\$37,856,000					\$37,856,000	
Route 1 add-a-lane	Malden, Revere, Saugus	Expansion - Roadway	\$100,000,000				\$194,790,000		\$194,790,000	
I-495/I-290/Route 85 Interchange	Marlborough and Hudson	Expansion - Roadway	\$37,400,000		\$9,843,170				\$49,215,849	
		Modernization - Roadway			\$39,372,679					
Clean Air and Mobility Program	Regionwide	Clean Air and Mobility	\$2,000,000 per year	\$10,000,000	\$10,936,820	\$12,678,772	\$14,698,171		\$48,313,763	
Isolated Intersection Improvement Program	Regionwide	Modernization - Roadway	\$2,000,000 per year		\$12,309,487	\$14,270,069	\$16,542,921		\$43,122,477	

Programmed Highway Discretionary and Major Infrastructure Funding
Unassigned Highway Discretionary and Major Infrastructure Funding
Total Highway Discretionary and Major Infrastructure Funding

\$281,813,041	\$119,836,155	\$502,455,841	\$684,762,092	\$0	\$1,588,867,130
\$93,786,959	\$449,753,845	\$313,154,159	\$333,677,908	\$0	\$1,190,372,870
\$375,600,000	\$569,590,000	\$815,610,000	\$1,018,440,000	\$1,180,660,000	\$2,779,240,000

Percentage of Programmed Highway Discretionary and Major Infrastructure Funding
Percentage of Unassigned Highway Discretionary and Major Infrastructure Funding

75%	21%	62%	67%		57%
25%	79%	38%	33%		43%

Modernization - Roadway Funding Programmed
Expansion - Roadway Funding Programmed
Expansion - Bike/Ped Funding Programmed
Expansion - Transit Funding Programmed
Clean Air and Mobility Funding Programmed

\$68,189,830	\$68,547,310	\$432,716,229	\$305,543,451	\$0	\$874,996,820	55%
\$203,623,211	\$40,352,026	\$57,060,840	\$364,520,470	\$0	\$665,556,547	42%
\$0	\$0	\$0	\$0	\$0	\$0	0%
\$0	\$0	\$0	\$0	\$0	\$0	0%
\$10,000,000	\$10,936,820	\$12,678,772	\$14,698,171	\$0	\$48,313,763	3%

**TABLE 2b: 2011-2030 Federal Transportation Funding Summary - Strategy 2 "Regional Needs-Based Focus"**  
*by Investment Category and MPO Discretionary and Major Infrastructure Funding*

<b>MPO Investment Categories (Plus)</b> <i>by primary purpose of projects</i>	<b>2008-11 Unassigned Highway Discretionary Funding</b>	<b>Percentage of Unassigned Highway Discretionary Funding</b>	<b>2011-30 Federal Funding in the Region</b>	<b>Percentage of 2011-30 Federal Funding in the Region</b>	<b>Percentage of Highway Funding in the Region</b>	<b>Percentage Change in Highway Funding from Strategy 1</b>
Transit*			\$ 6,884,713,212	49.9%		
State of Good Repair & Maintenance - Roadway			\$ 1,936,375,000	14.0%	28.0%	0.0%
Modernization - Roadway	\$ 82,509,954	87.0%	\$ 1,910,919,126	13.9%	27.7%	12.8%
Expansion - Roadway			\$ 665,556,547	4.8%	9.6%	-6.3%
Expansion - Transit**			\$ -	0.0%	0.0%	-100.0%
Expansion - Bike/Ped Specific	\$ 9,300,000	9.8%	\$ 116,762,608	0.8%	1.7%	-2.2%
Clean Air and Mobility			\$ 48,313,763	0.4%	0.7%	0.0%
Traffic Management & Operations - Roadway	\$ 810,000	0.9%	\$ 10,169,647	0.1%	0.1%	67.1%
Expansion - Freight Specific			\$ -	0.0%	0.0%	N/A
Statewide Maintenance***			\$ 2,190,005,000	15.9%	31.7%	0.0%
Other****	\$ 2,191,800	2.3%	\$ 27,518,310	0.2%	0.4%	67.1%
<b>Total</b>	<b>\$ 94,811,754</b>	<b>100.0%</b>	<b>\$ 13,790,333,212</b>	<b>100.0%</b>	<b>100.0%</b>	

\*Includes State of Good Repair, Maintenance/Modernization, and Management and Operations for Transit

\*\*All federal funds for transit expansion are flexed from highway discretionary between 2011-30.

\*\*\*Includes items classified by MassDOT as Statewide Maintenance, also includes ITS, CMAQ, HSIP, Transportation Enhancements, Safe Routes to School, etc.

\*\*\*\*Includes funds that don't fit into an investment category, such as study/design.



**TABLE 3a: Programmed Highway Discretionary and Major Infrastructure Funding - Strategy 3 "New Mix of Projects and Programs - Lower Cost/More Flexibility"**

Project	Town	Investment Category	Current Cost (2011)	2011-2015	2016-2020	2021-2025	2026-2030	2031-2035	MPO Funding	*Non-MPO Funding
Route 128 Improvement Program	Randolph to Wellesley	Expansion - Roadway	\$149,000,000	\$149,000,000					\$149,000,000	
Crosby's Corner	Concord and Lincoln	Modernization - Roadway	\$68,189,830	\$68,189,830					\$68,189,830	
*Route 18	Weymouth	Expansion - Roadway	\$31,349,250	\$16,767,211					\$16,767,211	\$14,582,039
I-93/I-95 Interchange	Woburn, Reading, Stoneham, and Wakefield	Expansion - Roadway	\$297,000,000			\$57,060,840			\$475,507,000	
		Modernization - Roadway				\$418,446,160				
Route 1 add-a-lane	Malden, Revere, Saugus	Expansion - Roadway	\$100,000,000		\$131,593,178				\$131,593,178	
I-93/Route 3 Interchange (Braintree Split)	Braintree	Expansion - Roadway	\$36,000,000		\$30,508,856				\$47,374,000	
		Modernization - Roadway			\$16,865,144					
*Sullivan Square	Boston	Modernization - Roadway	\$43,300,000		\$41,600,000				\$41,600,000	\$15,377,710
Trapelo Road	Belmont	Modernization - Roadway	\$16,394,990		\$21,574,689				\$21,574,689	
Route 2/Route 16 Intersection	Cambridge	Modernization - Roadway	\$40,000,000				\$77,916,020		\$77,916,020	
Route 126/Route 135 Grade Separation	Framingham	Modernization - Roadway	\$58,500,000				\$113,952,179		\$113,952,179	
Route 1/Route 16 Interchange	Revere	Modernization - Roadway	\$10,000,000				\$19,479,005		\$19,479,005	
MassDOT/Mass State Police Communications Interface for Real-time Information	Regionwide	Management & Operations - Roadway	\$10,000,000		\$13,159,318				\$13,159,318	
Clean Air and Mobility Program	Regionwide	Clean Air and Mobility	\$3,000,000 per year	\$11,000,000	\$16,405,230	\$19,018,157	\$22,047,257		\$68,470,644	
Bottleneck Program (e.g., Route 53, Montvale Avenue, New Boston Street Bridge)	Regionwide	Expansion - Roadway	\$4,000,000 per year		\$10,936,820	\$12,678,772	\$14,698,171		\$76,627,525	
		Management & Operations - Roadway			\$10,936,820	\$12,678,772	\$14,698,171			
Complete Streets Program (e.g., Trapelo Road, Rutherford Avenue, Needham Street/Highland Avenue)	Regionwide	Modernization - Roadway	\$4,000,000 per year		\$21,873,640	\$25,357,543	\$29,396,342		\$76,627,525	
Isolated Intersection Improvement Program	Regionwide	Modernization - Roadway	\$4,000,000 per year		\$21,873,640	\$25,357,543	\$29,396,342		\$76,627,525	
MBTA Safety Program (e.g., Positive Train Control and Bridge restoration)	Regionwide	Modernization - Transit	\$4,000,000 per year		\$21,873,640	\$25,357,543	\$29,396,342		\$76,627,525	
Advanced Transit Management Program (e.g., BRT Enhancements, Hand-held, real-time, vehicle location devices, Real-time information, Automatic passenger counters)	Regionwide	Modernization - Transit	\$4,000,000 per year		\$21,873,640	\$25,357,543	\$29,396,342		\$76,627,525	
Management & Operations Program (e.g., Employ Critical Infrastructure Surveillance, Deploy and Manage Dynamic Message Signs, Arterial Traffic Monitoring )	Regionwide	Management & Operations - Roadway	\$4,000,000 per year		\$21,873,640	\$25,357,543	\$29,396,342		\$76,627,525	
MassDOT Bay State Greenway Priority 100 Program (e.g., Northern Strand/Bike to the Sea, Mass Central Rail Trail, Bruce Freeman Rail Trail)	Regionwide	Expansion - Bike/Ped	\$4,000,000 per year		\$21,873,640	\$25,357,543	\$29,396,342		\$76,627,525	

Programmed Highway Discretionary and Major Infrastructure Funding
Unassigned Highway Discretionary and Major Infrastructure Funding
<b>Total Highway Discretionary and Major Infrastructure Funding</b>

\$244,957,041	\$424,821,891	\$672,027,960	\$439,168,857		\$1,780,975,749
\$130,642,959	\$144,768,109	\$143,582,040	\$579,271,143	\$0	\$998,264,251
<b>\$375,600,000</b>	<b>\$569,590,000</b>	<b>\$815,610,000</b>	<b>\$1,018,440,000</b>	<b>\$1,180,660,000</b>	<b>\$2,779,240,000</b>

Percentage of Programmed Highway Discretionary and Major Infrastructure Funding
Percentage of Unassigned Highway Discretionary and Major Infrastructure Funding

65%	75%	82%	43%		64%
35%	25%	18%	57%		36%

Modernization - Roadway Funding Programmed
Expansion - Roadway Funding Programmed
Expansion - Bike/Ped Funding Programmed
Clean Air and Mobility Funding Programmed
Maintenance/Modernization - Transit Funding Programmed
Management and Operations - Roadway Funding Programmed

\$68,189,830	\$123,787,112	\$469,161,246	\$270,139,889	\$0	\$931,278,077	52%
\$165,767,211	\$173,038,854	\$69,739,612	\$14,698,171	\$0	\$423,243,847	24%
\$0	\$21,873,640	\$25,357,543	\$29,396,342	\$0	\$76,627,525	4%
\$11,000,000	\$16,405,230	\$19,018,157	\$22,047,257	\$0	\$68,470,644	4%
\$0	\$43,747,279	\$50,715,086	\$58,792,685	\$0	\$153,255,050	9%
\$0	\$45,969,777	\$38,036,315	\$44,094,513	\$0	\$128,100,605	7%

**TABLE 3b: 2011-2030 Federal Transportation Funding Summary - Strategy 3**  
**"New Mix of Projects and Programs - Lower Cost/More Flexibility"**  
*by Investment Category and MPO Discretionary and Major Infrastructure Funding*

<b>MPO Investment Categories (Plus)</b> <i>by primary purpose of projects</i>	<b>2008-11 Unassigned Highway Discretionary Funding</b>	<b>Percentage of Unassigned Highway Discretionary Funding</b>	<b>2011-30 Federal Funding in the Region</b>	<b>Percentage of 2011-30 Federal Funding in the Region</b>	<b>Percentage of Highway Funding in the Region</b>	<b>Percentage Change in Highway Funding from Strategy 1</b>
Transit*			\$ 7,037,968,262	51.0%	3.9%	2.2%
State of Good Repair & Maintenance - Roadway			\$ 1,936,375,000	14.0%	27.5%	0.0%
Modernization - Roadway	\$ 82,509,954	87.0%	\$ 1,800,017,805	13.1%	25.6%	6.3%
Expansion - Roadway			\$ 423,243,847	3.1%	6.0%	-40.4%
Expansion - Transit**			\$ -	0.0%	0.0%	-100.0%
Expansion - Bike/Ped Specific	\$ 9,300,000	9.8%	\$ 174,546,371	1.3%	2.5%	46.2%
Clean Air and Mobility			\$ 68,470,644	0.5%	1.0%	41.7%
Traffic Management & Operations - Roadway	\$ 810,000	0.9%	\$ 136,629,021	1.0%	1.9%	2144.8%
Expansion - Freight Specific			\$ -	0.0%	0.0%	N/A
Statewide Maintenance***			\$ 2,190,005,000	15.9%	31.2%	0.0%
Other****	\$ 2,191,800	2.3%	\$ 23,077,261	0.2%	0.3%	40.1%
<b>Total</b>	<b>\$ 94,811,754</b>	<b>100.0%</b>	<b>\$ 13,790,333,212</b>	<b>100.0%</b>	<b>100.0%</b>	

\*Includes State of Good Repair, Maintenance/Modernization, and Management and Operations for Transit

\*\*All federal funds for transit expansion are flexed from highway discretionary between 2011-30.

\*\*\*Includes items classified by MassDOT as Statewide Maintenance, also includes ITS, CMAQ, HSIP, Transportation Enhancements, Safe Routes to School, etc.

\*\*\*\*Includes funds that don't fit into an investment category, such as study/design.