MASSACHUSETTS DEPARTMENT OF TRANSPORTATION
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

STATE IMPLEMENTATION PLAN – TRANSIT COMMITMENTS
MONTHLY STATUS REPORT

MAY 17, 2016

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INTRODUCTION

This report is being submitted to the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) to provide an update on the status of the four outstanding State Implementation Plan (SIP) transportation control measure (TCM) projects: (1) improvements to the Fairmount Line, (2) the design of the Red Line/Blue Line Connector, and (3) the construction of the Green Line Extension to College Avenue (Medford) and Union Square (Somerville). The U.S. Environmental Protection Agency (EPA) approved the projects as part of the SIP on July 31, 2008. A complete description of the process by which those projects were included in the SIP is provided in the Boston Region MPO's long-range transportation plan – JOURNEY TO 2030 Amendment adopted on September 24, 2009 and amended on November 19, 2009. As part of the approval of the JOURNEY TO 2030 Amendment, FHWA and FTA stated:

> *"The demonstration of timely implementation of TCMs in the SIP is required for a conformity determination. In order to ensure that the TCMs are completed as scheduled, the Executive Office of Transportation and Public Works shall prepare monthly progress reports to FTA, FHWA, and EPA. In addition to these progress reports EOT [MassDOT after November 1, 2009] shall convene monthly meetings with all interested parties to discuss the status of each TCM. This reporting requirement will be effective staring November 200*9."

This is the forty-ninth update of the required monthly status reports, to be presented to the Boston Region MPO at their January 22, 2015 meeting. This report builds on the *State Implementation Plan Transit Commitments 2014 Status Report*, submitted to the Massachusetts Department of Environmental Protection on July 22, 2014. This report will be posted on the website of the Massachusetts Department of Transportation.

Following the submittal of the 2012 *Agency Response to Public Comments,* MassDOT is no longer reporting on the 1,000 Parking Space requirement, as that project is complete.

I. FAIRMOUNT LINE IMPROVEMENT PROJECT

SIP Requirement

Before December 31, 2011, construction of the following facilities shall be completed and opened to full public use: Fairmount Line improvements consisting of enhancements of existing stations including without limitation: platform extensions; improved lighting and improved access; a new station in the general location of Four Corners, and a new station in each of the neighborhoods of Dorchester, Mattapan and Roxbury; and bridge upgrades and other measures to improve service and increase ridership (the Fairmount Line project). EOT[1] shall meet the following interim deadlines for the Fairmount Line Project:

A. One year from the effective date of this regulation (December 1, 2006), develop a Request for Proposals for a design consultant, complete the competitive procurement process, and issue a notice to proceed for a design consultant.

- ✓ Done

B. Within two years following the issuance of a notice to proceed, complete final design, apply for all necessary permits and grants, file any required legislation, and initiate all public and private land acquisition.

- ✓ Done (for all elements of the project except for Blue Hill Avenue Station)

Project Description

The 9.2-mile Fairmount commuter rail line runs from South Station, previously served four stations (Uphams Corner, Morton Street, Fairmount, and Readville) in the communities of Dorchester, Mattapan, and Hyde Park, and terminates in the Readville section of Boston. The line, which uses right-of-way entirely owned by the MBTA, also includes 41 bridges. It is the only commuter rail line that exclusively serves neighborhoods within the City of Boston, but ridership has historically been low and passenger facilities along the line have not met modern standards.

The Fairmount Line Improvement Project is defined as the rehabilitation of the existing Uphams Corner and Morton Street Stations, construction of four new stations (Newmarket, Four Corners, Talbot Avenue, and Blue Hill Avenue), reconstruction of six existing railroad bridges (located over Columbia Road, Quincy Street, Massachusetts Avenue, Talbot Avenue, Woodrow Avenue, and the Neponset River), and construction of a new interlocking and upgraded signal system (required to advance the bridge reconstruction work). The intent of these upgrades has been to enhance future service, allowing for increased frequency on the line.

Planning Conformity

Throughout the life of the project, improvements to the Fairmount Line have been included in all relevant transportation planning documents, including the Regional Transportation Plans of the Boston Region Metropolitan Planning Organization (MPO).

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[1] EOT is the predecessor to the legislatively-created Massachusetts Department of Transportation (MassDOT). For the purposes of referencing 310 CMR 7.36(7) *Transit System Improvements* of the SIP, this report will continue to use the EOT designation. However, the MassDOT designation will be used for all other language or text contained in this report.

Project Status
The sections below describe the current status of the different elements of the Fairmount Line Improvement Project.

Systems
Necessary upgrades to the required interlocking and signal systems have been completed and are currently in use, which has allowed for the reconstruction of structurally deficient bridges along the Fairmount Line.

Bridges
A construction contract to replace the Columbia Road, Quincy Street, and Massachusetts Avenue bridges was awarded in October of 2007, and construction was completed in 2010. The construction of the Talbot Avenue and Woodrow Avenue bridges is complete (see "New Stations" below). Construction of three bridges over the Neponset River began in fall 2010, and was completed in summer 2013.

Existing Stations
As stated above, existing stations at Uphams Corner and Morton Street required only rehabilitation for the project. The MBTA held a station re-opening at Uphams Corner on January 23, 2007. The reconstruction of Morton Street was celebrated at a station re-opening on July 17, 2007. New elements at both stations include extended high-level passenger platforms, accessible walkways, canopies, benches, windscreens, signage, bicycle racks, variable messages signs, lighting, and landscaping. Work at both stations is complete.

New Stations
Four Corners Station opened for service July 1, 2013. The station had been under construction since January 2010. The construction of Four Corners Station experienced delays due to unforeseen geotechnical conditions, relocation of existing utilities, and a redesign of the inbound sloped walkway structure at Geneva Avenue. Substantial completion of Four Corners Station occurred in June 2013 and final construction was complete in September 2013. All outstanding change orders have been paid and the project is officially closed out.

The construction of **Talbot Avenue Station** and the **Talbot and Woodrow Avenue Bridges Rehabilitation** projects began in fall 2010. The construction lasted approximately twenty-six months, with substantial completion of the station and the bridges in October 2012 and final completion of work in January 2013. The structural replacement of the two bridges was completed over weekends in November and December 2011. Talbot Avenue Station opened in November 2012. There are several change orders that must be processed in order for this project to be closed out. The MBTA project office is negotiating with the Contractor to finalize payment.

Newmarket Station opened for service on July 1, 2013. The station had been under construction since October 2010. Delay in the completion of the station was attributed to the discovery of an existing power duct bank for the South Bay Shopping Center not previously identified on any

existing utility plans. The necessity to redesign elements of the inbound and outbound retaining walls and a delay in the manufacturing of the precast concrete platform panels further contributed to the delay.

The proposed **Blue Hill Avenue Station** has been the subject of significant community controversy over the past seven years. In early 2009, after design work for the station was well underway (at the 60% design level), a small number of abutters raised concerns about negative impacts to residences immediately surrounding the proposed station, which at the time was proposed to have two side platforms. In an effort to address these concerns, the MBTA conducted a new analysis of alternative station locations. This additional analysis determined that at least one alternative location (River Street) was infeasible due to track curvature, and that two other alternative locations (north of Blue Hill Avenue and south of Cummins Highway) would have greater impacts to abutting residential properties than would the original design and would also serve fewer riders at a greater cost. The MBTA developed one additional alternative that made use of a center-island platform at the original station site in order to address some abutter concerns by locating the platform further from homes and backyards. The MBTA then completed an additional analysis of noise and vibration impacts (and considered mitigation measures) to try to address any outstanding abutter concerns.

The MBTA and MassDOT made a final determination on the Blue Hill Avenue station in May 2011. Design of the center-island station concept is continuing, as is ongoing discussion with the opposing abutters about appropriate mitigation. The redesign of the station has reached the 100% level. While the community still has concerns the project team is now advancing the design with the understanding that continued coordination with the community is paramount. On September 15, 2014 the MBTA General Manager led a community meeting in Mattapan. The MBTA has engaged the Community in working group meetings to incorporate community concerns in the design. The latest meeting was held on April 2015. The 90% design plans were received in July 2015 as scheduled and are distributed for comment. 100% plans were submitted March 2016.

Project Funding

In August 2007, MassDOT and the MBTA executed a contract to transfer approximately $39 million from the 'immediate needs' Transportation Bond Bill of 2007 (which provided Commonwealth bond funding to support the costs of the SIP projects) from MassDOT to the MBTA to support the costs of (1) signal work, (2) reconstructing the Columbia Road, Quincy Street, and Massachusetts Avenue Bridges, (3) designing the Talbot Avenue, Woodrow Avenue, and Neponset River Bridges, and (4) designing the Newmarket, Talbot, and Blue Hill Avenue Stations.

A supplemental funding agreement providing $23,756,574 in Commonwealth bond funding to the MBTA was executed in June 2009 in order to advance the construction of the station at Four Corners. A third funding agreement, approved in June 2011 in the amount of $61,616,500, has allowed the remaining stations (including Blue Hill Avenue) and bridges to advance. These

contracts total approximately $124.4 million in authorized spending on the Fairmount Line Improvement Project to this point.

SIP Requirement Status

Community concerns (described above) regarding the construction of a station at Blue Hill Avenue, as well as construction challenges throughout the Fairmount Line project, have resulted in a delay of the overall Fairmount Line Improvement Project beyond the December 31, 2011 SIP deadline. However, three of the four stations – Four Corners, Talbot Avenue, and Newmarket – are open for service, although they were completed after the required SIP deadline. A reliable completion date for Blue Hill Avenue station now is expected to be in Summer 2018.

In its efforts to encourage new riders on the improved Fairmount Line, on July 1, 2013, the MBTA introduced a new fare structure for the Fairmount Line which makes fares on the line more competitive with MBTA rapid transit and bus fares. Travel between any two stations on the Fairmount Line, with the one exception of trips beginning or ending at Readville, has the same $2.10 fare as an MBTA subway trip.

Given the delays in final completion of the project, MassDOT prepared a Petition to Delay and an Interim Emission Offset Plan, to be implemented for the duration of the delay. Both the Petition and Offset Plan were submitted to DEP on July 27, 2011, and are posted to the MassDOT SIP website.

As described in the Offset Plan, MassDOT estimated the reduced emissions expected to be generated by the implementation of the new Fairmont Line stations. MassDOT and the MBTA, in consultation with Fairmount Line stakeholders, identified a set of potential interim emission reduction offset measures that would meet the emissions reduction targets. MassDOT submitted these proposed measures to DEP in a July 27, 2011 petition, after which time MassDOT and the MBTA continued to work to refine the offset concepts for implementation, including a second letter to DEP (dated November 29, 2011) describing changes to the proposed offsets. On January 2, 2012 (the first weekday following January 1), the offset measures were implemented: additional trips via a dedicated shuttle on the CT3 bus route between Andrew Station and Boston Medical Center and increased weekday frequency on the Route 31 bus. These services will remain in place until the Fairmount Line Improvement Project is fully complete.

II. RED LINE/BLUE LINE CONNECTOR - DESIGN

SIP Requirement
Before December 31, 2011, complete final design of the Red Line/Blue Line Connector, from the Blue Line at Government Center to the Red Line at Charles Station.

Project Description
The proposed Red Line/Blue Line Connector consists of an extension of the MBTA Blue Line under Cambridge Street to the Red Line station at Charles/MGH. As envisioned, the project would consist of two major components: (1) a new tunnel extending the Blue Line under Cambridge Street from Joy Street to Charles Circle and (2) a new underground Blue Line station connected to the existing Charles/MGH station. The project would also require a decision on whether and how to make use of existing Bowdoin Station.

The SIP requires only that MassDOT complete final design for the project. Construction of the Red Line/Blue Line Connector is not required.

Planning Conformity
The design of the Red Line/Blue Line connector project has been included in all relevant transportation planning documents, including the Regional Transportation Plans of the Boston Region MPO.

Project Status
On September 14, 2007, MassDOT filed an Expanded Environmental Notification Form with the Massachusetts Environmental Policy Act Office. A public scoping session was held on October 17, 2007, and the Secretary of Energy & Environmental Affairs issued a certificate on the project on November 15, 2007. Based on the project scope as defined in the MEPA Certificate on the Expanded Environmental Notification Form, MassDOT issued a Request for Proposals on March 27, 2008 for a consultant to complete the necessary environmental reviews and engineering for the project. MassDOT awarded a consultant contract during the summer of 2008.

MassDOT has completed the following tasks for the project:

Draft Environmental Impact Report
- The Draft Environmental Impact Report (DEIR) was filed on March 31, 2010
- A MEPA Certificate for the DEIR was issued on May 28, 2010

Public Outreach
- Six Working Group meetings were held
- A public hearing on the DEIR was held on May 3, 2010
  - A project website was created

Refinement of Alternatives/Conceptual Engineering

- Refinement of potential alternatives was performed for three options: (1) a no-build option, (2) a tunnel option with Bowdoin Station remaining open, and (3) a tunnel option with Bowdoin Station closed. The refinement of alternatives also included an evaluation of potential construction options (a mined tunnel vs. a cut-and-cover tunnel) and construction phasing schemes.
- A *Definition of Alternatives/Conceptual Engineering Report* was completed in November 2009.

Design Criteria

- A draft *Design Criteria Report* was prepared and was included with the *Definition of Alternatives Report*.

Alternatives Analysis

- An *Alternatives Analysis Technical Report* was completed on March 31, 2010.

Design

- The conceptual design of the project is complete.

Cost Estimates

- Conceptual cost estimates were included in the *Definition of Alternatives Report*.

Construction Staging and Sequencing Plans

- Construction staging and sequencing plans were included in the Draft Environmental Impact Report.

Real Estate Requirements

- Potential real estate impacts were identified as part of the DEIR.

Project Funding

The 'immediate needs' Transportation Bond Bill of 2007 provided state bond funding to support the costs of the SIP projects, including the design of the Red Line/Blue Line Connector project. The estimated funding needed to complete design increased from the $29 million estimated prior to the initiation of the environmental review/conceptual design process to $52 million, according to the new cost estimates completed during the development of the DEIR.

SIP Requirement Status

MassDOT has made a good faith effort to meet the commitment to complete final design of the Red Line/Blue Line Connector, including the accomplishments listed above. However, as part of the environmental review and conceptual design process, MassDOT determined that the ultimate construction costs for the project would far outstrip what the project costs were believed to be at the time that the SIP regulation was promulgated: $290 million at the time of the SIP regulation versus the best estimate of $748 million (escalated to year of expenditure) developed during the

environmental review process. MassDOT has already spent $3 million to advance the project through environmental review and conceptual design, but the current $52 million estimate to complete final design substantially exceeds the $29 million last identified for the effort in the 2009 Regional Transportation Plan for the Boston Region. Furthermore, MassDOT has been unable to identify funding with which to construct the Red Line/Blue Line Connector at any point in the next 20 years.

Therefore, MassDOT initiated a process to amend the SIP to permanently and completely remove the obligation to perform final design of the Red Line/Blue Line Connector. To that end, in 2011 MassDOT officially sought approval from DEP to support a SIP amendment process, a process which has included public input and discussion. MassDOT is not proposing to substitute any new projects in place of the Red Line/Blue Line Connector commitment, given the absence of any air quality benefits associated with the current Red Line/Blue Line commitment (final design only). Correspondence from MassDOT to DEP formally initiating the amendment process was submitted on July 27, 2011, and is posted to the MassDOT website. In response to requests made by elected officials, MassDOT and DEP provided additional information about the history and status of the project, as well as the rationale behind the request for amendment.

On September 13, 2012, DEP held two public hearings to take public comment on MassDOT's proposed amendments to 310 CMR 7.36, Transit System Improvements, including the elimination of the requirement to complete final design of the Red Line/Blue Line Connector. Between the two hearings there were 16 attendees, 10 of whom gave oral testimony. All those who spoke at the hearings spoke in favor of DEP not removing the commitment. DEP accepted written testimony until September 24, 2012.

On August 23, 2013, EPA sent a letter to FHWA providing an update on Massachusetts Air Quality Conformity. In that letter, EPA noted the Red Line/Blue Line Connector Design project has not met the SIP completion date of December 31, 2011, but that MassDOT is not obligated to implement interim emission reduction offset projects because no emission reductions are associated with the design project.

On October 8, 2013, the Department of Environmental Protection approved a request made by MassDOT in July of 2011 to revise 310 CMR 7.36 to remove the requirement for MassDOT to complete the design of the Red Line/Blue Line Connector. This revision to the State Implementation Plan had to be approved by the U.S. Environmental Protection Agency. On December 8, 2015, EPA published a final rule in the Federal Register approving a State Implementation Plan (SIP) revision submitted by the Commonwealth of Massachusetts on November 6, 2013. The final rule removes from the SIP the commitment to design the Red Line/Blue Line Connector project.

III. GREEN LINE EXTENSION TO SOMERVILLE AND MEDFORD

SIP Requirement

Before December 31, 2014, construction of the following facilities shall be completed and opened to full public use: 1. The Green Line Extension from Lechmere Station to Medford Hillside; 2. The Green Line Union Square spur of the Green Line Extension to Medford Hillside; and

- *On or before 18 months following the effective date of the regulation (December 1, 2006), MassDOT must develop a request for proposals for a design consultant, complete the competitive procurement process, and issue a notice to proceed.*
  - ✓ Done

- *Within 15 months of the completion of the above requirements, MassDOT must complete conceptual design and file an Environmental Notification Form.*
  - ✓ Done

- *On or before two years after MEPA's issuance of a scope for a Draft Environmental Impact Report or a Single Environmental Impact Report, MassDOT must complete preliminary design and file a DEIR or SEIR.*
  - ✓ Done

- *On or before one year after MEPA's issuance of a scope for a Final Environmental Impact Report, MassDOT must file an FEIR.*
  - ✓ Done

- *On or before 18 months after MEPA's issuance of a certificate on an FEIR or an SEIR, MassDOT must complete final design, apply for all necessary permits funds and grants, file any required legislation, and initiate all public and private land acquisition.*
  - Ongoing

- *Upon completion of all of the above milestones, DEP and MassDOT shall establish a schedule for project construction and deadlines for project completion.*
  - Ongoing

Extensive information about the Green Line Extension project can be found at www.mass.gov/greenlineextension.

Project Description

This project – the purpose of which is to improve corridor mobility, boost transit ridership, improve regional air quality, ensure equitable distribution of transit services, and support opportunities for sustainable development – will extend the MBTA Green Line from a relocated Lechmere Station in East Cambridge to College Avenue in Medford, with a branch to Union Square in Somerville. The project is a collaborative effort of MassDOT and the MBTA, with the MBTA taking the lead in design, engineering, construction and project management.

Proposed Stations

New Green Line stations are currently proposed for:

- **College Avenue, Medford** – Located at the intersection of College Avenue and Boston Avenue in Medford, adjacent to Tufts University. The station platform will be located on the north side of the College Avenue Bridge, which crosses over the MBTA Lowell Line. Access to the station will be provided from both Boston Avenue and College Avenue, as well as from the Burget Avenue neighborhood, which lies northeast of the station site.

- **Broadway/Ball Square, Medford/Somerville** – Located at the intersection of Broadway and Boston Avenue on the north side of Ball Square. The station platform will be located on the north side of the Broadway Bridge, which crosses over the MBTA Lowell Line. Access to the station will be provided from both Boston Avenue and Broadway. A traction power substation will also be installed at this location.

- **Lowell Street, Somerville** – Located at the Lowell Street Bridge, which crosses over the MBTA Lowell Line adjacent to the proposed extension of the Somerville Community Path. The station platform will be located on the north side of the Lowell Street Bridge. Access to the station will be provided from Lowell Street.

- **Gilman Square, Somerville** – Located in the vicinity of the Medford Street crossing of the MBTA Lowell Line, behind Somerville City Hall, public library and High School. The station platform will be located on the west side of the Medford Street Bridge, which crosses over the MBTA Lowell Line. Access to the station will be provided from Medford Street. The Somerville Community Path will be located adjacent and connected to the station. A traction power substation will be installed on the south side of the corridor.

- **Washington Street, Somerville** – Located at the Washington Street Bridge, proximate to Somerville's Brickbottom/Inner Belt/Cobble Hill area. The station platform will be located south of the MBTA New Hampshire Main Line Bridge over Washington Street. Access to the station will be provided via entrances located under or adjacent to the south abutment of the bridge, in conjunction with improved sidewalk and street-crossings in the area. The extension of the Somerville Community Path will be located adjacent to and provide access to the station.

- **Union Square, Somerville** – Located east of Prospect Street in the vicinity of Union Square in Somerville. The station platform will be located within the MBTA Fitchburg Line right-of-way east of Prospect Street. Access to this station will be provided from both the street and bridge levels of Prospect Street.

Vehicle Maintenance and Storage Facility

The Green Line Extension also requires the construction of a new light rail vehicle maintenance and storage facility (VMSF) in the vicinity of the Green Line Extension. The facility will be constructed on an L-shaped parcel in the Inner Belt area of Somerville, adjacent to the Boston Engine Terminal. The MBTA has acquired two of the four parcels needed to build the VMSF and is in progress on the remaining two parcels. Relocation activities are ongoing.

Somerville Community Path Extension

Originally, the Green Line Extension project included just the design of the proposed extension of the Somerville Community Path from the proposed Lowell Street Station to the Inner Belt area. In May 2014, MassDOT and the City of Somerville, announced an agreement for the construction of the Community Path, including a connection to the Cambridge/Northpoint area. The Path Extension is not part of the SIP commitment.

Planning Conformity

The Green Line Extension project has been included in all relevant transportation planning documents, including the Regional Transportation Plans of the Boston Region Metropolitan Planning Organization.

Project Status

Project Team

The MBTA has established an experienced project team to manage the design and complete the construction of the Green Line Extension project. These team members are referenced throughout the remainder of this report:

- Program Manager / Construction Manager (PM/CM): HDR/Gilbane; functions as an extension of MBTA staff.
- Advanced Preliminary Engineering / Final Design (APE/FD): AECOM/HNTB; responsible for advanced preliminary engineering and final design.
- Phase 1 Contractor (Design-Bid-Build): Barletta Heavy Division.
- Construction Manager / General Contractor (CM/GC): WSK (JF White/Skanska/ Kiewit); responsible for preconstruction support services for the early Interim Guaranteed Maximum Prices (IGMPs) and contracted with as the CM/GC for the first four construction packages.
- Owner's Representative: Hatch Mott MacDonald; Commonwealth-required position for projects of this size.
- Relocation Consultant: Peter W. Sleeper Associates; reports to MBTA Real Estate preparing relocation plans for those properties that require relocation.
- Independent Cost Estimator (ICE): Stanton Constructability Services; provides independent cost estimates for each of the design packages and advises the MBTA if a bid for a scope of work is within criteria to allow contract award.

In addition to these team members, the GLX also works very closely with the Federal Transit Administration (FTA) and its Program Management Oversight Consultant (PMOC) on the GLX project.

Environmental Approvals

State-level environmental review (Massachusetts Environmental Policy Act [MEPA]) was completed in July 2010. Federal-level environmental review (National Environmental Policy Act [NEPA]) documents were submitted to the Federal Transit Administration (FTA) in September 2011, and a public hearing was held on October 20, 2011 (to accompany a 45-day public comment period). A Finding of No Significant Impact (FONSI) was issued by the FTA on July 9, 2012. The July 2012 release of a FONSI completed the federal-level environmental review process.

Funding Approvals

On January 5, 2015, the U. S. Secretary of Transportation and the MBTA signed the Full Funding Grant Agreement (FFGA) for the Green Line Extension project, approving $996,121,000 of FTA New Starts funding to support the design and construction of the Green Line Extension project. The execution of the FFGA was the result of many years of planning, design and pre-construction efforts by MassDOT and the MBTA, in collaboration with the FTA and its PMOC.

The federal funding is scheduled to be paid between Federal Fiscal Year (FFY) 2015 and FFY 2022. As noted in the MassDOT Capital Investment Plan for FY 2016, MassDOT and the MBTA will use Commonwealth funds in addition to the federal funding to advance the design and construction activities. With FTA's January 5, 2015 execution of the FFGA, the balance of the Program (i.e., those portions of Phase 2/2A, Phase 3 and Phase 4 currently not under construction) received approval necessary to advance construction activities with the completion of the design and bidding process.

The existing FFGA budget for the GLX project is $1.992 Billion.

Budget and Schedule

With DEP's concurrence, MassDOT delayed the submission of this SIP Annual Report in order to be able to provide the most up to date information possible on the Green Line Extension budget and schedule. Had this report been filed prior to the receipt of the bid response from the selected Construction Manager/General Contractor (CM/GC) for Guaranteed Maximum Price package #4 – known as IGMP #4 and described below – this annual report would have documented only significant progress in locking in both a schedule and program budget for the GLX project. However, as explained below, the cost of IGMP #4 – both as calculated by the Independent Cost Estimator (ICE) and as bid by the CM/GC – is substantially in excess of that assumed in the program budget memorialized in the FTA Full Funding Grant Agreement (FFGA), necessitating a project 'pause' in order to re-evaluate the cost/benefit calculations and finance plan for GLX.

To briefly review the critical steps taken to develop the overall GLX program budget: as part of the New Starts negotiation process, in January 2014 the MBTA and the FTA held one in a series of risk workshops, with participation by the Project Management Oversight Consultant (PMOC) under contract to the FTA, the MBTA's owner's representative (OR), the MBTA's design consultant, the ICE, the CM/GC team, and the Program Manager/Construction Manager (PM/CM) team. As part of the risk modeling process, the participants evaluated possible base cost adjustments arising from identified risks. This workshop resulted in a combination of base cost adjustments and risk variables for cost elements. The preliminary results were reviewed with the project team, including the FTA, in mid-February of 2014. The FTA also requested their PMOC to run an independent risk simulation model separate from that prepared by the MBTA, which the PMOC did.

Based on this risk analyses and in conjunction with its own PMOC, the FTA determined that the final GLX project budget should be established at $1.992 billion, including a 30% project cost contingency. Of this contingency, 19% is project and contract specific and 11% is unallocated. The FTA also determined a project completion date of June 2021.

The FTA's project budget is important because it sets the upper limit for the amount of federal reimbursement the Commonwealth may receive from the FTA for project costs.

Based on the $1.992 billion anticipated project cost, in January of 2015 the Commonwealth entered into a Full Funding Grant Agreement with the FTA. The FFGA specified that the Commonwealth will be able to seek reimbursement from the FTA for up to $996 million – at the time, believed to be half the overall project cost – with the Commonwealth responsible for all project costs over that amount. Thus, the Commonwealth share was believed to also be $996 million.

As described in more detail below, the GLX project will be constructed in five phases using seven different contracts. Cumulatively, the first four contracts came in 45% over their FFGA budgeted amounts, requiring the use of approximately $64.2 million of the unallocated contingency of $252.7 million. The MBTA developed the bid package for IGMP #4 and provided it to the ICE, PM/CM, and CM/GC in March 2015. In the FTA-approved project budget, the cost of IGMP #4 was set at $387.6 million based upon 60% design. Subsequently, at 100% design, the MBTA adjusted the project budget to $487.3 million. A preliminary estimate by the ICE and a bid from the PM/CM and CM/GC were received in May 2015.

Despite all of the work done to understand and anticipate project costs and risks in advance of the January 2015 signing of the FFGA (and to provide for unforeseen risks by carrying a substantial contingency of 30%), the responses by both the ICE and CM/GC now demonstrate *that the GLX project – as the project scope was defined in the Full Funding Grant Agreement – cannot be built for the $1.992 billion project cost established in January 2015.* The cost of IGMP #4 came in substantially above the project budget: $401.8 million above the 100% design estimate.

Since receiving the unexpectedly high bid, MassDOT, the MBTA, and the FTA have been working to reconcile the various cost estimates related to IGMP #4 and to understand how the actual costs can be so much greater than the projected costs that had been so recently developed and scrubbed by multiple, independent parties. Based on the analysis to date and additional input from the CM/PM, ICE, and the CM/GC (received August 14, 2015), MassDOT and the MBTA now believe the cost of IGMP #4 to be between $700 million and $850 million.

If the costs of the remaining packages (IGMP #5, IGMP #6 and IGMP #7) come in over budget in a similar manner as the previous packages, the total project cost could be in a range of $2.7 billion to $3.0 billion. The Commonwealth's share of the overall project costs would then be $1.7 billion to $2.0 billion, rather than the currently budgeted $996 million.

With the federal contribution capped at $996 million and the Commonwealth responsible for all project cost increases, MassDOT and the MBTA have no choice but to re-evaluate the GLX project in order to make a recommendation to the Commonwealth on whether and how the project should now proceed.

As part of that effort, MassDOT and the MBTA are now working to identify opportunities to value engineer elements of the project in order to bring the costs of IGMP #4 – and the overall project costs more generally – closer to the original anticipated costs.

The MBTA Fiscal and Management Control Board and the MassDOT Board were briefed on these developments on August 24, 2015, and on September 9, 2015, respecitvely.

Before seeking additional state funding, MassDOT and the MBTA must consider:

- All available options to reduce costs (beyond value engineering and CM/GC negotiations)
- All available options to identify additional funding from sources other than the Commonwealth
- Whether to proceed with the GLX project

MassDOT and the MBTA are actively seeking stakeholder and public input on, as well as staff analysis of, options including the following:

- **Option 1 - Reducing the Project Scope, and Therefore Project Costs**
    - Downsize, delay, or eliminate planned vehicle maintenance and storage facility
      Up to $149 million in savings, pending necessary re-design work
    - Eliminate or streamline current station designs to be like stations elsewhere on the Green Line
      Up to $40 million in savings, pending necessary re-design work

- Eliminate planned Community Path Extension
  Up to $28 million in savings, pending necessary re-design work
- Pros
  - Would bring project costs somewhat closer to FFGA budget
  - Would focus Commonwealth funding on core project elements
- Cons
  - Would reduce project benefits by reducing project elements
  - Could require a reopening of the FFGA process due to scope changes
  - Would disappoint project stakeholders

- **Option 2 - Finding Additional Sources of Funds, Other than State Bonds**
  - Reallocate $158 million programmed by the Boston Region MPO for a future Route 16 extension to the core GLX project
    - Requires MPO action and approval
  - Work with municipal partners (Cambridge, Somerville, and Medford) to:
    - Implement value sharing mechanisms (for example, Transit Impact Fees or Tax Increment Financing for stations
    - Identify additional municipal, private or philanthropic funding for the Community Path Extension
  - Obtain institutional and private contributions
    - Tufts University
    - Union Square master developer
    - Other real estate or institutional partners
  - Seek any additional federal funding in cooperation with the Congressional delegation
  - Pros
    - Municipal and other contributions would relieve financial burden on the Commonwealth
    - 'Value sharing' would help to allocate some of the project costs to entities that receive a direct benefit from the project
  - Cons
    - Would delay but not cancel a future Route 16 extension
    - Would require municipal, institutional, and developer willingness and ability to participate in the costs of the Green Line Extension project
    - The likely success of value sharing arrangements is unknown

- **Option 3 - Change Procurement Method**
  - Halt Construction Manager/General Contractor process and rebid project – in smaller contract packages – using a more traditional procurement method
  - Pros
    - Could reduce project costs by attracting more competitive bidders
  - Cons

        - Would cause at least a year of project delay
        - The financial benefits are unknown, and the ultimate contract cost could be higher than the current IGMP #4 bid
        - Could require a reopening of the FFGA process due to change in procurement methodology

- **Option 4 - Mothballing or Cancelling the Project**
    - Pros
        - Avoids the financial exposure to the Commonwealth of increasing project costs
        - Allows the Commonwealth to reallocate the unused portion of the state share of the project costs ($338 million already spent) to MBTA State of Good Repair
    - Cons
        - Forgoes the substantial anticipated transportation, economic, and land use benefits of the project
        - Forfeits $996 million in federal New Starts funding
        - Hundreds of millions of dollars in state funding for sunk costs/project shutdown will have been spent to little benefit
        - Creates litigation risk or requires changes to the State Implementation Plan under the Clean Air Act

Given the unexpectedly high cost of IGMP #4, and the amount of time required to analyze the bid and to determine the best path forward, the issuance of IGMP #4 has been delayed beyond its original anticipated date of June 2015. MassDOT will provide an update to DEP and the public as soon as it has determined the impact of this delay on the overall project schedule.

MassDOT and the MBTA sought public input on these options in September 2015. MassDOT also worked with the Boston MPO to establish a system of regular updates to that body.

Project Phasing and Delivery

To tailor the project delivery method to best mitigate the larger project risks, the MBTA developed a phased project delivery plan, which divided the project into four phases.

Phase 1 Early Bridge/Demolition is using the traditional Design-Bid-Build approach for ongoing Phase 1 construction activities including the widening of the Harvard St. railroad bridge (Medford) and the Medford St. railroad bridge (Somerville) to accommodate the additional GLX tracks and the demolition of the MBTA tire storage building at 21 Water Street in the Lechmere Station area to provide parking and staging areas for the Phase 2/2A work. This contract is complete.

Phase 2/2A would extend service from the (new) Lechmere Station to the Washington Street Station and Union Square Station and will relocate the bus facility and vehicle

storage at Lechmere Station. This initial extension of Green Line service was planned to be completed in late 2017/early 2018. Although enabling construction work is underway toward achieving this milestone, the completion is primarily driven by issuance of a Notice to Proceed on IGMP #4, the final Phase 2/2A construction package.

Phase 3 would construct the Vehicle Maintenance and Storage Facility (VMSF).

Phase 4 would provide service beyond Washington Street Station (completed as part of Phase 2/2A above) to College Avenue Station.

New Green Line Vehicles

The MBTA Vehicle Procurement contract for the purchase of 24 Type 9 Vehicles was awarded to CAF USA Inc. in the amount not to exceed $118,159,822 at the MassDOT Board Meeting held on May 14, 2014. The NTP for this contract was issued on September 4, 2014.

CAF is in the process of developing drawing packages for the Preliminary Design, and the MBTA Project Team and the Contractor CAF continue to hold technical working sessions and project meetings. In addition, weekly project management meetings are held between MBTA and CAF to discuss project status, short term schedules and priorities as well as monthly project status meetings where all project issues, schedules, deliverables and milestones are reviewed and discussed.

The first vehicle is to be delivered no later than 36 months from NTP. The pilot car delivery is scheduled for September 2017. The pilot car will receive comprehensive testing for a period of six months followed by delivery of the remaining 22 vehicles, with the last car delivered by July 2018. The entry into service of all vehicles is anticipated to be completed in early 2019.

Real Estate

MassDOT and the MBTA are collaborating on tasks associated with the property acquisition efforts for the Green Line Extension project The MBTA continues to review and refine the list of identified properties that are impacted on a contract by contract basis, including further definition of temporary easements that may be needed to support construction.

The City of Somerville and MBTA have executed an Access License agreement for Union Square (IGMP #3 and #4). The grant of easement documentation is in process and will be recorded prior to the City transfer of land to their Union Square developer. The GLX team continues to work with the developer in regard to the coordination of construction staging, utilities and the location of "The Ride" drop-off. In addition, a memorandum of agreement (MOA) has been executed between the City of Somerville and MBTA to convey necessary parcels at the Gilman Square Station site.

As reported in March, the City of Somerville was unable to meet the planned acquisition date for two critical properties required for the construction of Washington Street Bridge and the Community Path. The GLX team is now pursuing a license agreement with the property owners while the City advances the permanent acquisition process.

The taking for the Ball Square Station properties have been recorded at the registry and legal notices were sent to the property owners and business tenants informing the change to MBTA ownership. A license agreement was executed between MBTA and HYM Investments allowing the MBTA to work on HYM property (to complete work near the oil and water separator). Several other license agreements are under development to convey rights or property to MBTA for GLX construction.

A Tufts/MBTA College Avenue Station Redesign Commitment Letter was signed on January 23, 2015 outlining the obligations made by both parties regarding the redesign and funding for the changes to the current GLX station design at College Avenue and use of Tufts property to stage the GLX construction work. A final MOA has been signed which includes Tufts' proposal for an air rights building over portions of the College Avenue Station and revised bridge and retaining wall design. The redesign of the College Ave. Station continues in coordination with Tufts University.

Design and Pre-Construction Progress

Many project design milestones have already been reached on the Green Line Extension project. The five key early work packages (Phase 1 and IGMP #1, #2, #3 & #4A) have progressed through final design and have NTPs for construction activities as discussed above in Construction Status. Contract packages IGMP #4 through IGMP #7 (exclusive of IGMP #4A) include the balance of work elements that were approved with the January 2015 execution of the FFGA.

Construction Status

Phase 1: Phase 1 is a design-bid-build contract that commenced in January 2013 using MassDOT funds and allowed GLX construction to begin while the remaining approvals and the FFGA were obtained from the FTA. This contract is complete.

In Medford at Harvard Street, the Commuter Rail operator, Keolis, completed the de-stressing of the relocated Commuter Rail T2 track on July 12th. Concrete modifications were completed at the existing abutments for the installation of the new Green Line outbound and inbound bridges (i.e., west of the new T2 Bridge). The erection of the new Green Line bridges was completed on July 12th. Noise barrier column and panel installation above the new cast-in-place retaining wall south of Winchester Court is anticipated to begin in July.

IGMP #1: Procurement of long lead items including traction power substations, signal equipment and special track work and superstructure steel for the new Washington Street railroad bridge.

Meetings continue to be held to resolve comments on the open submittals for specialty track and other long lead items such as electrical and signal equipment. In some instances, once the submittal is approved, the contractor has been able to report better than projected fabrication schedules. Work was completed at the GLX field office at 200 Inner Belt; this office is supporting the construction program.

As ongoing VE activities for the Washington Street Station and bridge may affect the bridge steel design; therefore, MBTA has directed the contractor to place a hold on the order for the Washington St. Bridge steel.

IGMP #2: Phase 2/2A and Phase 4 temporary utility bridges at Medford Street and Broadway and utility relocation work

In mid-April, the temporary utility bridge was installed adjacent to the Broadway Bridge. Water line relocation has been completed and Verizon has also completed cable pulls and commenced cutover operations to the new Broadway Utility Bridge eight months earlier than originally scheduled.

With the installation of the temporary School Street utility/pedestrian bridge in mid-June, a contract milestone was completed. Work continues at Medford Street including completion of the support of excavation (SOE) and subgrade preparation at the center pier of the utility bridge, completion of the lower level SOE shafts at the north abutment, and the relocation of existing conduit and cables.

IGMP #3: Millers River drainage improvements and the relocation of the Fitchburg Mainline commuter rail track

Support of excavation continues for the installation of new drainage pipe in the area of the oil/water separator and at the third outfall location. The removal of the granite block wall has finished along the backside of Brickbottom parking lot. The 8" sewer line relocation at 132 Washington Street has commenced, and EverSource is now needed to do their work to allow construction to start on the Washington Street Pump Station SOE.

Drilling of the 7-foot diameter viaduct shafts continues; as of mid-July, eight shafts have been completed. This operation will continue over the next six months.

The contractor has commenced with the installation of the SOE piles for the twin 90" drain line from the outlet structure and working towards Joy Street. The excavation work at US-2 wall is now complete along with the drilling of the pile supports. The installation of wall forms, reinforcing and concrete placement continues.

Public Outreach

Public outreach on the project has included hundreds of meetings and other events over multiple years. MassDOT and MBTA staff have met with numerous public groups, elected officials, and other interested parties. Meetings have been held with a variety of local groups, including two different project advisory committees and their subcommittees; design review sessions with right-of-way abutters; interagency meetings; neighborhood briefings; briefings with elected officials; institutional and business group meetings; public meetings and hearings; land use workshops; and 'meet and greet' sessions, as well as many others.

Public meetings were held to present updates to the design of the Community Path, with the most recent held in May 2015. The GLX team also met with the City of Somerville in advance of this meeting to discuss project updates.

The project team met with the Brickbottom Artist's Building to discuss GLX work in the Brickbottom area and address any concerns by the residents. Meetings were also held with Medford's mayor and school superintendent to discuss the GLX Youth Mentoring Program.

Public meetings were held in May and June in the City of Medford and the City of Somerville to provide progress update on the Ball Square and College Avenue Station designs and Gilman Square and Lowell Street Station designs, respectively. A separate meeting was held in regard to the College Ave/Tufts University Air rights building.

SIP Requirement Status

By filing an Expanded Environmental Notification Form, procuring multiple design consultants, and publishing both Draft and Final Environmental Impact Reports, MassDOT has met the first four interim milestones associated with the Green Line Extension project. MassDOT – which has committed substantial resources to the Green Line Extension project, a top transportation priority of the Commonwealth and the largest expansion of the MBTA rapid transit system in decades – has transitioned the project from the planning and environmental review phases to design, engineering, and eventual construction, coupled with the tasks associated with applying for New Starts funding.

In the 2011 SIP Status Report, MassDOT reported that the Green Line Extension project would not meet the legal deadline of December 31, 2014.

Although the goal of the phased project delivery approach is to complete components in an incremental way, the timeline for overall project completion listed above represents a substantial delay beyond the current SIP deadline of December 31, 2014, triggering the need to provide interim emission reduction offset projects and measures for the period of the delay (beginning January 1, 2015). Working with the Central Transportation Planning Staff, MassDOT and the MBTA have calculated the reductions of NMHC, CO, and NOx – reductions equal to or greater than the

reductions projected for the Green Line Extension itself, as specified in the SIP regulation – that will be required for the period of the delay.

In June 2012, MassDOT released a list of potential mitigation ideas received from the public that could be used as offset measures. In the summer and fall of 2012, MassDOT solicited public comments on these potential measures. The MBTA created an internal working group to determine a final portfolio of interim mitigation measures to implement by December 31, 2014, the legal deadline for the implementation of the Green Line Extension.

This work resulted in a recommendation to implement the following three interim mitigation measures which collectively would meet the emissions reduction target for the project:

- *Additional off-peak service along existing routes serving the GLX corridor, including the Green Line, and bus routes 80, 88, 91, 94 and 96;*
- *Purchase of 142 new hybrid electric vehicles for The RIDE;*
- *Additional park and ride spaces at the Salem and Beverly intermodal facilities.*

The Petition to Delay was submitted to the Massachusetts Department of Environmental Protection (MA DEP) on July 22, 2014 and expanded further on the analysis and determination of the interim offset measures. In a letter dated July 16, 2015, the MA DEP conditionally approved MassDOT's request to delay the Green Line Extension project and the implementation of the above interim mitigation measures. Both the 2014 Petition to Delay and the July 2015 Conditional Approval are available on MassDOT's website.