Chapter 5. Costs and Funding

This chapter presents the one-time capital cost for design and construction, as well as the annual change in operating and maintenance (O&M) costs and farebox revenues, for the TSM, BRT, and LRT alternatives. This chapter also discusses the financial setting for the evaluation of the improvements, including a discussion of MTA funding mechanisms and future financial outlook, and the strategy for funding the capital cost and operating and maintenance cost needs of the alternatives.

5.1. Capital Costs

5.1.1. Approach

Capital cost estimates have been developed in accordance with FTA guidelines. The guidelines call for cost estimates to be prepared and reported using the latest revision of FTA's Standard Cost Categories. In the estimates, cost components for the various alternatives are developed and summarized into the Standard Cost Categories. These cost categories form the basis for the format and structure that is used for the capital cost detail and summary sheets developed for this project. The *Capital Cost Estimating Methodology Technical Report* provides more detailed discussion on the methodology used to estimate capital costs.

The current FTA Standard Cost Categories consist of the following:

- Guideway and Track Elements
- Stations, Stops, Terminals, Intermodal
- Support Facilities (Maintenance and Storage Facilities, Administration Buildings)
- Sitework and Special Conditions
- Systems (Power, Control, Communication)
- Right-of-way, Land, Existing Improvements
- Vehicles
- Professional Services
- Contingency

Each of the alternatives under consideration for the Purple Line has a set of conceptual engineering drawings, typical sections, station locations, and written descriptions that provide the needed definition for each of the major cost components. These planning documents form the basis for the identification of the various infrastructure elements used to prepare the capital cost estimates. These facility elements can be classified into one of two broad groups, either typical or non-typical facilities. Typical facility costs are developed for elements that can be defined by a typical cross-section and applied over a given length of alignment or based on a conceptual scope of work developed as appropriate for a specific typical facility. The typical facility composite unit cost is developed by combining the costs for all of the individual construction elements applicable to a given typical section or facility and creating a representative composite unit cost. Typical sections or facilities have been developed for each of the alternatives.

Non-typical facility costs are developed based on conceptual engineering and design related to the unique facility under consideration. For non-typical facilities, elements necessary for overall system operation, but whose costs cannot be allocated to a specific geographic segment of the system (e.g., vehicles, maintenance and storage facility); these costs are included at the summary level. After details are prepared for both typical and non-typical facilities and the cost data are developed, they are put into a format summarizing overall alternative cost, as well as identifying the cost of various alignment segments.

5.1.2. Contingency

Contingency, in the statistical sense, is the estimated percentage by which a calculated value may differ from its true or final value. The contingency allowance is used to account for those items of work (and their corresponding costs) that may not be readily apparent or cannot be quantified at the current level of design, such as unknown project scope items or a potential project change resulting from public or political issues, or environmental or technical requirements. For the purposes of this study, contingency is divided into two major categories, allocated and unallocated.

Allocated contingency was based on the level of design information available for individual items of work, as well as the relative difficulty in establishing unit prices for these items. The allocated contingency allowance, in the range of five percent to 30 percent, will be allocated according to FTA construction or procurement cost categories. The exact percentage selected for each cost category is based on professional judgment and experience related to the cost variability typically seen for items of work within a particular cost category.

Unallocated contingency is similar to allocated contingency in that it is primarily applied as an allowance for unknowns and uncertainties due to the level of project development completed. The major difference is that allocated contingencies are intended to address uncertainties in the estimated construction, right-of-way, and vehicle costs that typically occur as the amount of engineering and design information advances, while unallocated contingencies are typically much broader in nature and often address changes in the project scope and schedule. Unallocated contingency is calculated as two to five percent, depending on the cost category.

5.1.3. Professional Services

This cost category includes allowances for Preliminary Engineering, Final Design, project and construction management, agency program management, project insurance, surveys and testing, and start-up costs. These allowances are computed by applying a percentage to the total construction cost estimated for each cost category (excluding right-of-way and vehicle costs). Right-of-way and vehicle costs typically are calculated to include the management and administration costs associated with these activities and are therefore excluded from the calculation of professional services.

5.1.4. Capital Costs Assumptions

Key assumptions affecting the capital cost estimates included in the financial strategy are discussed below.

The Silver Spring Transit Center, the Takoma/ Langley Transit Center, and the new south entrance to the Bethesda Metro Station, while related to the Purple Line alternatives, are funded separately and scheduled to be constructed independently and in advance of a Purple Line project. Therefore, no costs are assumed in the Purple Line capital cost estimates except for possible modifications to accommodate the Purple Line.

The expenditure for the Georgetown Branch right-of-way between Bethesda and the CSX

Metropolitan Branch, purchased previously by Montgomery County for the specific purposes of providing both a transitway and trail, is assumed to be already contributed by the County to the project.

It is also assumed that the use of roadway rights-of-way controlled by the state, counties, and local jurisdictions, including those on the University of Maryland campus in College Park and at Metro stations, would be granted to the project at no cost, except for construction of new facilities and replacement or repair of existing facilities and utilities.

The construction of the Capital Crescent Trail between Bethesda and Silver Spring is part of the Purple Line. While the design of the Purple Line includes this parallel trail, it is assumed that a separate funding program would be undertaken by Montgomery County for implementation and maintenance of the trail (e.g., local or state funding sources). The Green Trail is not part of the Purple Line and therefore would be funded separately by Montgomery County.

The capital cost estimates assume traditional design-bid-build procurement, construction, and equipping for implementing the Purple Line, although other means of project implementation could be used, such as design-build.

For reasons of construction, corridor readiness, and funding availability, the Purple Line could be implemented in stages or phases. At this point, no definitive decision has been made regarding any phasing or staging, but some possible initial phases, referred to as minimum operable segments (MOSs), could be, in no particular order or likelihood, Bethesda to Silver Spring, Silver Spring to College Park, Silver Spring to New Carrollton, or Bethesda to College Park. Any initial MOS phase would require a maintenance and storage facility.

5.1.5. Capital Cost Estimates

The cost estimates for the TSM, BRT, and LRT Alternatives are presented in Table 5-1. The table shows the increasing cost of the alternatives. This reflects the discussion of the intent and definitions of the alternatives in Chapter 2, where increased capital investment in dedicated and grade-separated alignment elements enable faster and more reliable operating speeds and travel times. In general, LRT alternatives have higher capital costs than BRT alternatives due to LRT's need for continuous track, power, and signal systems. For the High Investment Alternatives, where the BRT and LRT would have similar guideway features, such as tunnels and dedicated lanes, the cost differential between the modes narrows.

The Silver Spring/Thayer design option, being considered for the High Investment Alternatives, would cost approximately $53,600,000 less than the High Investment option for BRT, and $50,200,000 less for LRT.

The Preinkert/Chapel Drive design option being considered for the Medium Investment Alternatives would cost $10,090,000 more for BRT and $11,300,000 more for LRT.

The Medium Investment BRT variation via Jones Bridge Road, with the addition of the station at Woodmont Avenue and St. Elmo Street, would have an estimated capital cost in 2007 dollars of $597,000,000, which includes $60,000,000 for a new southern entrance at the Medical Center Metro Station, viewed as a critical element to achieve the travel time benefits for trips transferring to and from the Red Line at Medical Center. The other variation, Medium Investment BRT Extended to Medical Center with the addition of the station at Woodmont Avenue and St. Elmo Street, would have an estimated capital cost in 2007 dollars of $585,000,000 This variation could use the existing Medical Center Station entrance.

Table 5-1: Alternatives Capital Cost Estimate (2007 dollars, in millions)

Description	TSM	Low Investment BRT	Medium Investment BRT	High Investment BRT	Low Investment LRT	Medium Investment LRT	High Investment LRT
Length (miles):	16	16.9	16.8	16.8	16.2	16.4	16.5
Number of Stations:	21	22	22	21	21	21	20
Number of Revenue Vehicles:	68	60	49	42	44	44	44
Guideway and Track Elements	$10.54	$76.06	$150.57	$473.02	$307.52	$311.01	$557.71
Stations, Stops, Terminals, Intermodal	$6.23	$49.04	$82.32	$126.73	$103.12	$101.62	$157.33
Support Facilities: Yards, Shops, Admin. Buildings	$0.00	$21.60	$17.64	$15.12	$82.29	$82.29	$82.29
Sitework and Special Conditions	$3.20	$48.88	$92.81	$95.72	$86.98	$94.56	$82.48
Systems	$1.42	$29.06	$24.65	$21.23	$127.04	$126.59	$130.31
Construction Subtotal	$21.40	$224.63	$367.99	$731.82	$706.95	$716.08	$1,010.11
Right-of-Way, Land, Existing Improvements*	$3.21	$33.10	$37.10	$49.80	$58.30	$59.70	$69.50
Vehicles	$48.27	$42.59	$34.78	$29.81	$170.23	$170.23	$170.23
Professional Services	$6.85	$71.88	$117.76	$234.18	$226.22	$229.15	$323.24
Unallocated Contingency	$2.24	$14.18	$22.19	$42.87	$44.44	$44.99	$61.76
Total Project Cost	**$81.96**	**$386.39**	**$579.82**	**$1,088.48**	**$1,206.15**	**$1,220.15**	**$1,634.84**

* The proposed right-of way or easement lines generally were set 10' to 15' +/- beyond the edge of the typical section to allow for construction activity required for embankments, retaining walls and/or erosion and sediment control measures.

5.2. Operating and Maintenance Costs

5.2.1. Approach

Estimating operating and maintenance costs for an Alternatives Analysis involves two major steps: 1) development of operating plans and estimation of operating statistics for the transit mode included in each alternative, and 2) development of operating and maintenance cost models and their application to the operating statistics obtained in Step 1 to estimate the

operating and maintenance costs for the new service. The operating statistics (e.g., vehicle hours, vehicle miles) are derived from the final operating plan for each service alternative after the equilibration step in the travel demand process. Equilibration is the step whereby the supply of transit service (number of vehicles operating and passenger carrying capacity provided in a given period) is balanced with the demand (number of passengers to be carried in a given period) as estimated using travel demand models. The final operating plan describes the level of service to be provided as part of each alternative, including peak and off-peak service for weekdays and weekends.

The estimating approach used for this study conforms to the FTA's most recently issued technical guidelines for transit alternatives analysis (*Procedures and Technical Methods for Transit Project Planning: Review Draft*, September 1986 and updates), to the extent possible at this stage of the planning process. In particular, the transit cost models use the resource buildup approach methodology recommended by FTA, and the cost models are fully allocated models. This means that they test the effects of system changes (such as expansions of the rail or bus system) on costs of all areas of the agency's operation and are capable of testing different levels of costs for many individual elements of the operation, including the wages and salaries of operators and maintenance personnel, costs for fringe benefits and fuel. The models, which are derived principally using National Transit Data, follow FTA's recommended approach of separating and classifying individual expense categories.

Public transportation in the corridor is provided by a variety of transit agencies, including MTA, WMATA, and county systems operated by Montgomery and Prince George's Counties, as well as other systems such as the UM shuttle.

The resulting operating and maintenance cost estimates were validated by comparing them to actual expenditures using recent MTA bus and light rail operation statistics. Separate bus operating and maintenance cost models and estimates were developed for local and express WMATA Metrobus, the county-operated bus services, and other bus services. WMATA and county bus information were used to develop the operating and maintenance cost models for those services. The *Operating and Maintenance Cost Estimate Technical Report* documents the development of the operating and maintenance cost models and estimates, including documentation of the data sources.

The BRT and LRT Alternatives involve three elements affecting operating and maintenance costs: the costs of operating and maintaining the line haul BRT or LRT services, including vehicles; the cost of operating and maintaining the BRT or LRT facilities, including guideways, stations, and other physical components; and the changes in operating and maintenance costs from the adjustment of the local bus services along and across the corridor to reflect shifting ridership demand.

5.2.2. Operating and Maintenance Cost Assumptions

The MTA is assumed to be responsible for operation and maintenance of the Purple Line services and associated costs. MTA is also assumed to operate the additional express bus services that comprise the bulk of the additional service operated under the TSM alternative.

MTA, WMATA, Montgomery County, Prince George's County, University of Maryland, and other transit operators in the corridor and surrounding region will continue to be responsible for operations and maintenance of their bus and rail transit services and facilities, recognizing that some adjustments to service levels and routing (in the case of bus services) may result from implementation of the project.

The cost of operating and maintaining the hiker-biker trail built in conjunction with or adjacent to the Purple Line would be the responsibility of Montgomery County, the owner of the Georgetown Branch Trail.

The operating and maintenance cost estimates assume the current practice of operating and maintaining transit services would continue, although other means of operating and maintaining the services and facilities could be used.

As discussed in Section 5.1.4, *Capital Cost Assumptions*, the project could be implemented in stages or phases and have a modified operating plan.

5.2.3. Operating and Maintenance Cost Estimates

Operating and maintenance cost estimates for each alternative were determined by multiplying the unit costs by the number of vehicles, hours and miles of service, and, in the case of LRT, the one-way track miles under each option. The fully burdened cost comes from adding the costs generated by these factors as well as the factors for the BRT guideway and an add-on cost for underground stations.

Table 5-2 shows the total annual estimated operating and maintenance costs for the alternatives. Because higher capacity BRT and LRT vehicles allow the same number of passengers to be carried with fewer vehicles and fewer operators, some of the BRT and LRT alternatives have lower overall operating costs than alternatives using more conventional bus services, including the TSM alternative.

The various Build alternatives range between approximately $17 million and $26 million in cost. The costs are lower for the High Investment Alternatives, because under these alternatives the proposed BRT or LRT service would replace more of the existing bus service and the guideway bus services would operate faster and thus more efficiently, than under the Low and Medium Investment Alternatives.

Table 5-2: Total Annual Estimated Operating and Maintenance Costs (2007 dollars in millions)

Description	TSM	Low Investment BRT	Medium Investment BRT	High Investment BRT	Low Investment LRT	Medium Investment LRT	High Investment LRT
Incremental Annual Bus and BRT O&M, (including BRT Service, Station and Guideway Operation)	$14.6	$17.3	$17.3	$15.8	(-$3.6)	(-$3.6)	(-$3.6)
Incremental Annual LRT O&M, Service, Station and Guideway Costs	-	-	-	-	$30.0	$28.6	$25.8
Total Annual O&M Cost Increase over No Build	**$14.6**	**$17.3**	**$17.3**	**$15.8**	**$26.4**	**$25.0**	**$22.8**
Annual Change in Systemwide Farebox Revenue	$2.4	$3.3	$4.5	$5.2	$5.3	$5.6	$6.2
Annual Operating and Maintenance Subsidy	$12.2	$14.0	$12.8	$10.6	$21.1	$19.4	$16.0

The Silver Spring/Thayer Avenue and Preinkert/ Chapel Drive design options would have no appreciable difference in operating costs from the alternatives for which they are being considered.

The Medium Investment BRT variation via Jones Bridge Road, would have an estimated operating and maintenance cost in 2007 dollars of $17,300,000, which is the same as the basic Low and Medium Investment BRT alternatives while the other variation, Medium Investment BRT extended to Medical Center, would have an estimated capital cost in 2007 dollars of $18,300,000.

5.2.4. Farebox Revenues

Farebox revenues are those that are collected from passengers using the transit services for making trips. People use a variety of means to pay fares, including cash, tokens, passes, and electronic farecards. Passes and farecards for multi-trip, or weekly and monthly periods are typically purchased at a discount. Fares revenues include both fares at the initial boarding of the trip as well any transfer costs. For the purposes of this analysis, the operator of the Purple Line would be the MTA.

With the increase in systemwide transit users forecasted for the alternatives, the increase in systemwide farebox revenues relative to the 2030 No Build are presented in Table 5-2.

5.2.5. Operating Subsidy

Annual operating and maintenance costs in excess of the annual farebox revenues would require a subsidy from some combination of state and local sources. Table 5-2 shows the forecasted annual operating subsidies for each of the alternatives.

5.2.6. Financial Strategy

This section summarizes the current strategy for funding and financing a project that may emerge from this Alternatives Analysis. It provides background information regarding transportation revenue and expenditures in Maryland, and places the project in the context of the state's transportation budgeting and capital planning process. The portion of the Purple Line between Bethesda and Silver Spring (the earlier Georgetown Branch Transitway/Trail Project) is included as a project in the MWCOG Constrained Long Range Plan (CLRP). The portion between Silver Spring and New Carrollton is defined as a study. The State Transportation Improvement Program/ Consolidated Transportation Improvement Plan (STIP/CTP) includes funding for ongoing planning through 2010 for the Purple Line.

5.2.7. Transit Funding In Maryland

The MTA is unusual as a transit agency in that it is part of the Maryland Department of Transportation (MDOT) and the non-federal share of transit expenditures, both capital and operating, is funded by the State. Transit is one of several modes that are funded using the Maryland Transportation Trust Fund (TTF). The TTF was created in 1971 to provide a dedicated source of revenues to support state transportation. The fund supports all of the department's activities, including debt service, modal agency operations, and capital projects.

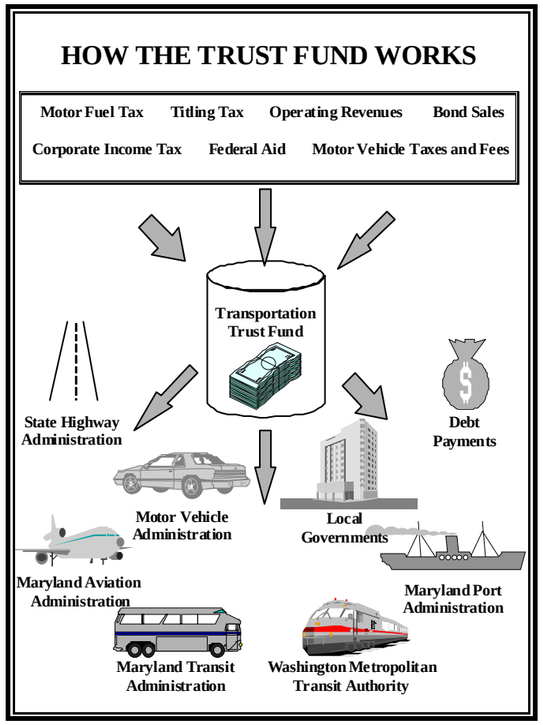
All state revenues for transportation are collected through the TTF, including taxes, user fees and charges, bond proceeds, federal aid, and operating receipts. Highway toll revenues are collected by the Maryland Transportation Authority.

Several sources of revenues make up the TTF. They include the following:

- Motor vehicle fuel taxes of 23.5 cents per gallon of gasoline, 24.25 cents per gallon of diesel fuel, and 7 cents per gallon of aviation fuel
- Motor vehicle registration and other fees
- Motor vehicle title tax of 5 percent of the fair market value of new and used vehicle sales and those of new residents
- Corporate income tax – 21 percent of the State's 7 percent corporate income sales tax
- Beginning in 2009, 6.5 percent of the 6 percent state sales and use tax will be dedicated to the TTF and is estimated to be $1.6 billion over the 6-year period covered by the MDOT capital program
- Operating revenues from transit fare boxes, Maryland Port Authority terminal operations, Maryland Aviation Administration flight activities, fees, parking, and concessions
- Federal funds – authorized by the U.S. Congress. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation authorized $720 million in annual funds to MDOT, $580 million in highway programs and $140 million in transit funds.

The TTF is predominantly comprised of motor vehicle and other user fees. These offer a stable source of revenue for MDOT, a source that consistently grows at a modest rate each year. However, because the motor vehicle fuel tax is a flat fee, rather than charged as a percentage of retail prices, revenues from that source do not grow with inflation. Figure 5-1 shows how the TTF works.

Figure 5-1: Transportation Trust Fund Overview



Allocation of TTF funds is determined by the Maryland Secretary of Transportation and approved by the Governor and the Maryland General Assembly. A target fund balance of $100 million is maintained to provide for MDOT's working cash flow requirements.

Maryland is considering a number of major transit capital investments in addition to the Purple Line, including the Red Line Corridor in Baltimore, the Corridor Cities Transitway in Montgomery County, and a major MARC expansion (the commuter rail system in Maryland serving the Baltimore-Washington area). In addition, high priority is being given to

existing transit system preservation and rehabilitation. Along with transit needs, substantial funding needs exist for highways and other transportation systems supported by the TTF, which will require decisions regarding revenue increases for the TTF, other sources of revenue, and prioritization regarding the scale and timing of the transit projects.

Figure 5-2 illustrates the annual TTF revenue from 1988 to 2007. The last time the 23.5 cent per gallon gas tax was raised in Maryland was 1992. Revenues in the TTF, although growing at a relative steady rate, were simply not keeping up with the State's transportation needs. An increase in motor vehicle registration and titling fees in 2004 helped replenish trust fund revenues starting in FY 2005. However, even with these increases, estimates by MDOT projected a potential $1.5 billion transportation-funding shortfall by 2008 and a $40 billion shortfall over the next twenty years. This projected shortfall is attributed in particular to growth in the transportation system and system demand, as well increased needs for maintenance to the aging existing infrastructure, including bridges, roads, and transit rolling stock and facilities.

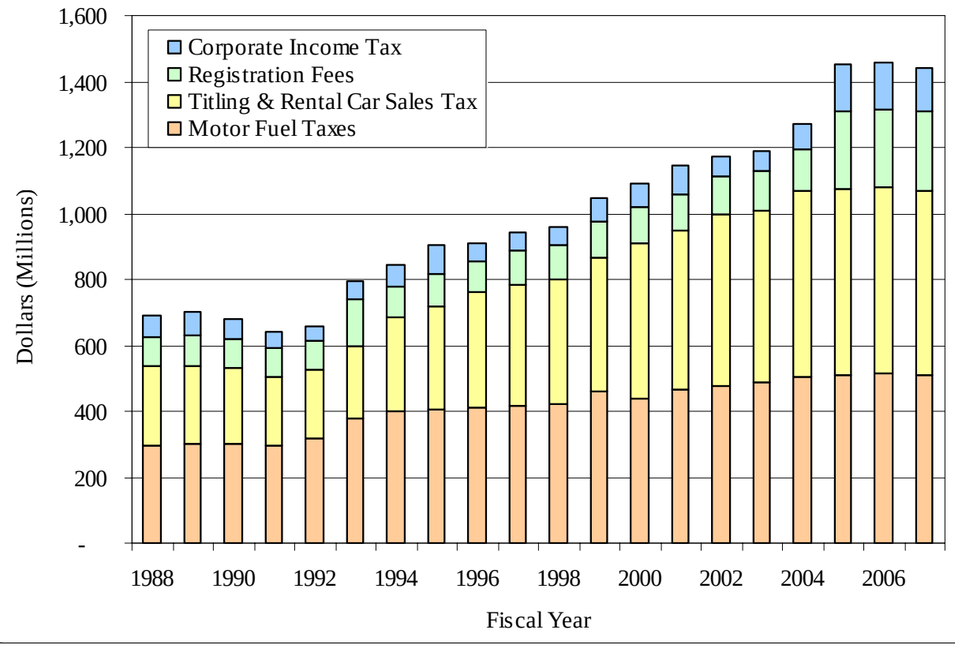
In a Special Session of the Maryland General Assembly held in late 2007, the General Assembly passed and Governor O'Malley signed a combination of revenue enhancements that increased TTF revenues by more than $400 million a year. These funds have been programmed in the 2008 Consolidated Transportation Program (CTP) that allocates funding to capital projects for FY 2008–2013. A substantial portion of the revenue increase was dedicated to the Maryland transit program. The Purple Line received a commitment of $100 million of the revenues from the increase in the FY 2008–2013 CTP. This money should be sufficient to take the project through completion of Preliminary Engineering and into Final Design.

Historically, transit has received approximately 35 percent of the TTF over a given six-year capital program. In FY 2007, transit accounted for 25.3 percent of the TTF expenditures with 18.6 percent allocated to MTA and 6.7 percent allocated to WMATA.

Given the State's growth plan for transit in Maryland, including consideration of implementation of three major capital investment projects (the Purple Line, the Corridor Cities Transitway, and the Red Line Corridor), the MDOT is developing a plan that combines the staggering and phasing of projects with a program to capture additional revenues from local governments. The intent is to have funds available to meet capital and operating costs of the New Starts projects, as well as a range of additional system enhancements to improve system preservation and operations of the existing transit system and its general operating obligations.

This strategy is in the process of being developed by MDOT, along with a specific plan to implement it. Once the details of the revenue enhancements are available and decisions are made regarding the specific levels of investments in the various corridors, MTA would specify an exact plan for funding this project. Once that information is available, MTA would develop a strategy for funding this project through construction, ensuring the availability of funds for operating this new investment while maintaining the quality of operations and maintenance for the remainder of its transit systems.

Figure 5-2: Transportation Trust Fund Revenue Increase Strategy



Beyond state funds, the remainder of the funding would come from federal, county, and possibly private-sector sources. It is expected that Montgomery and Prince George's Counties would provide capital funds for construction of the Purple Line in addition to right-of-way contributions, easements, and ancillary roadway and trail facilities.

5.2.8. Montgomery County Funding

Montgomery County is a member jurisdiction of WMATA through the Washington Suburban Transit Commission (WSTC). The WSTC was created in 1965 by the General Assembly of Maryland and the Transit Authority through an interstate compact among Maryland, Virginia, and the District of Columbia, with the consent of Congress in 1967.

WMATA provides Metrobus and Metrorail service to Montgomery County, as well as the remainder of the Washington region. Mass transit has become an integral part of the transportation network of the county with present services provided via a number of Metrobus routes and Metrorail Red Line.

In 1980, the federal legislation authorizing funding for the Metrorail system required the local governments in the Washington region to develop a "stable and reliable" source of funding for the local costs required to build and operate mass transit systems. Montgomery County satisfied that requirement because it had already, in 1965, established a Mass Transit Facilities Fund that receives revenue from both a county real estate tax dedicated to transit, and state aid.

Proceeds from the local property tax are currently the main source of funding for the mass transit program which goes to funding local bus service, including Ride On bus service, and the

county's local share of WMATA's capital and operating costs, bus operations, rail operations, and debt service.

5.2.9. Prince George's County Funding

Prince George's County is also a member jurisdiction of WMATA through the WSTC. Like Montgomery County, Prince George's County, in 1982, established a mass transit special revenue fund which receives revenues from the state real property tax grant revenue sharing program. Additional county funding is also provided through its general fund.

Proceeds from the local property tax are currently the main source of funding for the mass transit program which goes to funding local bus service, including TheBus, and the county's local share of WMATA's capital and operating costs, bus operations, rail operations, and debt service.

5.2.10. Potential Private-Sector Funding

The private sector is a potential source of funding, especially in areas that are undergoing land development changes or expected to in the future, especially in concert with the possible Purple Line Locally Preferred Alternative. The Federal Transit Administration (FTA) has adopted policies that give special interest and preference to transit projects involving private sector participation. This includes station area joint development projects and private value capture financing techniques to assist in funding the capital or operating and maintenance costs of transportation improvements. Joint development is any development that is physically or functionally related to transit station areas. Value capture is the technique or mechanism used to "capture" a portion of the incremental value created on land and improvements associated with the transit system.

MDOT, WMATA, Montgomery County, and Prince George's County have recent experience in both joint development and value capture mechanisms. Specific policies and value capture mechanisms utilized by MDOT include leasing of transit agency-owned land for air rights development; right-of-way contributions; developer "in-kind" contributions; and space lease arrangements. WMATA derives significant value capture revenues through leasing transit-owned property for air rights development and has also obtained limited revenues through developer cost sharing arrangements and connector fees. Montgomery County and Prince George's County have many of the zoning and policy tools in place to promote station area development (i.e., transit district overlay zone process) and is experienced in determining the pro rata share of the cost for off-site facilities that developers must proffer in transit districts.

A variety of joint development and value capture mechanisms offer the potential to contribute to the capital and operation and maintenance and funding of the Purple Line.

Transit District Overlay Zone (TDOZ) – This mechanism has been established in Montgomery County and Prince George's County to promote coordinated and integrated development schemes around transit stations through the District Overlay Zoning process. A designated transit districts includes specific land uses and densities for areas around transit stations including the distance from the station locations.

Right-of-Way Contributions – This category includes the contribution of privately- or publicly-owned land that is needed for the transit improvement's right-of-way, station areas, or support facilities.

Developer Dedication/Proffers – This category includes the amount developers might be willing to pay for off-site facility improvements associated with transit station area development. The amount of potential proffers is based upon the increase in residual land value that is expected to occur as zoning allows developers to build at a higher density than would otherwise occur.

Developer Payment in Lieu of Parking – This mechanism involves reducing parking requirements, often by approximately one space per 1,000 square feet of commercial office development at station areas. Payments in lieu of parking are usually negotiated on a case-by-case basis with developers and include a fairly complex formula for determining the cost benefit of a parking reduction. At the King Street Metrorail Station in Alexandria, the City, for example, has required developers to make payments to the City in the amount which effectively equates to about two-thirds of the cost savings.

Benefit Assessments – This value capture mechanism focuses on commercial development within transit station areas and assumes that the transit system will have a positive effect on achievable lease rates as market image is enhanced and tenant demand rises. The value capture works on the premise that the increased value created by induced lease rates is split between the transit agency or local jurisdiction and the developer through the establishment of a benefit assessment tax, which would likely be assessed on a per-square-foot basis of commercial floor area.

Air Rights Development Revenues – Air rights revenues include ground lease revenues, developer dedication/proffers, payments in lieu of parking, and benefit assessments (as described previously).

While there are no committed sources or amounts of capital or operating and maintenance funds support from these private sector sources, the MTA, Montgomery County, Prince George's County, and the Maryland-National Capital Park and Planning Commission will continue to look for private sector funding opportunities.

Private-sector funding contributions would most likely come from development projects adjacent to certain Purple Line stations, particularly Bethesda (existing Metrorail Station), Connecticut Avenue at the Georgetown Branch right-of-way, Silver Spring Transit Center (existing Metrorail/MARC Station), Fenton Street, Arliss Street, Takoma-Langley Transit Center, University of Maryland – East Campus, College Park (existing Metrorail/MARC station), River Road, and New Carrollton (existing Metrorail/MARC/ Amtrak station). Contributions are typically targeted toward stations and enhancements along the alignment.

5.2.11. Federal Aid

The U.S. Department of Transportation is a prime source of funding major transportation infrastructure construction, especially for interstate highways and transit. The principal source for transit is the FTA's New Starts program discussed below. A number of other federal programs have the potential to provide some funding for enhancements and associated components of a Purple Line Locally Preferred Alternative and will be explored further once the Locally Preferred Alternative is selected.

New Starts

The FTA's discretionary Section 5309 New Starts program is the federal government's primary financial resource for supporting locally planned, implemented, and operated major transit capital investments. The New Starts program funds new, and extensions to existing, fixed guideway systems, including commuter rail, light rail, heavy rail, BRT, trolleys, and ferries. For the five-year period FY 2005 - FY 2009, the

New Starts program is authorized at $7.4 billion ($1.5 billion per year average). The New Starts program is funded at about 16 percent of the total federal transit funding for FY 2005 – FY 2009 ($45.3 billion). To qualify for federal funding, New Starts projects must be authorized by the U.S. Congress in the Surface Transportation Authorization Act, which occurs every five or six years. The current authorization act (SAFETEA-LU) is in effect through FY 2009. The allocation of federal funds for specific transit New Starts projects occurs in the annual Transportation Appropriations Act. Congress earmarks transit New Starts discretionary funds to various projects throughout the country. The bulk of projects that obtain federal transit discretionary funding earmarks are those projects that are in FTA's Full Funding Grant Agreement (FFGA) process. In fact, FTA's FY 2007 budget request to Congress includes $1.228 billion (92 percent of the total request) for New Starts projects in the FFGA pipeline and $102 million for other projects (8 percent).

Due to intense competition for federal transit funding, the federal share for New Starts projects has steadily declined over the past 10 years. Although the law allows an 80 percent federal share for New Starts projects, the trend has been to limit federal funds to around 50 percent. Funding for transit projects in Maryland is an excellent example of this change in that the original Washington Metrorail system received 100 percent federal funding. When the Baltimore Metro was built, it received 90 percent federal funding. In the 1990s when the Baltimore Central Light Rail Line Phase 2 was built, it received 80 percent federal funding, while the recently completed Largo extension of the Metrorail received 60 percent federal funding. Because requests for this funding assistance far outstrip the available funds, projects from around the country compete against each other for funds. In recent fiscal years, the Congressional Appropriation Committee has been limiting the federal share to 50 percent and nearly all project requests for federal assistance are in this range.

For transit projects seeking federal funds, the agency sponsoring a locally selected transit project submits a "New Starts Criteria" package to FTA to get the project into the "funding pipeline." This package is first developed after the Alternatives Analysis is completed and a Locally Preferred Alternative is selected, prior to the request to enter the Preliminary Engineering phase. The package provides information describing the proposed project and information about a number of criteria used to rate the project against other projects from around the country competing for the limited pool of New Starts funds. These criteria include the following:

- Mobility improvements (travel time savings, low-income households served)
- Environmental benefits
- Operating efficiencies (operating cost per mile)
- Cost-effectiveness (transportation system user benefits)
- Transit-supportive land use patterns, policies, and programs
- Local financial commitment
- Economic Development

Under SAFETEA-LU (August 2005), a five level scale of "High," "Medium-High," "Medium," "Medium-Low," and "Low" is established for overall project rating, as well as for individual criteria. Only those projects rated "Medium" or higher, overall, may be advanced through the New Starts project development process or be recommended for funding. A "Medium" overall rating requires a rating of at least "Medium" for both project justification and local financial commitment, and if a project receives a "Low" rating for either project justification or local financial commitment, it will receive a "Low" overall rating. FTA further notes that it will not generally recommend for funding any project that does not achieve a rating of at least "Medium" for cost effectiveness. A project must receive an overall rating of at least "Medium" to be admitted into Preliminary Engineering or Final Design, or to receive a funding recommendation. FTA no longer rates projects as Highly Recommended, Recommended or Not Recommended for funding. Projects must still go through the administrative and political steps of the Executive and Congressional budget and appropriations processes.

Another key variable is the local financial commitment, which focuses on the availability and reliability of local funding sources for capital construction and operating and maintenance costs, as well as the overall amount and share of project cost being requested from the federal Section 5309 program. Maryland has historically rated very well in these areas.

A project emerging out of an Alternatives Analysis phase with a selected Locally Preferred Alternative that is in the state's CLRP is eligible to submit a "Request to Initiate Preliminary Engineering." During the Preliminary Engineering phase, the project will complete detailed planning and conduct Preliminary Engineering, complete the federal and state environmental review processes (environmental impact statement), and prepare project management and financial plans. At the completion of the Preliminary Engineering phase, the New Starts Criteria package for the project is updated and submitted for rating and recommendation. After receiving a New Starts rating from FTA, the project would submit a "Request to Initiate Final Design." In this phase, final construction plans are developed, and property acquisition and construction and equipment procurement occur that eventually lead to the start of operations. A key element of this phase is negotiating an FFGA between the sponsoring agency and FTA regarding the amount and payout schedule for the federal share of funds.

The Purple Line, Red Line Corridor, and the Corridor Cities Transitway are potential New Starts projects. None of these projects has selected a Locally Preferred Alternative, and therefore have not yet submitted a New Starts Criteria package to FTA for rating. Since these projects have not been rated, they are not officially in the New Starts pipeline and have yet to submit a "Request to Initiate Preliminary Engineering." The Purple Line and the Red Line Corridor Transit Study are in the Alternatives Analysis phase, and the Corridor Cities Transitway project is at the stage of updating its environmental documentation and, subsequently, selecting the Locally Preferred Alternative for the transit component of the project. All have entered the federal environmental process, NEPA.

The current SAFETEA-LU authorizing legislation expires in FY 2009, at which time it is expected that a successor authorizing legislation would be passed by Congress and signed into law. The candidate Maryland New Starts projects, including the Purple Line, would be seeking capital funding authorized in this successor legislation.

5.2.12. Capital Funding Strategy

A number of decisions will affect the amount and timing of the funding required for building and operating the Purple Line. First is the decision on the Locally Preferred Alternative, which will establish the overall level of capital funding needed. It is possible that the Locally Preferred Alternative may be a modification of an alternative considered in this AA/DEIS in terms

of location of the terminal stations, the number and location of stations, and other components of the project definition. The other decision is the timing of the construction and start of operations, including initiation and phasing or staging of construction. Major influences on the timing will be the availability of funding, especially the state funding, and the state priorities relative to the other New Starts projects.

MDOT will seek New Starts funding for the Locally Preferred Alternative. While up to 80 percent of the project costs can be covered by the New Starts program, it is expected that MDOT will be seeking between 50 and 60 percent. The majority of the non-New Starts funding is expected to come from the Maryland TTF. Capital fund contributions, above right-of-way and related property and easement contributions are expected from Montgomery County, particularly for the Capital Crescent Trail along the Georgetown Branch right-of-way and Prince George's County. Non-New Starts federal funding will be sought for various enhancements, such as trails, and roadway, railroad and transit oriented development improvements, where eligible.

The MTA will aggressively pursue private sources of funding. At a number of station areas, there is the potential for developer contributions for stations and the adjoining area, specifically at Bethesda (existing Metrorail Station), Connecticut Avenue at the Georgetown Branch right-of-way, Silver Spring Transit Center (existing Metrorail and MARC Station), Fenton Street, Arliss Street, Takoma/Langley Transit Center, University of Maryland – East Campus, College Park (existing Metrorail and MARC station), River Road, Kenilworth Avenue, and New Carrollton (existing Metrorail, MARC and Amtrak station).

As discussed earlier, a special session of the Maryland Legislature enabled a number of revenue enhancements that include a $400 million per year increase in revenue to the TTF in late 2007. In January 2008, the Governor announced that $100 million was committed to the Purple Line. The Red Line in Baltimore also received a commitment of $100 million and the Corridor Cities Transitway received $80 million.

As the additional funds were just recently added to the CTP, the Purple Line and Corridor Cities Transitway funds will be included in next update of the Washington region financially constrained long-range regional transportation plan.

The FY 2008–2013 MDOT Consolidated Transportation Program (CTP) has a total of $87,698,000 in funds for the Purple Line Corridor project, including $10,826,000 in Federal Aid. The CTP shows funds by both category of expense and year of expenditure through 2013. The CTP is updated every year for all projects within the program. The FY 2008-2013 CTP shows funds for planning/ NEPA/Preliminary Engineering through FY 2010 and Final Design funds through 2013. Funding for Final Design beyond 2013 and right-of-way and construction would be in future years. Since a Locally Preferred Alternative has not been selected, these funds are essentially being held in place, pending selection of an alternative. Should No Build be selected, any unspent funds revert back to the TTF. Should a TSM or Build alternative be selected, the funds by category and year of expenditure will be adjusted annually to reflect the scope and cost of the project, federal funds anticipated, and project schedule. The state funds allocated to the Purple Line are based on a six-year revenue projection for the entire TTF, calculated by MDOT, for purposes of assigning funds to the entire MDOT Capital Program.

It is expected that a further funding revenue increase will be pursued over the next several years to fund the priority transit projects in Maryland, including system preservation, MARC improvements, and the selected New Starts projects' Locally Preferred Alternatives. While one possible scenario is to increase revenue to the Maryland TTF, other jurisdictional or institutional revenue and funding mechanisms are possible, such as special transit improvement districts, or local option funding. It is expected that funding for the Purple Line Locally Preferred Alternative and other priority New Starts projects will be in place by 2011.

5.2.13. Operating and Maintenance Cost Funding Strategy

As is the case for existing MTA services, should the MTA operate the Purple Line, that portion of the annual operating and maintenance and associated costs not covered by fare revenues, i.e., the operating subsidy (Table 5-2), would be funded by the TTF. As part of the State-level revenue enhancement for capital funding, other sources and mechanisms for providing the operating subsidy may be considered, including possible county contributions.

5.3. Cost and Funding Conclusions

The capital cost funding and annual operating cost subsidy for the Purple Line would be funded from a package of federal, state, county, and possibly private sources. It is expected that 50 to 60 percent of the capital funding will be sought from the federal New Starts funding. While other federal, county, and private sources will contribute to the remainder of the capital funding needs, the State of Maryland would be the principal source. Recent revenue increases and programmatic commitments will cover the funding need for design and initial capital costs. It is expected that further revenue increases and funding mechanisms will be in place by 2011 to fund the implementation and operations of the Purple Line Locally Preferred Alternative.