

## **I. PURPOSE AND NEED**

### **A. Project Location and Description**

The Maryland State Highway Administration (SHA) and Federal Highway Administration (FHWA) are conducting a project planning study for improvements to MD 4 (Solomons Island Road/Patuxent Beach Road), which spans both Calvert and St. Mary's Counties (**Figure I-1**). This study will examine proposed widening of MD 4 from the MD 2-4 split in Calvert County to the MD 235 intersection in St. Mary's County (**Figure I-2**) and will also explore improvement opportunities along the Thomas Johnson Memorial Bridge and the MD 4/MD 235 intersection.

MD 4 is one of Maryland's original state roads. It extends approximately 65 miles from the District of Columbia (DC) to its terminus at MD 5, just south of Leonardtown, Maryland. The highway runs from DC to the southeast, connecting with I-495. After crossing I-495, MD 4 continues in a southward direction for a short distance before intersecting Marlboro Pike (a former alignment of MD 4); it then turns east and expands into a four-lane limited-access highway. Between 1962 and 1972, MD 4 was diverted along Southern Maryland Boulevard (then MD 416) and combined with MD 2. During this time, MD 4 replaced MD 2's companion route MD 416 for almost the entire length of Calvert County. MD 2-4, a four-lane at-grade divided highway, ended simultaneously at the southern tip of Calvert County. After the Thomas Johnson Memorial Bridge was built in 1977, MD 4 was extended across the bridge into St. Mary's County to its terminus at MD 5.

The MD 4 project is consistent with the goals and objectives of state, regional and local planning documents. Improvements to MD 4 within the study area are included in SHA's long range plan, the Highway Needs Inventory (HNI), the 2004 Comprehensive Plan for Calvert County, St. Mary's County Growth Management Plan, and the 2006 St. Mary's County Transportation Plan. The 2004 Comprehensive Plan for Calvert County (December 2004), the St. Mary's County Growth Management Plan (2001), 2006 St. Mary's County Transportation Plan, and the 2010 St. Mary's County Comprehensive Plan govern the land use for the study area. All four master plans identify the need for improved capacity and safety along the section of MD 4 within the study area.

### **B. Purpose of the Project**

The purpose of the project is to improve existing capacity and traffic operations, and to increase vehicular and pedestrian safety along MD 4 while supporting existing and planned development in the area. MD 4 provides commuters in the area with access to points north, including the District of Columbia (DC), as well as points south, including the Patuxent Naval Air Station. MD 4 is also the main evacuation route for the Calvert Cliffs Nuclear Power Station. The enhancements to MD 4 would improve access, mobility, and safety for local, regional, and inter-regional traffic, including passenger cars, trucks, transit vehicles, bicyclists, and pedestrians.

### **C. Need for the Project**

Traffic volumes across the Thomas Johnson Memorial Bridge have increased from 12,900 vehicles per day in 1990 to 27,000 vehicles per day in the year 2007. The residential development in the area just north of Solomons Island has increased over 30 percent the past few years. Over 43 percent of Calvert County residents commute outside of the county. In St. Mary's County, the Patuxent Naval Air Station now hosts over 17,000 people, including active-

duty service members, civil-service employees, defense contractor employees, and military dependents. The total employment for St. Mary’s County is approximately 49,000 persons, including the Patuxent Naval Air Station. In addition to high traffic volumes along northbound and southbound MD 4 during the morning and evening peak periods, the traffic congestion on the Thomas Johnson Memorial Bridge is problematic. Inadequate shoulder widths along the bridge cause major traffic delays, additionally any closures due to crashes or maintenance activities will create major traffic delays in both directions. Currently, all maintenance activities on the bridge must be completed during late night to early morning hours to avoid causing major traffic delays during the morning and evening peak traffic hours.

In addition to the need for capacity and safety improvements, bicycle and pedestrian access is restricted to the northern and southern portions of the study area. There is currently bicycle and pedestrian access along MD 4 south of the bridge in St. Mary’s County, but it ends at the bridge. Similarly, the Calvert County section of MD 4 is a designated bicycle route. The Thomas Johnson Memorial Bridge does not provide a dedicated bicycle/pedestrian lane.

As of 2005, under the Base Realignment and Closure (BRAC) program, there were 84 additional civilian jobs created at the Patuxent Naval Air Station.

**Existing Traffic and Future Travel Demand**

Travel demand forecasts were developed for MD 4. The forecasts were based on the Metropolitan Washington Council of Governments regional model Round 6.4A socio-economic data. The forecasts show that the traffic volumes will grow to over 32,000 vehicles per day on all sections of the roadway from MD 235 to MD 2 within the study area. All intersections and the two lane mainline segments are failing in both the morning and evening peak hours. With failing levels of service along MD 4, the MD 231 crossing of the Patuxent River to the north will see an increase in traffic volumes. Also, major congestion along MD 4 will change the travel path of many motorists. Motorists will begin to use alternate routes such as MD 5, MD 234, and MD 235 to make trips to and from the Lexington Park, Leonardtown and California areas.

**Travel Demand/Level of Service (LOS)**

The highest weekday peak period volumes along MD 4 occur between the MD 235 intersection and the Patuxent Boulevard intersection. By 2030, the same section of MD 4 will experience a 24 percent increase in the Average Daily Traffic (ADT) (**Table I-1**). The ADT along the study corridor will increase 18 percent by 2030.

**Table I-1: Average Daily Traffic**

Limits	2007 Volume	2030 Volume	Percent Growth
	Average Daily Traffic (Vehicles/Day)		
MD 235 (north of MD 4)**	40,300	**	**
MD 235 (south of MD 4)**	55,800	**	**
South of MD 235	17,000	18,600	9%
MD 235 to Patuxent Boulevard	28,300	35,200	24%
Patuxent Boulevard to Kingston Creek Road	27,900	33,600	20%
Kingston Creek Road to MD 2*	27,000	32,500	20%

<sup>1</sup>AM and PM peak hour volumes represent the highest volumes in the peak direction that occur on an average weekday (Monday through Friday). AM peak hour times are from 6 AM to 9 AM and PM peak hour times are from 4 PM to 7 PM.

\* Limits include the Thomas Johnson Memorial Bridge.

\*\* The 2030 traffic volumes were not available for this segment of MD 235.

Currently, both the morning (6 AM to 9 AM) and evening (4 PM to 7 PM) peak hours for the study area have a failing Level of Service (LOS). By 2030, the LOS will remain failing during both the morning and the evening peak hours (**Table I-2**). The volume/capacity ratios for the mainline segments and major intersections will increase approximately 17 percent average, from 2007 to 2030. The MD 4/MD 235, MD 4/Patuxent Parkway, and MD 4/Kingston Creek Road intersections have a LOS E during the current PM peak hours, which will become LOS F by the year 2030. Additional traffic information can be found in **Appendix A**.

**Table I-2: Levels of Service (Including Volume/Capacity Ratios)**

Limits	2007 LOS		2030 LOS	
	AM	PM	AM	PM
MD 4 Mainline (MD 235 to MD 2)	F	F	F	F
MD 4/MD 235 Intersection	F (1.06)	E	F (1.27)	F (1.21)
MD 4/Patuxent Boulevard Intersection to Kingston Creek Road	F (1.02)	E	F (1.19)	F (1.13)
MD 4/Kingston Creek Road Intersection	F (1.03)	E	F (1.18)	F (1.13)

\*The limits in this table represent the all major intersections and MD 4 mainline segments within the study area.

**Safety**

The Maryland State Highway Administration, Office of Traffic and Safety (SHA-OOTS) provided crash data for the study corridor from 2003 to 2005. During that three-year period, a total of 123 crashes were reported, with 1 fatal crash, 56 injury crashes, and 66 property damage crashes.

**Table I-3** summarizes reported crashes within the MD 4 study area by crash type for the years 2003, 2004, and 2005. The crash information in **Table I-3** indicates that the crash rate is greater than the statewide average on MD 4 from FDR Boulevard to MD 235 and the rate for rear end collisions across the Thomas Johnson Memorial Bridge (located in the St. Mary’s County Line to MD 2 section in Table 3) is also higher than the statewide rate.

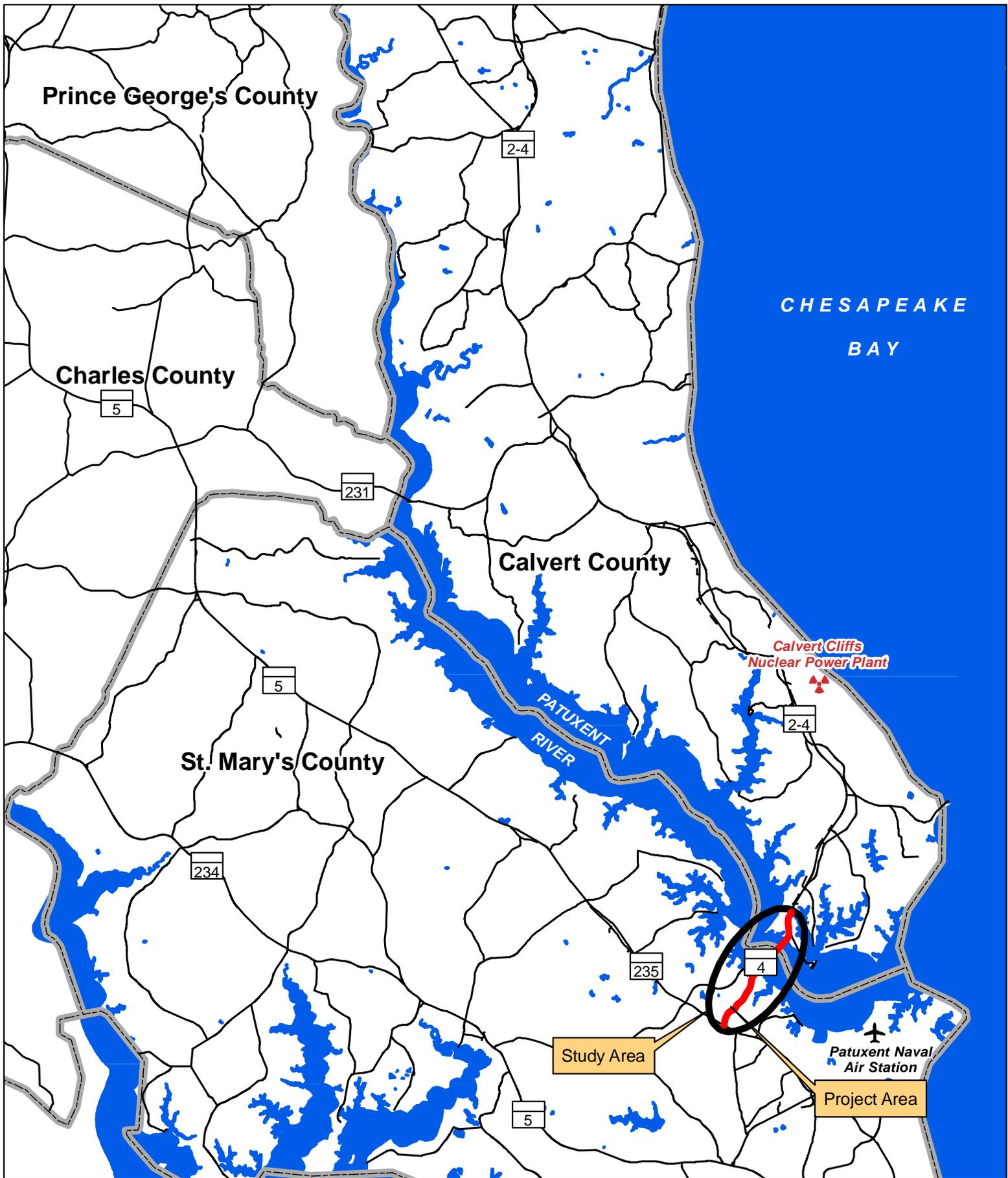
**Table I-3: Crash Report Data**

Severity	2003	2004	2005	Total	Study Rate	Statewide Average Rate
MD 4: FDR Boulevard to MD 235						
Fatal	-	-	-	-	0.0	1.3
Injury	4	3	1	8	181.8*	81.2
Property Damage	2	5	2	9	204.6*	107.2
Pedestrian	1	-	-	1	22.7	4.4
Total Crashes	6	8	3	17	386.4*	189.7
MD 4: MD 235 to Patuxent Boulevard						
Fatal	-	-	-	-	0.0	1.3

**Table I-3: Crash Report Data**

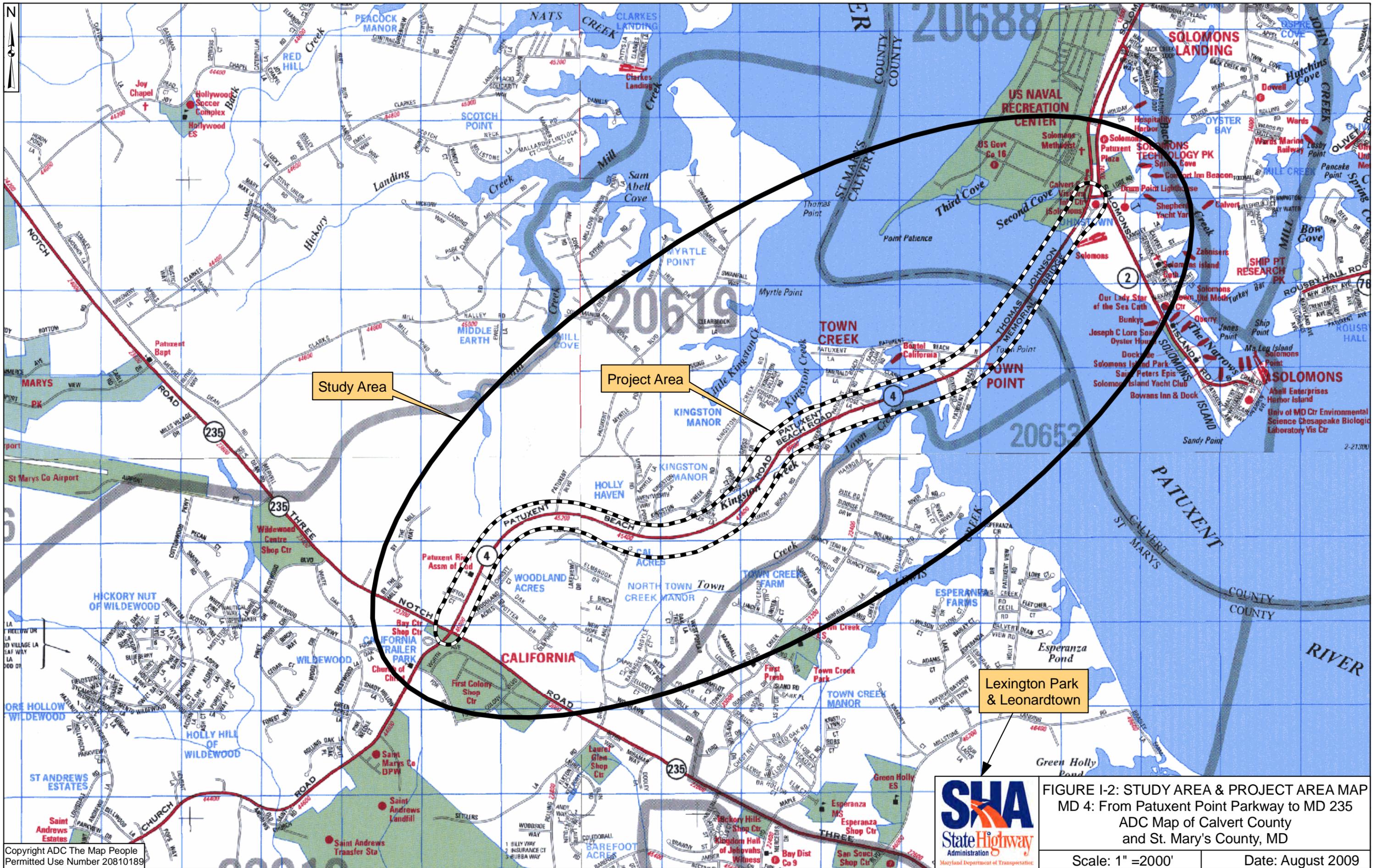
Severity	2003	2004	2005	Total	Study Rate	Statewide Average Rate
Injury	5	3	2	10	45.4	57.3
Property Damage	4	8	6	18	81.8	67.8
Pedestrian	1	-	-	1	4.5	1.8
Total Crashes	9	11	8	28	127.2	126.4
<b>MD 4: Patuxent Boulevard to Kingston Creek Road</b>						
Fatal	-	-	-	-	0.0	1.4
Injury	-	-	-	-	0.0	59.7
Property Damage	-	3	-	3	27.2	70.9
Pedestrian	-	-	-	-	0	2.0
Total Crashes	-	3	-	3	27.2	131.9
<b>MD 4: Kingston Creek Road to Calvert County Line</b>						
Fatal	-	-	-	-	0.0	1.3
Injury	3	4	4	11	17.2	56.6
Property Damage	4	10	3	17	26.6	66.8
Pedestrian	-	-	-	-	0	1.7
Total Crashes	7	14	7	28	43.8	124.6
<b>MD 4: St. Mary's County Line to MD 2</b>						
Fatal	-	-	-	-	0.0	1.2
Injury	4	4	5	13	61.9	53.7
Property Damage	1	5	1	7	33.3	63.0
Pedestrian	-	-	-	-	0	1.4
Total Crashes	5	9	6	20	95.2	117.9
<b>MD 2: MD 4 to Patuxent Point Parkway</b>						
Fatal	-	1	-	1	4.1	1.5
Injury	8	4	2	14	57.1	64.8
Property Damage	3	4	5	12	49.0	77.6
Pedestrian	-	-	-	-	0	2.5
Total Crashes	11	9	7	27	110.2	143.8
Total Crashes for the Study Area	38	54	31	123	N/A	N/A

\*Study area crash rates are significantly higher than the statewide average rate



**Figure I-1: Regional Map**  
**MD 4 - From Patuxent Point Parkway to MD 235**

August 2009  
 Scale: 1" = 3.5 miles



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**FIGURE I-2: STUDY AREA & PROJECT AREA MAP**  
 MD 4: From Patuxent Point Parkway to MD 235  
 ADC Map of Calvert County  
 and St. Mary's County, MD

Scale: 1" = 2000'  
 Date: August 2009