Chapter 4: The Long Range Plan Projects

Chapter Summary

4.1 What is a Fiscally Constrained Plan?	A fiscally constrained plan is a LRTP that demonstrates sufficient funds (federal, state, local, and private) to implement proposed transportation system improvements, as well as to operate and maintain the entire system, through the comparison of revenues and costs. This plan analyzes the funding available for capital expansion projects in the C-SMMPO region from 2019 through 2040, as well as the total anticipated cost of those projects (projects from 2015 through 2018 are already funded in the TIP). All project costs are required by USDOT to be estimated in **Year-of-Expenditure (YOE)** dollars. The capital expansion project cost estimates are initially produced in current year dollars and inflated to the YOE according to the estimated construction schedule.	Page 4-2
4.2 How are Projects Identified?	The projects identified for funding are contained in existing documents, including plans and programs used to identify future project needs. Basic capital expansion project improvement types include reconstruction, construction, and access control improvements.	Page 4-3
4.3 Which Projects are in the Fiscally Constrained Plan?	MDOT's financial projections include $844M for Calvert and St. Mary's counties through 2040. The C-SMMPO Board considered a variety of capacity expansion projects for the region and selected the four lane widening of MD 4 (Solomons Island Road) from Patuxent Point Parkway in Calvert County to the MD 235 intersection in St. Mary's County, including a new Thomas Johnson Bridge, as the highest priority project. SHA's financial projection for the four phases of the MD 4 from Patuxent Point Road to MD 235 project is $841.4M. The four phases of the project include: 1. Thomas Johnson Bridge (Patuxent River Crossing) 2. MD 4 Mainline, St. Mary's County 3. MD 4/MD 235 Interchange 4. MD 4 Mainline, Calvert County The remaining balance available for additional capacity improvement projects is $2.6M.	Page 4-5

Chapter 4: Long Range Plan Projects

4.1 What is a Fiscally Constrained Plan?

According to USDOT, long range transportation plans must contain information on how projects can be funded over the time period of the plan based on reasonably anticipated revenues, including anticipated revenues from FHWA and FTA, state DOTs, regional or local sources, the private sector, and user charges. **Moving Forward 2040** must demonstrate that projects in the plan do not exceed the expected revenue. In other words, the plan must be **fiscally constrained**. MDOT developed a revenue projection of reasonably available funds that can be used for capital transportation projects in the C-SMMPO region from 2019 to 2040 (projects from 2015 through 2018 are already funded in the TIP). Projects and their costs are identified by the state and Calvert and St. Mary's counties. The complete MDOT financial projection for the C-SMMPO region is available in **Appendix C**.

What does it mean to be fiscally constrained?
A demonstration of sufficient funds (federal, state, local, and private) to implement proposed transportation system improvements, as well as to operate and maintain the entire system, through the comparison of revenues and costs.

There are two categories of projects:

- **Capital expansion projects** increase the capacity of the transportation system through the construction of new facilities and the expansion of existing infrastructure; and
- **System preservation projects** maintain and improve existing facilities.

In addition to meeting fiscal constraint, all project costs included in the plan are required by USDOT to be estimated in **Year-of-Expenditure (YOE)** dollars. The capital expansion project cost estimates are produced initially in current year dollars and inflated to the YOE according to the estimated construction schedule. Costs are escalated typically based on distinct inflation forecasts for, at a minimum, construction costs, right-of-way acquisition, labor cost, and general price inflation to account for the wide variability in the inflation characteristics of certain cost components.

What is Year-of-Expenditure?
Regardless of how financial assumptions and forecasts are developed, all forecasts in the financial plan must be shown in "year of expenditure" dollars based on reasonable inflation factors.

Figure 4.1 shows the funding available for capital expansion projects and the total estimated project costs for the C-SMMPO region from 2019 through 2040 in YOE. The projects are discussed in more detail in section 4.3 of this chapter.

Figure 4.1 Available Funds and Estimated Project Costs for C-SMMPO Region (2019-2040)

Funding Description	Cost
Total Capital Expansion Project Funding Available (MDOT Financial Projection)	**$844,000,000**
Total Estimated Project Costs in YOE	**$841,400,000**
Remaining Balance Available for Other Capital Expansion and System Preservation Projects	**$2,600,000**

4.2 How are Projects Identified?

LRTPs typically examine the need for **capital expansion projects.** These major projects are typically on State-owned roadways and are funded in the **MDOT Consolidated Transportation Program** (CTP). The counties also construct and maintain their own roadway, transit, bicycle, and pedestrian facilities. If a capital expansion project is in a MPO area, then it must first be included in the LRTP before it can be considered for funding in the CTP. **Figure 4.2** lists the highway project improvement types.

Consolidated Transportation Program (CTP)
The Consolidated Transportation Program (CTP) is Maryland's six-year capital budget for transportation projects. The CTP includes capital expansion projects that are generally a new, expanded, or significantly improved facility or service that may involve planning, environmental studies, design, right-of-way acquisition, construction, or the purchase of essential equipment related to the facility or service.

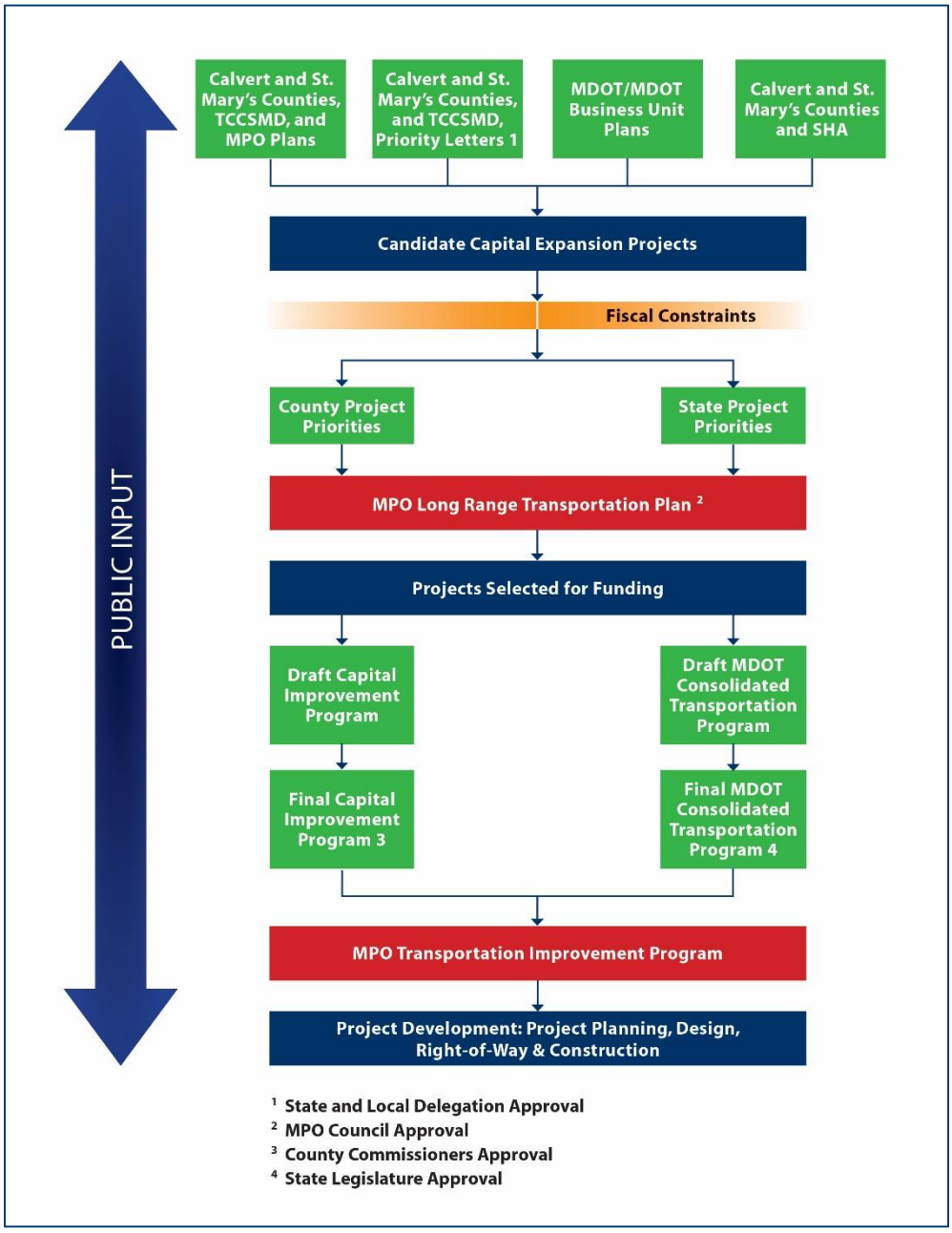
Figure 4.2 Highway Project Improvement Types

Improvement Type	Description
Reconstruction	Improvements where old pavement and appurtenances such as drainage structures are removed and replaced or substantially modified. Such reconstruction may apply to the existing number of lanes or dualization, adding or modifying interchanges or existing highway on the same alignment.
Construction	Improvements of a totally new facility and appurtenances, including bridges. A new facility will generally provide a highway where none exists, or an alternate facility to an existing highway that will remain open and continue to serve through traffic.
Access Control Improvements	Control of access, by definition, is where ingress and egress to abutting land, on to and/or across the highway is fully or partially restricted by public authority. Highway access can by controlled as follows:
Full Control	Preference to through traffic by providing grade separation interchanges with selected public roads only and by prohibiting intersecting at-grade and direct private driveway connections.
Partial Control	Preference to through traffic to a degree that, in addition to or in lieu of interchanges with major public roads, there may be selected at-grade intersections to public streets only.
Uncontrolled Access	Allows the number of points of ingress/egress to be limited only by control over the placement and geometric design of connections as necessary for the safety of the traveling public.

Source: Maryland SHA, Highway Needs Inventory (HNI)

In the MPO's region, candidate capital expansion projects from a variety of existing planning documents were considered for inclusion in **Moving Forward 2040** LRTP. As illustrated in **Figure 4.3**, the candidate projects are then analyzed and vetted by the MPO and its member agencies based on need. Project cost estimates are developed and the projects included in the LRTP must not exceed the available funding (fiscal constraint barrier) that is projected through the LRTP's horizon year. Project priorities for the counties and state from the LRTP and other plans are then considered for funding in each counties' Capital Improvement Program (CIP) or MDOT's CTP, respectively. The projects selected for funding are then added to either the counties' CIP or the MDOT CTP, and the MPO's Transportation Improvement Program (TIP) document. The funded projects then undergo project development by the responsible agencies. Public involvement opportunities are provided throughout these various processes, and feedback is considered in decision-making.

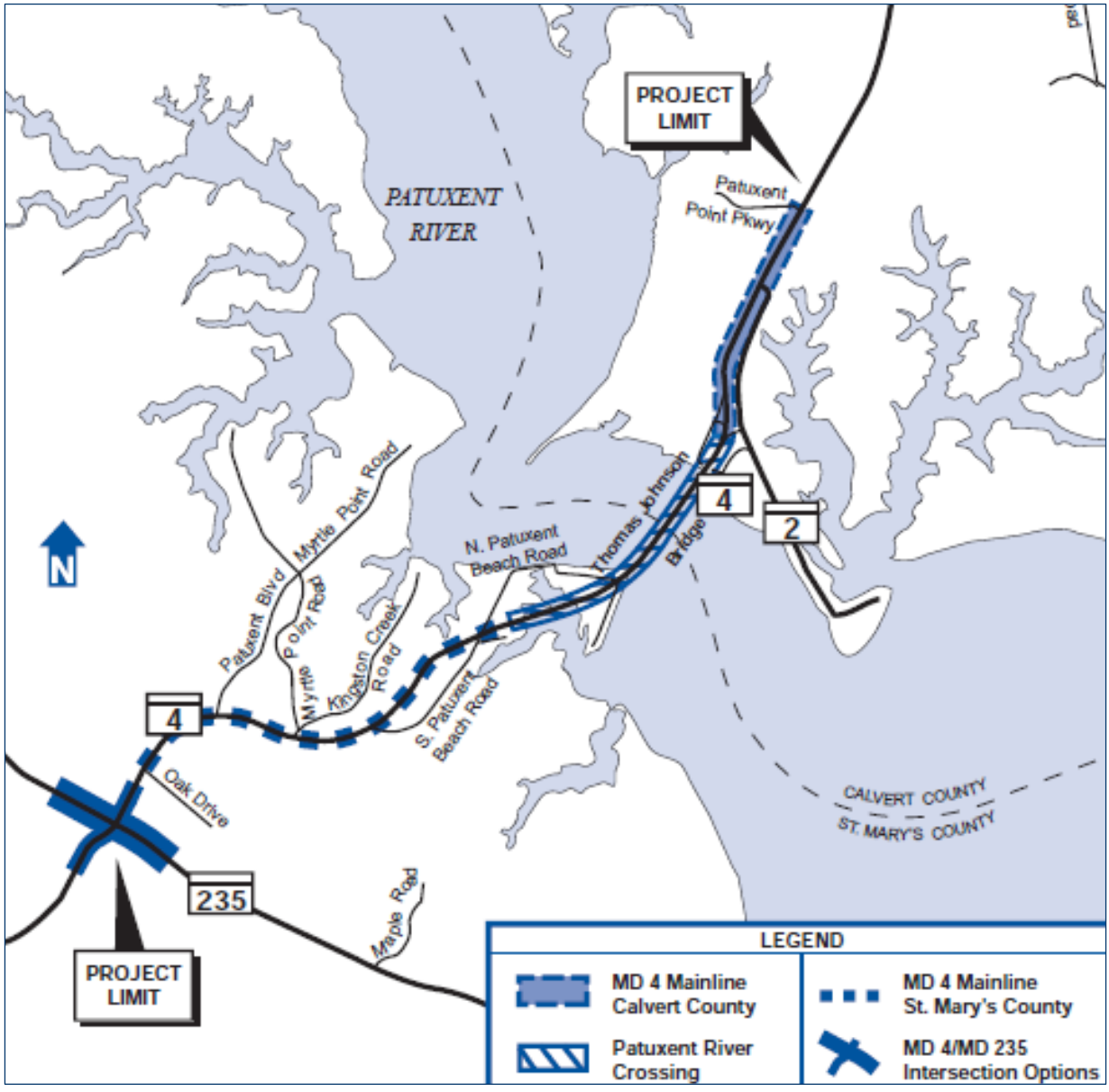
Figure 4.3: Linkage between Statewide, County, and MPO Transportation Plans and Programs



4.3 Which Projects are in the Fiscally Constrained Plan?

The C-SMMPO Board considered a variety of capacity expansion projects for the region. After careful analysis, the C-SMMPO Board selected the four-lane widening of MD 4 from Patuxent Point Parkway in Calvert County to MD 235 in St. Mary's County, including a replacement for the Thomas Johnson Bridge, as the highest priority project (**Figure 4.4**).

Figure 4.4: MD 4 from Patuxent Point Parkway to MD 235



Source: Finding of No Significant Impact, MD 4 – Thomas Johnson Bridge Project Planning Study from Patuxent Point Parkway to MD 235 – September 2015

Project Needs

Traffic volumes and congestion are a growing problem in the C-SMMPO region. Population growth, including residential development in the area north of Solomons Island, the Lexington Park area, and other portions of the region, are contributing factors. One of the most significant factors is NAS PAX, which now hosts over 22,000 people, including active-duty military, civil-service employees, defense contractor employees, and military dependents. Additionally, according to Maryland DOC's Brief Economic Facts, over 60% of Calvert County and 24% of St. Mary's County residents commute outside of the county.

As a result, traffic volumes across the Thomas Johnson Bridge increased from 12,900 vehicle per day (vpd) in 1990 to 27,000 vpd in 2007. The existing average daily traffic (ADT) volumes on MD 4 range from approximately 11,000 vpd (near MD 5) to 26,000 vpd (near the Thomas Johnson Bridge). During the worst peak hours, mainline MD 4 currently operates at level of service (LOS) E from MD 235 to the Thomas Johnson Bridge. The ADT is expected to increase to 32,000 vpd by 2025 and, without capacity improvements, mainline MD 4 will operate at LOS F. After widening, the roadway is expected to operate at LOS C. This project will decrease delay and travel time along MD 4 and decrease accident potential associated with congestion.

In addition to high traffic volumes along north- and southbound MD 4 during AM and PM peak periods, traffic congestion on the Thomas Johnson Bridge is problematic. Inadequate shoulder widths along the bridge cause major traffic delays and/or closures during crashes and maintenance activities on the bridge must be completed during late night and early morning hours to avoid causing major traffic delays during peak traffic hours. Additionally, the current bridge does not support pedestrian or bicycle use.

Project Benefits

The MD 4 project would improve existing capacity and traffic operations and increase vehicular, pedestrian, and bicycle safety along MD 4 while supporting existing and planned development in the area. MD 4 provides commuters with access to points south, including the NAS PAX as well as points north from St. Mary's, including the District of Columbia (DC). MD 4 is also the main southern evacuation route for the Calvert Cliffs Nuclear Power Plant. The enhancements to the MD 4 corridor would improve access, mobility, and safety for local, regional, and inter-regional traffic, including passenger and transit vehicles.

Project Status

SHA obtained FHWA location and design approval for this project in Fall 2015 and selected Alternative 4: Thomas Johnson Bridge Four-Lane Parallel Span; MD 4 Mainline Improvements, Calvert County; MD 4 Mainline Widening, St. Mary's County; and MD 4/MD 235 Intersection Option D: Single Point Urban Interchange (SPUI) as its preferred alternative. Based on the information gathered during detailed engineering and environmental studies and on input received from review agencies and the public, SHA determined that the preferred alternative would best address existing and projected operational needs, while minimizing environmental impacts throughout the study area.

Project Cost and Phasing

Large projects like the MD 4 Thomas Johnson Bridge require substantial human and financial resources to complete. The total estimated cost in YOE for the MD 4 project ranges from $816 to $857 million. To make costs easier to manage, proposed improvements are typically broken up into smaller design and construction phases. The schedule and costs for Phases 1 through 4 and are presented in **Figure 4.5**, followed by detailed descriptions of each phase.

Figure 4.5 Fiscally Constrained SHA Projects (Thousands of Dollars)

Phase	Facility/Project	Location	Project Description	YOE	Estimated Project Cost in YOE
Capacity Expansion					
1	Patuxent River Crossing	Thomas Johnson Bridge	Construct a new four-lane bridge	2015 - 2027	$510,400
2	MD 4 Mainline, St. Mary's County	Thomas Johnson Bridge to MD 235	Four-lane widening	2023	$88,000
3	MD 4/MD 235 Interchange	MD 4/MD 235 intersection in Lexington Park	Interchange construction	2028	$232,500
4	MD 4 Mainline, Calvert County	Thomas Johnson Bridge to Patuxent Point Parkway	Four-lane widening	2031	$10,500
				Total	**$841,400**

Source: Finding of No Significant Impact, MD 4 – Thomas Johnson Bridge Project Planning Study from Patuxent Point Parkway to MD 235 – September 2015

Phase 1: Four-Lane Thomas Johnson Bridge (Patuxent River Crossing)

A new four-lane bridge would be constructed approximately 70 to 140 feet south of the existing Thomas Johnson Bridge. The new bridge would feature two 12-foot-wide lanes, a 4-foot wide median shoulder, and a 10-foot-wide outside shoulder in each direction. The bridge would also include a 10-foot-wide shared-use bicycle/pedestrian path separated by a barrier on the northbound side of the bridge. Upon completion of the new bridge, the existing bridge would be demolished.

Phase 2: MD 4 Mainline Widening, St. Mary's County

MD 4 in St. Mary's County would be widened from a two-lane road to a four-lane divided roadway from Oak Drive to North Patuxent Beach Road, with a 30-foot-wide median. The typical section would consist of two 12-foot-wide lanes in each direction, 10-foot-wide outside shoulders, and four-foot-wide median shoulders. Two new travel lanes would be constructed parallel to the southbound side of the existing roadway to carry southbound traffic. The existing two-lane roadway would be reconstructed to carry northbound traffic. Turn lanes may be added to all intersections along MD 4 in St. Mary's County. A 10-foot-wide bicycle and pedestrian facility would be constructed along the northbound side of MD 4. This facility would be separated from the MD 4 mainline by a 10-foot-wide buffer.

Phase 3: MD 4/MD 235 Interchange

At the intersection of MD 4/MD 235 a new single point urban interchange (SPUI) will be constructed. The SPUI is a grade-separated interchange, with MD 235 crossing over MD 4 on a bridge. MD 4 would remain at its existing grade. All through traffic on MD 235 would be free-flowing (without a traffic signal) with two lanes in each direction. Ramps would be used to direct all left turns between MD 235 and MD 4 to a single signalized intersection under the bridge, which would also control the through movements on MD 4. MD 4 would have two through lanes in each direction. A bicycle and pedestrian path would be provided through the intersection and connect with the county's proposed Three Notch Trail. Service roads would be provided behind the properties along northbound MD 235 and existing direct access to those properties from MD 235 would be eliminated.

Phase 4: MD 4 Mainline Widening, Calvert County

MD 4 in Calvert County would be widened within the existing grass median to provide a four-foot-wide median shoulder in each direction from north of the Patuxent River crossing to the MD 4/Patuxent Point Parkway intersection. The new median width would be approximately 22 feet. Due to their proximity to the new bridge span, both the existing exit from northbound MD 4 to southbound Solomons Island Road closest to the Visitor's Center, and the existing entrance from Solomons Island Road to MD 2/4 northbound would be closed. Both would be replaced by a new right-in/right-out access point for MD 2/4 northbound/Solomons Island Road approximately 1,000 feet north of the closed access. The remaining access points along MD 2/4 would not be altered.