

**A Report to the Maryland General Assembly**

**Senate Budget and Taxation Committee and**

**House Appropriations Committee**

**Regarding**

**Report on the Feasibility of Either Re-Starting  
the Red Line Light Rail Project or  
Developing Alternatives to Address  
East-West Transit Options in Baltimore City**

**November 2018**

**Maryland Department of Transportation  
Maryland Transit Administration**

Maryland Department of Transportation Maryland Transit Administration –  
Report on the Feasibility of Re-Starting the Red Line Project (2018 JCR, p.64)

**I. Background**

The Maryland Department of Transportation (MDOT) “is a customer-driven leader that delivers safe, sustainable, intelligent, and exceptional transportation solutions in order to connect our customers to life’s opportunities.” This mission drives MDOT’s decisions and guides the Transportation Business Units to make the most efficient use of scarce resources. MDOT has adopted a data-driven approach to advance its goals through measuring, evaluating, and re-evaluating its performance and results. It is through these performance-based lenses that funding decisions are made at all our Transportation Business Units (TBUs) and that comprise the Consolidated Transportation Program (CTP).

The Maryland General Assembly Joint Chairman’s Report on the Fiscal Year 2019 Operating Budget requires the Maryland Department of Transportation Maryland Transit Administration (MDOT MTA) to prepare a report on the feasibility of either re-starting the Red Line Light Rail project or developing alternatives to address east-west transit options in Baltimore City.

**II. Summary of Report Findings**

This report examines the issues and challenges around re-starting the Red Line project, including:

- funding availability;
- project delivery options;
- environmental approval;
- changes in project corridor conditions;
- changes in regulatory conditions;
- stakeholder, agency, and third-party agreements and coordination;
- additional hazardous materials risk; and
- consultant support.

Key findings from each of these issues are summarized below.

*Funding Availability*

Cost estimates for the Red Line project were last updated in 2014. MDOT estimates that inflation alone could add more than \$500 million to the initial \$3 billion estimate. Further, the estimate included a variety of funding sources including essential federal funds, which comprised 30 percent of total project funding. The FTA rescinded and reallocated these highly-competitive funds to other projects following the cancellation of the Red Line project.

Further, due to the decline in Maryland’s Transportation Trust Fund (TTF) revenue projections and an increase in unfunded needs, MDOT would not reasonably be able to restore the original

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State portion of funding needed for constructing any major east-west transit project. The FY 2019-2024 Consolidated Transportation Program (CTP) total 6-year budget is \$16 billion, comprising state, federal, and other funds; of those funds, MDOT must spend 80% (\$12.8 billion) on system preservation and state of good repair. The remaining \$530 million per year is spread across MDOT's six TBUs for capacity improvements such as upgrades at the State-owned airports and the Port, IT upgrades at MDOT MVA, additional funding for the Washington Metropolitan Area Transit Authority (WMATA) and various highway upgrades.

### *Project Delivery Options*

Due to the nature of the project, the Red Line project would require a complex project delivery plan. Identifying the most cost-effective project delivery options would need to consider market conditions and interest rates, both of which have changed since the original delivery decisions were made. Consequently, MDOT would need to review for appropriateness and consider updating the proposed project delivery plan, considering changing factors.

### *Environmental Approval*

Since the Federal Transit Administration (FTA) rescinded the Record of Decision (ROD) for the project on October 13, 2015, the environmental mitigation actions and requirements have changed. The ROD, as put forth under the National Environmental Policy Act (NEPA), presents the basis for the decision on the environmental impact statement, summarizes any mitigation measures that would be incorporated in the project, and identifies any required document approvals. Without a signed ROD, no further approvals may be given.

Re-starting the proposed Red Line project (or a new east-west project) would first require a re-evaluation of the NEPA decision because more than three years have passed and no major steps have been taken on the project. The re-evaluation would consider the entire project and all current environmental requirements which could take two to three years to complete. Additionally, it may no longer be feasible to implement the mitigation activities to which MDOT MTA originally committed. Previously identified mitigation activities may need to be replaced with different, more costly ones.

### *Changes in Project Corridor Conditions*

During the three years since the proposed Red Line project was cancelled, the project corridor has changed in substantive ways that would impact project feasibility and cost. Notably, new construction underway conflicts directly with the Preferred Alternative's alignment. As a result, the project may, at minimum, face higher costs or the need to revisit the alignment altogether.

### *Changes in Regulatory Conditions*

The Red Line project plans were developed in compliance with the regulations and standards in place at the time. A review of significant standards indicates that there have some regulatory requirement changes that would necessitate changes to the original plans. The MDOT MTA would need to monitor for any new state or federal regulatory changes as any major transit project would be affected by numerous agency changes.

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The state legislature now requires that MDOT MTA establish and follow a Central Maryland Regional Transit Plan. Any long-term strategy or project to address east-west transit needs should be identified and prioritized following – not preceding – the Plan’s development. This long-term plan takes a comprehensive approach to identify and prioritize transit corridors throughout the Baltimore metropolitan area. This Plan will involve a Commission established for the Plan development, the public and any other interested stakeholders.

### *Stakeholder, Agency, and Third-Party Agreements and Coordination*

During the planning of the proposed Red Line, MDOT MTA developed agreements with stakeholders, agencies, and jurisdictions. If the preferred alternative were pursued, these would all need to be revisited, evaluated for relevance, and in most cases, renegotiated. For a new east-west transit project all aspects of the project would need to be coordinated with affected third-parties and new negotiations completed.

### *Additional Hazardous Materials Risk*

During the geological investigation for the Red Line Project, MDOT MTA encountered residue from chromium refining. The material does not pose a hazard in its current condition, but excavation of the tunnel portal would disturb it. MDOT MTA had not completed its investigation at the time the project was cancelled. If the preferred alternative were pursued, MDOT MTA would need to thoroughly investigate and include the additional cost to excavate and dispose of this material in the updated cost estimate.

### *Consultant Support*

MDOT MTA would need to secure consultant support for the planning and engineering of a Red Line project re-initiation, or the development of a new project. MDOT MTA used two consultant teams for the Red Line project, a Program Management Consultant (PMC) team which acted as an extension of MDOT MTA staff and oversaw the work of the second team, the General Engineering Consultants (GEC). The prior contracts used for this consultant support have expired. The typical timeline for a procurement of this type is two years.

## **III. Project History and Scope**

MDOT MTA and the FTA formally initiated the Baltimore Red Line project in 2003 with a Notice of Intent to prepare a joint Alternatives Analysis and Draft Environmental Impact Statement (AA/Draft EIS). Based on agency and public input, a range of alternatives were developed and then carried through a screening process. In 2008 the AA/Draft EIS was completed, and in 2009 MDOT MTA identified the Locally Preferred Alternative. The Locally Preferred Alternative extended to John Hopkins Bayview Hospital. MDOT MTA continued to refine the Locally Preferred Alternative through the preparation and completion of the Final EIS in 2012. In 2013,

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the FTA issued the Record of Decision, granting environmental approval of the project and documenting the required mitigation. In 2015, the State cancelled the project.

At the time of its cancellation, the proposed Red Line was a 14.1-mile light rail line that would serve Woodlawn, Edmondson Village, West Baltimore, Downtown Baltimore, Harbor East, Fells Point, Canton, Highlandtown, and Johns Hopkins Bayview Medical Center. The scope included 8.7 miles of surface rail, 4.7 miles of tunnel, 0.7 miles of aerial rail, 14 surface stations (5 with parking), and 5 underground stations. A 600-foot underground walkway would connect to the existing Charles Center Metro SubwayLink station. The line was proposed to operate with 26 light rail vehicles. An operations and maintenance facility and train storage yard would be located near the middle of the line.<sup>1</sup>

#### **IV. Feasibility of Re-Starting of the 2015 Red Line Project**

There are a variety of substantive issues and challenges that would require careful consideration and resolution prior to successfully re-starting the Red Line project, including:

- funding availability;
- environmental approval;
- changes in project corridor conditions;
- project delivery options;
- changes in regulatory conditions;
- stakeholder, agency, and third-party agreements and coordination;
- additional hazardous materials risk; and
- consultant support.

The following section details and discusses each of these issues, identified above.

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<sup>1</sup> Baltimore Red Line Monthly Progress Report to the Federal Transit Administration, Maryland Department of Transportation Maryland Transit Administration, January 2015.

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**A. Funding Availability**

**1. 2015 Financial Plan**

The cost estimate for the proposed Red Line was last updated in September 2014. At that time, the capital cost was as follows:

<b>Cost Element</b>	<b>(\$M Year of Expenditure)<sup>2</sup></b>
<b>Construction</b>	
<b>Surface Guideway and Stations</b>	115.5
<b>Underground Guideway and Stations</b>	1,236.7
<b>Track and Systems</b>	299.5
<b>Operations and Maintenance Facility</b>	105.6
<b>Utilities, Environmental, Streetwork, Parking</b>	281.2
<b>Subtotal Construction</b>	<b>2,038.5</b>
<b>Right of Way</b>	72.7
<b>Vehicles</b>	122.4
<b>Professional Services</b>	552.5
<b>Subtotal before Unallocated Contingency</b>	<b>2,786.2</b>
<b>Unallocated Contingency (5% of Construction)</b>	102.7
<b>Subtotal before Finance</b>	<b>2,888.9</b>
<b>Finance<sup>3</sup></b>	108.8
<b>Total</b>	<b>2,997.7</b>

MDOT MTA developed the base project cost in compliance with FTA’s requirements for capital cost estimating and included all the elements needed to operate a light rail line as described. MDOT estimates that inflation over the subsequent years since this cost estimate was developed, as well as other factors, could add more than \$500 million to the initial \$3 billion estimate.

Adjacent Projects

Two additional, adjacent, unfunded projects were not included in the base project cost: A new MARC station adjacent to the proposed Red Line Bayview station and a relocated and reconstructed MARC station at West Baltimore. While strongly beneficial to the proposed Red Line, these projects would pose a significant additional funding liability.

The proposed Bayview MARC station would have operated independently from the proposed Red Line station, but the stations would have shared a parking facility and transferred riders, increasing

<sup>2</sup> Ibid.

<sup>3</sup> Finance costs are associated with the public-private partnership. The P3 concessionaire would finance a portion of the capital cost, and MDOT would repay those funds with availability payments over the term of the contract. FTA’s New Starts financial planning requirements specify that these financing costs are included in the overall project costs. While there could also be financing costs attributable to the bond component of the Maryland Transportation Trust Funds, FTA agreed these costs were impossible to quantify and could therefore be excluded.

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the transportation benefit of each facility. At West Baltimore, MDOT MTA proposed relocating and reconstructing the MARC station to meet Americans with Disabilities Act (ADA) requirements and facilitated passenger loading by allowing all train doors to open along new, high-level platforms. The transfer of riders between the proposed Red Line and the improved MARC station would increase the transportation benefit of both facilities. The costs of these projects, shown in the table below, are above and beyond the proposed Red Line cost estimate.

<b>Adjacent Proposed Projects Not Included in Red Line Project Cost Estimate</b>	<b>Cost (millions)</b>
<b>Bayview MARC Station (station; pedestrian bridge)</b>	\$76
<b>Bayview MARC Parking</b>	\$5
<b>West Baltimore MARC Station</b>	\$80
<b>Total</b>	<b>\$161</b>

Sources of Funding

The proposed Red Line’s financial plan assumed federal financial funding through the FTA’s Capital Investment Grant Program (i.e., “New Starts”), State funding, local government funding, and private sector participation through one or more public-private partnerships. The financial plan as reported to FTA was as follows:

<b>Funding Source</b>	<b>Cost (millions)</b>	<b>% of Total</b>
<b>FTA New Starts</b>	\$900	30
<b>FTA Formula</b>	\$55	2
<b>Maryland</b>	\$947	32
<b>P3</b>	\$806	27
<b>Local</b>	\$290	10
<b>Total</b>	<b>\$2,998</b>	<b>100</b>

As of 2015, the proposed Red Line was “recommended” for a Full Funding Grant Agreement. However, as is typical prior to a grantee receiving bids on major project elements, the grant had not yet been finalized. Following the cancellation of the Red Line project, the grant recommendation was rescinded by FTA and has since been reallocated to other projects in their pipeline.

## 2. Federal Funding for Capital Projects Today

### New Starts Defined

FTA’s New Starts program is the federal government’s primary mechanism for funding major transit capital investments. This program includes the New Starts discretionary grant program, which was a major component of the proposed Red Line’s financial package. A re-initiated Red Line project or a new east-west major transit solution would be eligible for a Capital Investment Grant (CIG) by virtue of the cost (over \$300 million) and project definition (a new fixed guideway rail or BRT system); it would, however, start at the beginning of the application process with no advantage over any other newly-initiated project in a highly competitive process.

FTA has no published guidance regarding grant amounts; however, grants do not typically exceed \$1 billion. Consequently, higher project costs would result in the project sponsor (in this case, the collective entities of the State of Maryland) facing a larger match burden if federal funds would even be available.

While FTA makes the funding recommendations, Congress decides how much funding to provide to the program each year in an appropriations act. The Federal Omnibus Appropriations bill, signed in March 2018, provides \$13.5 billion for FTA programs across the country, including \$2.6 billion for the Capital Investment Grants program. The Purple Line has a total of \$900 million allocated to Maryland through the New Starts program.

### New Starts “Pipeline”

There are currently 22 projects in one of three phases of the New Starts program (Project Development, Engineering, and Full Funding Grant Agreement).<sup>4</sup> The eight projects currently under Full Funding Grant Agreements, including the Purple Line, require \$7.3 billion. Funding for the remaining 14 projects requires \$15.8 billion.<sup>5</sup> The following are the projects currently recommended for Full Funding Grant Agreements.

<b>NEW STARTS - EXISTING FULL FUNDING GRANT AGREEMENTS</b>				
<b>City, State, Project</b>	<b>Mode</b>	<b>Total Project Cost (millions)</b>	<b>Total CIG Request (millions)</b>	<b>FY 2019 CIG Funding Recommendations</b>
<b>Los Angeles CA - Regional Connector</b>	Light Rail	\$1,403	\$670	\$100
<b>Los Angeles CA - Westside</b>	Heavy Rail	\$2,822	\$1,250	\$100

<sup>4</sup> Federal Transit Administration, *Annual Report on Funding Recommendations, FY 2019 Capital Investments Grant Program*, February 2018.

<sup>5</sup> Ibid.



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<b>Subway Section 1</b>				
<b>Los Angeles CA - Westside Subway Section 2</b>	Heavy Rail	\$2,499	\$1,187	\$100
<b>San Diego CA - Mid-Coast Corridor Transit Project</b>	Light Rail	\$2,171	\$1,043	\$100
<b>Boston MA - Green Line Extension</b>	Light Rail	\$2,297	\$996	\$150
<b>Maryland National Capital Purple Line</b>	Light Rail	\$2,407	\$900	\$120
<b>Portland-Milwaukie OR - Light Rail</b>	Light Rail	\$1,490	\$745	\$66
<b>Fort Worth TX - Tex Rail</b>	Commuter Rail	\$1,034	\$499	\$100
<b>Subtotal</b>		<b>\$16,125</b>	<b>\$7,291</b>	<b>\$836</b>

The projects listed below are in the Project Development or Engineering phases and have not yet been recommended for funding by FTA.

<b>PROJECT DEVELOPMENT</b>			
<b>City, State, Project</b>	<b>Mode</b>	<b>Total Capital Cost (millions)</b>	<b>Total CIG Request (millions)</b>
<b>Phoenix AZ - Northwest Extension Phase II</b>	Light Rail	\$319	\$156
<b>Phoenix AZ - South Central Light Rail Extension</b>	Light Rail	\$705	\$345
<b>San Jose CA - Bart Silicon Valley Phase II Extension</b>	Heavy Rail	\$4,693	--
<b>Lake County IN - West Lake Corridor</b>	Commuter Rail	\$776	\$388
<b>St Paul MN - Metro Gold Line</b>	BRT	\$420	\$189

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<b>Secaucus NJ - Hudson Tunnel</b>	Heavy Rail	\$13,600	\$6,718
<b>New York City, NY - Second Avenue Subway Phase 2</b>	Heavy Rail	\$6,000	\$2,000
<b>Seattle WA – Federal Way Link Extension</b>	Light Rail	\$2,166	\$500
<b>Subtotal</b>		<b>\$28,679</b>	<b>\$10,296</b>

**ENGINEERING**

<b>Minneapolis MN - Metro Blue Line Extension</b>	Light Rail	\$1,536	\$753
<b>Minneapolis MN - Southwest Light Rail</b>	Light Rail	\$1,858	\$929
<b>Durham-Orange NC - Light Rail</b>	Light Rail	\$2,476	\$1,238
<b>Seattle WA - Lynnwood Link Extension</b>	Light Rail	\$3,069	\$1,173
<b>Los Angeles CA - Westside Purple Line Extension</b>	Heavy Rail	\$3,663	\$1,300
<b>Santa Anna Garden Grove Streetcar Project</b>	Streetcar	\$299	\$149
<b>Subtotal</b>		<b>\$12,901</b>	<b>\$5,542</b>

The total costs for the Project Development and Engineering Phases are \$41.4 billion for estimated total Capital Costs and \$15.8 billion for anticipated CIG Requests.

<b>Project Phase</b>	<b>Capital Cost (millions)</b>	<b>Total CIG Funding Requests (millions)</b>
<b>Project Development</b>	\$28,679	\$10,296
<b>Engineering</b>	\$12,901	\$5,542
<b>Total</b>	<b>\$41,395</b>	<b>\$15,838</b>

According to the American Public Transportation Association (APTA), there are approximately 50 additional projects in some stage of development but have not yet entered the FTA program.<sup>6</sup>

<sup>6</sup> Email correspondence with M. Hughes-Cromwick, American Public Transportation Association, July 13, 2018.

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Between projects in the New Starts program and projects in the pipeline, the demand for funding is far greater than the appropriated amount. At the current funding level of approximately \$2.5 billion a year it could take 10 years to fund the 22 projects in the pipeline let alone the 50 other projects under development. Furthermore, given this scarcity of funding and FTA’s likely interest in geographic diversity, a second grant to Maryland is doubtful in the next 20-25 years.

### Rating Process

FTA makes funding recommendations in an annual report to Congress. FTA evaluates, rates, and recommends prospective projects based on criteria specified in law, as well as funding availability. FTA considers project readiness, including whether an advanced level of engineering and design has been completed so that the project scope, cost, and schedule are considered reliable. Specifically, FTA considers the selected project delivery method selected and if at least 50 percent of the non-New Starts funds for the project are committed. A new major transit project in Maryland would need to advance to a level of project readiness before it would be competitively considered for the FTA New Starts process.

The New Starts program has a three-step process, shown in **Figure 1**.

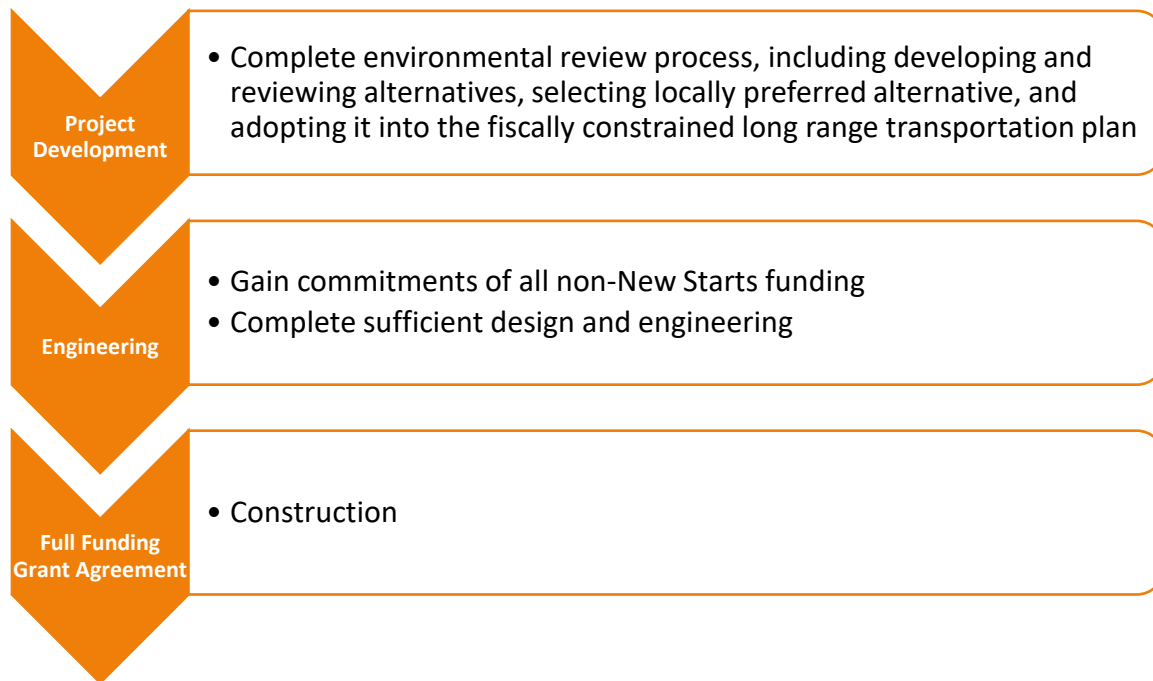


Figure 1. Steps in the New Starts Program

The first phase, Project Development, includes environmental analysis, selection of a Locally Preferred Alternative, and the adoption of the project into the fiscally constrained long-range transportation plan.

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During the second phase, Engineering, the project sponsor must accomplish the following:

- Secure commitments of all the non-New Starts funding
- Progress the project’s development and design to the point where its scope, cost, schedule, benefits, and impacts are considered firm and final
- Complete all significant third-party agreements
- Assure that the project continues to obtain at least a Medium overall rating under the statutory evaluation criteria; and
- Update the Project Management Plan and subplans to include a management approach at a sufficient level of development to construct and implement the project.

A Full Funding Grant Agreement for construction may be signed after successful completion of these activities, and their approval by FTA.

The project sponsor requests entry to each successive phase, and FTA approves or disapproves the request based on its assessment of the project’s merit and readiness. The level of readiness and extent of documentation increases with each step in the process so that FTA can minimize its risk that the project will exceed its budget or encounter unanticipated construction issues.

New Starts projects are required by law to complete the Project Development phase within two years of entering that phase. While the law provides for an extension to the two-year timeframe, this is expected to be the rare exception rather than the rule. Thus, FTA advises project sponsors to do “up-front” work in advance of seeking entry into Project Development to ensure they can complete the Project Development activities within two years. Within three years of granting approval to enter the Engineering phase, FTA expects New Starts project sponsors to have made sufficient progress on their projects, including obtaining funding commitments for at least half of the non-New Starts funding.

### **3. State Funding**

#### *State Funds Available*

MDOT MTA’s capital budget is presented in the Consolidated Transportation Program (CTP). The FY 2019-2024 CTP includes \$3.2 billion in total funding, including \$1.1 billion in State funds, \$1.9 billion in federal funds, and \$237 million in “other” funds.<sup>7</sup> Of this amount, \$2.215 billion (69 percent), is committed toward system preservation projects. The remainder of the funds are committed to system expansion. Most system expansion funds are committed to the Purple Line Light Rail Project, with construction set for completion in 2022. The Purple Line project is being delivered via a public-private partnership. Under this contract, the private partner will operate the Purple Line for approximately 30 years. Annual service payments (availability payments) will continue throughout the life of the contract.

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<sup>7</sup> FY 2018 to FY 2023 Consolidated Transportation Program, 2018 State Report on Transportation, Maryland Department of Transportation, 2018, pg. MTA-1.

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The Consolidated Transportation Program (CTP) total 6-year budget is \$16 billion, comprising state, federal, and other funds; of those funds, MDOT must spend 80% (\$12.8 billion) on system preservation and state of good repair. The remaining \$530 million per year is spread across MDOT's six TBUs for capacity improvements such as upgrades at the State-owned airports and the Port, IT upgrades at MDOT MVA, additional funding for WMATA and various highway upgrades.

In developing the CTP and establishing funding levels, MDOT must account for state and local economic growth, fluctuations in State transportation revenue, and allocations of federal funding. The State's Transportation Trust Fund (TTF) supports MDOT investments through a dedicated account. The TTF utilizes a variety of revenue sources, which provides funding that enables MDOT to address important capital and operating needs. Revenue sources include a Motor Fuel Tax, Motor Vehicle Titling Tax, Motor Vehicle Registration, and Corporate Income Tax. As gas prices have remained low and vehicles are becoming more fuel efficient, fuel tax revenues have declined. Both the number and purchase price of vehicles are also declining, resulting in lowering revenues from the titling tax below forecasted levels. As a result, revenue projections for the TTF have declined over the last three years (see **Figure 2**). The increase in the current Draft CTP is not due to additional TTF revenue but from factors that do not increase funding for the MDOT Transportation Business Units such as funding from the General Fund and local funding moving from outside the TTF to be a part of the TTF due to legislative changes.

The 2018 legislative session brought two significant changes to the CTP. These changes affect local Highway User Revenues (HUR) and Transit funding. As a result, MDOT's CTP increased by \$1.2 billion over 6 years, totaling \$16.0 billion. First, changes to the HUR law increased allocations to localities for FY 2020 to FY 2025 and changed the definition of HUR to be grants so they are now included in the 6-year CTP total funding level. The second legislative change is the Maryland Metro/Transit Funding Act. The key element that increased the overall 6-year funding was the \$167 million in additional funding, mainly from the General Fund, as dedicated funding to WMATA.

In 2014, when the proposed Red Line project was under review, TTF revenues were also declining and the estimated revenue from the Transportation Funding Act of 2013 was considerably less than projected for many reasons, including falling fuel prices. The first year outside of the 6-year CTP (FY 2021) would have required \$614.5 million in concessionaire payments for the Red and Purple Line projects, with \$395 million needed for the Red Line project. This funding need would have eliminated MDOT's ability to advance any other expansion project statewide in the CTP that would have required funding in FY 2021. This would have delayed all Department expansion projects starting in FY 2019 through FY 2021 to FY 2022 and beyond.

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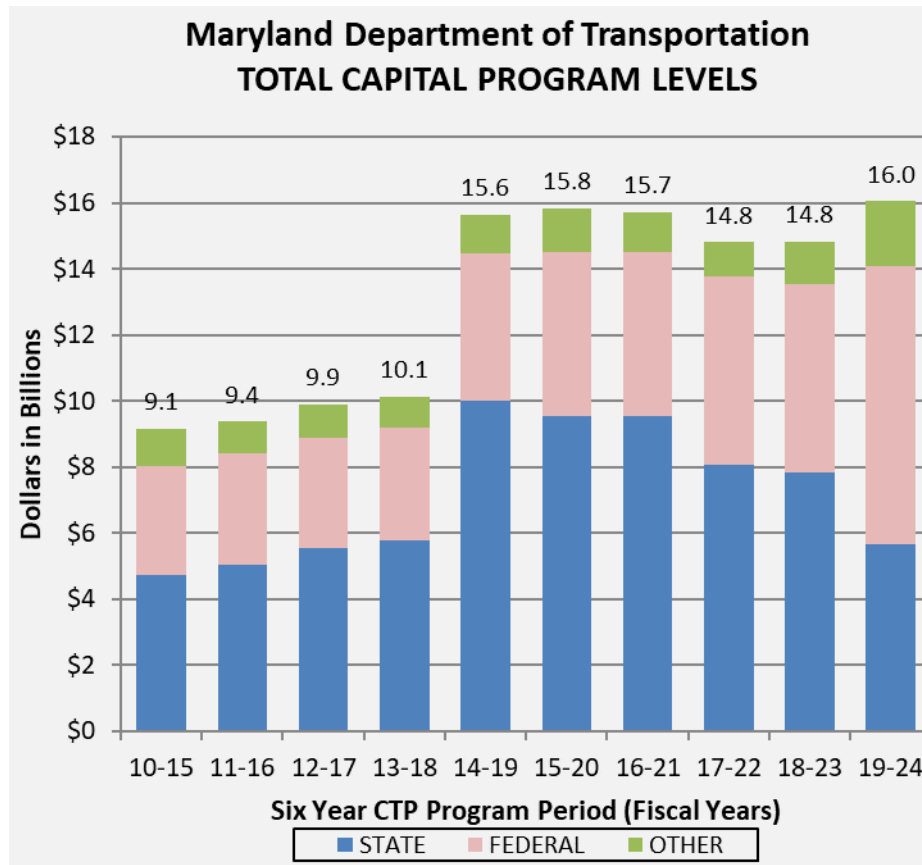


Figure 2: Total Capital Program Levels

Unfunded Needs

MDOT MTA owns approximately \$8 billion worth of assets across all transit modes: buses, heavy rail, commuter rail, and light rail. These assets include vehicles, facilities, equipment, and other infrastructure. MDOT MTA is responsible for maintaining these assets in a state of good repair. The state of good repair backlog is the total dollar value of assets that are not in a state of good repair. MDOT MTA utilizes FTA’s Transit Economic Requirements Model (TERM) Lite, an analysis tool is designed to help transit agencies assess their state of good repair backlog. According to this analysis, MDOT MTA anticipates needing an additional \$1.3 billion over the next 20 years above the already programmed amounts to prevent the backlog from growing.

The decline in revenue projections and unfunded needs make it highly unlikely MDOT would be able to restore the State portion of funding needed for constructing any major east-west transit project. Also, MDOT MTA would not be able to comply with FTA’s requirement that project sponsors demonstrate that state of good repair needs are fully funded.

## **B. Project Delivery Options**

The size and complexity of the proposed Red Line resulted in a complex project delivery plan comprising eight separate construction packages procured through three different delivery methods: Owner Furnished Design-Build (DB), Design-Bid-Build (DBB), and Public-Private Partnership (P3).<sup>8</sup> This complex project delivery approach was intended to produce the shortest overall construction duration and represented the least expensive approach by maintaining the project's critical path, along with the downtown tunnel contract, as a DBB procurement.

The Owner Furnished Design-Build (DB) procurement method was determined to be the most practical way to procure the fare collection equipment contract. MDOT MTA wished to maintain consistency with the regionwide fare collection system and had considered that a system upgrade could coincide with the proposed Red Line procurement.

The Design-Bid-Build (DBB) procurement process was chosen for select tunnel, surface guideway, and underground facility construction; utility relocation; and forest and stream environmental mitigation tasks. This method would allow the procurement and initiation of work to start sooner than other delivery methods and supported the maintenance of the project schedule. The DBB procurement process was planned for six of the eight contract packages. Two of these six were for the Downtown and Cooks Lane tunnels. DBB enables a high level of owner control, and is often used for major, complex transit tunnel construction in urban environments, but is done at the risk of the owner (MDOT MTA in this case).

A Public-Private Partnership (P3) was planned for construction of the west end terminus to I-70, the east end terminus to the downtown tunnel eastern portal, and the Operations and Maintenance Facility; vehicles; and maintenance. This delivery method was selected because of its ability to incentivize innovations and creative design solutions, mitigate interface and integration risks, support schedule adherence, and facilitate a more cost-effective approach.

Decisions on project delivery are highly dependent on market conditions, interest rates, and risk assessments which have changed since the original delivery decisions were made. For any new east-west major transit project, the procurement strategy would have to be entirely redone in light of the current conditions at the time the project would be considered for the Engineering phase of the New Starts program.

## **C. Environmental Approval**

The National Environmental Policy Act (NEPA) requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions. The federal funding of

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<sup>8</sup> Maryland Transit Administration, *Baltimore Red Line Contract Packaging and Procurement Development Plan*, Version 2, December 8, 2014.

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any major transportation project, and the required federal permits, both federal actions, oblige a project to comply with NEPA.

FTA and MDOT MTA prepared an Environmental Impact Statement (EIS) for the Red Line Project. The Final EIS was completed in 2012, and the Record of Decision (ROD) FTA's environmental decision document under NEPA, was signed in 2013. After the State of Maryland cancelled the Red Line Project in June of 2015, the FTA rescinded the Record of Decision (ROD) for the project on October 13, 2015.<sup>9</sup>

The ROD presents the basis for the decision on the environmental impact statement, summarizes any mitigation measures that would be incorporated in the project, and documents any required Section 4(f) (49 U.S.C. §303 & §138, 23 CFR Part 774) approval(s). Without a signed ROD, no further approvals may be given. If the Red Line project were re-started or a new east-west project initiated, the following process would need to be followed:

### **1. 2015 Red Line Project Preferred Alternative**

When considering restarting the project, the first decision would be if the Locally Preferred Alternative from the FEIS would be retained. Modification of the Locally Preferred Alternative would likely be desired or required for a variety of reasons: changes in political or policy goals, changes in the physical environment, public or stakeholder comments, or budget considerations. Any changes from the Locally Preferred Alternative would need to be fully evaluated in the environmental document.

Even if the Locally Preferred Alternative were retained, the continued progression of the design in the two years after the signing of the ROD in 2013 and before the project's cancellation in 2015 would require a re-evaluation of the project. If the Locally Preferred Alternative is not the desired next step a new Draft Environmental Impact Statement would need to be developed.

### **2. Re-evaluation of Environmental Impacts**

If the decision is to pursue the previous Locally Preferred Alternative, a re-evaluation of the environmental impacts would be required by the FTA as more than three years has passed and no major steps have been taken on the project. The re-evaluation would consider the entire project and all current environmental requirements to determine whether the existing FEIS remains valid.

In the developed setting of the Red Line project corridor, there have been changes to the existing conditions. These changes include physical changes such as land use, new construction, or transportation infrastructure, but also changes in demographics and the natural environment. These changed conditions would need to be documented. It would be necessary to consider whether the study team has new information which would change the environmental analysis; for example, the

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<sup>9</sup> Federal Register, Vol. 80, No. 197, Tuesday, October 13, 2015, Notices, p. 61563.



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discovery of the presence of a rare, endangered, or threatened species that was not previously known in the project corridor. An assessment of the impacts of the proposed project would evaluate new or reduced impacts resulting from the changes in the project, the changes of the resources, or newly identified resources. The new impact assessment may result in the need for new or different mitigation of those impacts.

Another consideration is that previously committed mitigation activities may no longer be feasible; even if an impact remains the same, it may be necessary to replace an identified mitigation activity with a different one. The commitments to avoid, minimize, or mitigate impacts would be documented in the ROD.

### **3. Requirements for Public Involvement and Hearings**

Preparing a supplemental EIS or a new Draft EIS (DEIS) would require public involvement focused on the changes in the project or why all new analysis was needed. Any change in the alignment would necessitate specific outreach to new communities. Upon completion of the supplemental DEIS, the document would be distributed to cooperating and participating agencies and made available to the public. A public comment period of 45 to 60 days is required; with a public hearing. Any major transit project in this corridor would be considered a high-profile project and would necessitate considerable public and stakeholder participation. This could impact the schedule as public involvement in such a long corridor takes time to be done effectively.

The supplemental Final EIS or Final EIS would consider all the comments received and provide responses to the comments received such as modifying the alternatives, supplementing or modifying the analyses, making factual corrections, or explaining why the comments do not warrant further agency response. If the Final EIS is not combined with the ROD, a 30-day waiting period is required before publication of the ROD in the Federal Register.

Preparing the Supplemental EIS would take approximately 12 to 18 months, while a new Draft EIS could take 24 to 36 months or more. Any project would need to allow time for the public comment period, hearing, and the preparation of the Final EIS/ROD.

#### **D. Changes in Conditions in the Project Corridor**

In the three years since the proposed Red Line was cancelled, there have been several changes in the project corridor. In at least one case, new construction is occurring which conflicts directly with the alignment of the Preferred Alternative.

##### Oldham Crossing

Oldham Crossing is a new townhouse development currently under construction south of East Lombard Street at Oldham Street, just west of I-895. This site had been the location of an aerial crossing by the proposed Red Line. The new street grid and utility infrastructure are clearly in

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conflict with the Red Line project alignment. To the extent that residential units are constructed in the proposed Red Line right of way, those units would need to be acquired through voluntary sale or through eminent domain, and any residents relocated. This would result in a higher cost to the project. If this was deemed too impactful, the alignment would need to be moved, at a higher cost to the project.

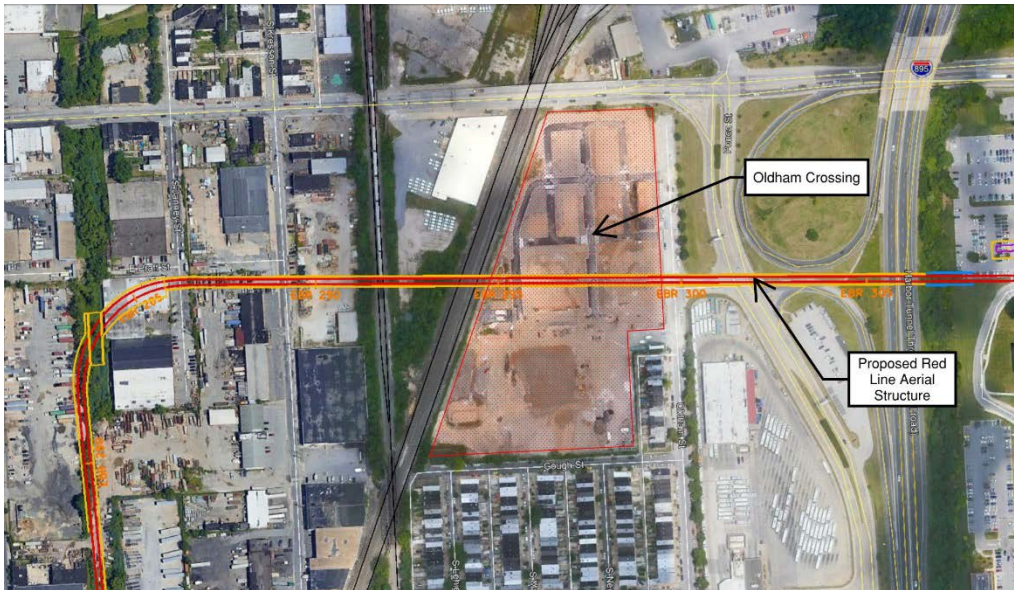


Figure 3: Proposed Red Line alignment in Vicinity of Oldham Crossing



Figure 4: Recent Construction at Oldham Crossing

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Baltimore and Potomac Tunnel Study

In March 2017, the Federal Railroad Administration issued a ROD for the Baltimore and Potomac (B&P) Tunnel Project. The Preferred Alternative includes the realignment of the track at the West Baltimore MARC station. The relocation of the tracks to the west could conflict with the plans for the proposed Red Line alignment on Franklin and Mulberry Streets where it passes under the Amtrak right-of-way. Proposed Red Line stations at the West Baltimore MARC station would need to be evaluated and would need to be modified or relocated at a higher cost.

Marketplace at Fells Point

In other locations along the proposed Red Line alignment, the construction does not conflict physically with the final condition but building access and use would be substantially impacted during construction. One example is Marketplace at Fells Point, a 159-unit apartment complex between Fleet Street, Bethel Street, Aliceanna Street, and Broadway. While this development is not in the path of the proposed Red Line alignment, it would be impacted by construction, as excavation for the proposed Red Line Fells Point station would extend to the building face. In 2015, the building was not occupied and MDOT MTA was making plans to lease empty units from the owner. The building is now completed and substantially leased, so in addition to lease payments to the owners, tenants would need to be relocated and entitled to relocation benefits which would result in a higher cost for the project.

**E. Changes in Regulatory Requirements**

The Red Line project plans were developed in compliance with the regulations and standards in place at the time. A review of significant standards indicates there have been some regulatory changes that would necessitate changes to the original plans. The MDOT MTA would need to monitor for any new state or federal regulatory changes as any major transit project would be affected by numerous agency changes.

Where there have been any applicable changes, the old plans would need to be modified, and any new plans would be prepared to that would comply with the relevant regulations and industry standards. For example, the National Fire Protection Association (NFPA) 130 – *Standard for Fixed Guideway Transit and Passenger Rail Systems* specifies fire protection and life safety requirements for underground, surface, and elevated fixed guideway transit and passenger rail systems. This standard is updated every three to five years therefore any plans would need to be developed or modified to be in conformance with updates.

**F. Stakeholder, Agency and Third-Party Agreements and Commitments**

During the planning of the proposed Red Line, MDOT MTA developed agreements with stakeholders, agencies, and jurisdictions. If the preferred alternative were pursued, these would all need to be revisited, evaluated for relevance, and probably in most cases, renegotiated. For a new east-west transit project all aspects of the project would need to be coordinated with affected third-parties. For the proposed Red Line changes in conditions, leadership, and priorities (both at MDOT

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MTA and with the third parties) could result in different agreements even if the preferred alternative were pursued. The following is a partial list of the agreements developed for the proposed Red Line.

Government Agencies

Baltimore City  
Baltimore County  
Baltimore County Board of Education  
Baltimore County Highways  
Federal Highway Administration  
Maryland Department of Labor, Licensing & Regulation  
Maryland Department of Natural Resources  
Baltimore Development Corporation  
Maryland Transportation Authority  
Social Security Administration  
Maryland Department of the Environment  
US General Services Administration  
Maryland State Highway Administration  
Housing Authority of Baltimore

Institutions

Johns Hopkins Bayview Medical Center  
National Institutes of Health  
University of Maryland BioPark  
University of Maryland Baltimore and University of Maryland Medical Center

Railroads

Amtrak  
Canton Railroad  
Norfolk Southern Railway Company  
CSX Transportation

Utility Companies

Verizon  
Baltimore Gas and Electric – Constellation Energy  
Veolia Energy

If the Locally Preferred Alternative were pursued, the most significant agreements and outstanding issues that would need to be resolved are as follows:

Baltimore City

The signed agreement with Baltimore City included funding from the City, changes to federal highway funding, donation of city-owned right-of-way, and some in-kind donations. In negotiations with Baltimore City, MDOT MTA agreed to design the replacement of the old and fragile Lombard Street Water Main. Still outstanding when the project was cancelled was the

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decision on the timing of the replacement, relative to the construction of the proposed Red Line tunnel (before, during, or after construction). There were many other outstanding issues, including traffic signals, street closures, accommodation of future development, utility duct banks, and street realignments.

Baltimore County

Under a Memorandum of Understanding started with Baltimore County, the County agreed to convey the County-owned right-of-way needed to construct and operate the proposed Red Line. MDOT MTA would bear the costs for street, utility and other infrastructure modification and relocations. Likewise, MDOT MTA would pay for changes to traffic control devices, while the County would make timing and phasing adjustments to reduce the proposed Red Line travel times. A final Memorandum of Agreement was not completed.

Social Security Administration

Negotiations with the Social Security Administration (SSA) included the location of the alignment and station, an exchange of federally-owned property needed for the proposed Red Line, for state-owned property. Topics of importance to the SSA included station access for pedestrians, safety and security, maintenance, and emergency traffic operations. MDOT MTA and SSA did execute a Memorandum of Understanding, but the final Memorandum of Agreement was not completed.

Norfolk Southern Railway Company

The Bear Creek Branch is an unused railroad right-of-way at the eastern end of the proposed Red Line Corridor which runs north-south, parallel to Haven Street. At the time of the Red Line project MDOT MTA executed a Memorandum of Agreement with the Norfolk Southern Railway Company that MDOT MTA would be granted a perpetual easement for the proposed Red Line within the Norfolk Southern Bear Creek Branch right-of-way and in exchange, MDOT MTA would design the relocation and rehabilitation, and fund the construction, of a proposed adjacent freight track in the right-of-way. The agreement located the easement on the west side of the right-of-way, leaving space for the future construction of a parallel single track for freight train use by Norfolk Southern.

It is unknown if Norfolk Southern still wishes to reactivate this freight track. The agreement also permitted MDOT MTA to construct the proposed Red Line over the railroad's President Street Branch, construct a tail track on a portion of the railroad's Bayview Yard property, and use part of the railroad's Westside property for the Red Line project's proposed Operations and Maintenance Facility in West Baltimore.

Powder Mill Stream Restoration Project

MDOT MTA had identified mitigation opportunities for the proposed Red Line with stream restoration and wetland creation at Powder Mill Run in northwest Baltimore. Since that time this

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project has been implemented by Baltimore City, and these credits are therefore no longer available. A new project's impacts would need to identify new mitigation sites and negotiate with the Maryland Department of the Environment.

### **G. Additional Hazardous Materials Risk**

During the geological investigation for the Red Line Project, MDOT MTA encountered residue from chromium refining under Boston Street at the location of the East Portal Structure for the Downtown Tunnel. Similar sites exist around the Baltimore Harbor. The material does not pose a hazard in its current condition, but excavation of the tunnel portal would disturb it. Chromium contaminated water would have to be treated during construction and perhaps into the future.

MDOT MTA estimated that the added cost to excavate and dispose of this material could range from \$20 million to \$25 million, depending on the extent of the contaminated area. MDOT MTA had not completed its investigation at the time the project was cancelled, but this site represents a large cost and schedule risk.

### **H. Consultant Support**

MDOT MTA would need to secure consultant support for the planning and engineering of a Red Line project re-initiation, or the development of a new project. MDOT MTA used two consultant teams for the Red Line project, a Program Management Consultant (PMC) team which acted as an extension of MDOT MTA staff and oversaw the work of the second team, the General Engineering Consultants (GEC). The prior contracts used for this large consultant support have expired. Before re-starting the project or developing a new east-west major transit project, MDOT MTA would be required to procure consultants with specialized expertise. MDOT MTA typically uses a two-stage procurement process, starting with a Request for Qualifications, followed by a Request for Proposals. The process for a contract of this size, through issuance of a Notice to Proceed, would take at least two years to complete with a focused effort.

## **V. New Alternatives**

In lieu of the previous Red Line project, an alternative to address east-west transit options in Baltimore City could be developed. Potential sources of ideas for an alternative project should be included as part of a new regional transit plan currently under development. Given the changes to the corridor, the risky/expensive tunnel of the preferred alternative of the proposed Red Line result in many new constraints and a new environment to examine possible solutions.

### **A. Central Maryland Regional Transit Plan**

The Maryland General Assembly, in Chapter 352 (2018 HB 372/SB 277) signed into law on April 25, 2018, has required MDOT MTA to prepare a Central Maryland Regional Transit Plan to address the needs of MDOT MTA's core service area over a 25-year time frame. The Plan must,

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among other requirements, identify “corridors for new public transportation assets” and prioritize investments. In responding to this requirement, MDOT MTA should complete this work to consider the entire transit system before considering just east-west connections. It is inappropriate to begin an east-west transit solution before completing the Plan to evaluate the entire system.

**B. Evaluation of Alternatives from the Alternative Analysis (AA)/Draft Environmental Impact Statement (DEIS)**

The Red Line Study began by considering multiple alignment alternatives for both light rail transit and bus rapid transit (BRT). These were screened and, in some cases, dropped from the study. The reduced number of alternatives varied by alignment, and by the amount of tunnel and dedicated travel lanes. Any of these options could be reconsidered, as could the ones that were rejected during scoping. The changes in the conditions, funding, or policy discussed above could make some of these options more attractive than they were in the past. The feasibility of any alternatives would need to be evaluated with the key elements of cost and ridership to develop possible viable alternatives. The following alternatives would need to be reconsidered to move a project forward.

*BRT Alternatives*

The Alternative Analysis (AA)/DEIS considered six representative combinations of alignments for BRT alternatives. Some included tunnel segments, and two were entirely surface-running. The multiple segment options result in many permutations. BRT in general had the advantage of having a lower capital cost, but the BRT alternatives had lower projected ridership (including fewer new transit riders), longer travel times, virtually no public support, and the alternatives were less cost-effective based upon cost per rider than the light rail alternatives.

*Surface-Running Light Rail*

Alternative 4A was a light rail alternative that was entirely surface-running. Because it did not include any tunnel segments it was much less expensive. A surface rail alignment on Cooks Lane and in Little Italy, Fells Point and Canton would have substantial impacts to the community, particularly with the loss of parking. The surface alignment in all these areas would have had slower travel times than tunneling even with the planned use of transit signal priority.

*Maximum Tunnel Light Rail*

Alternative 4D was a light rail alternative with longer tunnel segments than the Locally Preferred Alternative. The light rail was in tunnel from the I-70 East Park-and-Ride to Calverton Road, under Cooks Lane, US 40, and West Franklin Street. The downtown tunnel extended due east under Eastern Avenue to Haven Street. While it provided faster travel times and had the highest projected ridership, it would have been substantially more expensive than surface options.

**C. Reduced Scope Red Line Project**

Another option could look at the previously considered reduced-scope version of the proposed Red Line, extending for only a portion of the originally-planned 14 miles. The termini of a shortened Red Line project would need to comply with the NEPA requirement for logical termini and



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independent utility, but there are various termini that would likely meet that stipulation. Multiple iterations using these or other termini could be developed, based on project goals such as cost, or the preferred markets to serve. Any of these options would need to include a cost benefit analysis and a reduced alignment would likely also result in reduced ridership.

**D. Planning Process**

A decision to identify a new alternative or consider one previously eliminated should follow a defined planning process. The planning process could start with the transit vision from the Central Maryland Regional Transit Plan. This long-range plan would define the policy goals and performance measures and prioritize projects.

If the Central Maryland Regional Transit Plan recommended moving forward with the study of an east-west connection the planning process would need to include the following activities:

- Consultation with the Central Maryland Regional Transit Plan Commission, the Baltimore Regional Transportation Board, elected officials, and the public;
- Identification of primary employment centers, transportation hubs, educational facilities, residential development concentrations, and leisure activities that could be the destination of transit riders;
- Travel demand forecasting;
- Development of conceptual alternatives;
- Screening of conceptual alternatives using engineering, cost, and environmental impact criteria;
- Presentation of screened alternatives to stakeholders and the public; and
- Selection of a preferred alternative.

**VI. Project Study Costs and Schedule**

Without a specific scope, it is not possible to estimate project study costs and schedules. If the proposed Red Line Locally Preferred Alternative was retained, costs would be incurred for the environmental re-evaluation, project delivery options analysis, financial planning, and review the prior design for changes in standards, guidelines, and conditions. The cost estimate for this effort could cost as much as \$60 million.

As with the cost, estimating the schedule can only be done at a very high level. Acquiring consultant assistance could be two years. Completion of the environmental analysis and documentation could likely be completed in two to three years. A further two years would be required for design, followed by a year for procurement of construction contracts. This comes to a total of seven to eight years to reach construction under the best circumstances and if funding is available at each step.



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**VII. Summary**

Considering the variety of unresolved technical and financial issues present at the time the project was cancelled, developing additional east-west transportation service in Baltimore City with a new capital project would be a costly and time-consuming process. Inflation, unresolved risks associated with tunnel construction, and significant changes in the project corridor present substantial obstacles to success.

MDOT estimates that the initial \$3 billion cost estimate has risen by at least \$500 million, due to inflation alone. Additionally, MDOT has identified \$161 million of costs that were not included in the previous cost estimate. Further, unresolved hazardous materials risks associated with the tunnel construction would further increase costs, along with development in the project corridor at Oldham Crossing and Marketplace at Fells Point, and changes at the B&P Tunnel portal.

As the cost estimate for the proposed Red Line approaches \$4 billion, and with the federal government unlikely to fund any portion, the costs to the State and local partners is unrealistic. The federal New Starts pipeline has 22 projects in it with over 50 additional projects in some stage of planning; it is unlikely that significant funding from the federal government would be available in the foreseeable future. MDOT is not in a position to fund anything with billions of dollars as then MDOT MTA would not be able to comply with FTA's requirement that project sponsors demonstrate that state of good repair needs are fully funded.

Given that a Central Maryland Regional Transit Plan is now required of MDOT MTA by the legislature, its development should precede any separate major expansion project identification. This long-term plan will look to identify and prioritize transit corridors throughout the whole Baltimore metropolitan area. This Plan will involve a Commission established for the Plan development, the public and any other interested stakeholders.