

I. PURPOSE AND NEED FOR ACTION

The Purpose and Need for the MD 32 Planning Study is to improve safety and capacity throughout the corridor while attempting to minimize right-of-way impacts; residential and business displacements; and environmental impacts. The need for improvements to MD 32, from MD 108 to I-70, as a capacity and safety project has been identified since 1989 by the State and Howard County.

A. Project Location and Description

This study evaluates the potential for improvements to MD 32 from MD 108 to I-70, a distance of approximately nine miles, in Howard County (refer to **Figure S-1**). MD 32 is on Maryland's primary highway system and is functionally classified by the State of Maryland as a Minor Arterial with a federal classification as a Rural - Other Principal Arterial. This portion of MD 32 is a two-lane roadway extending from MD 108 in the village/commercial center of Clarksville to I-70 in the West Friendship community area. MD 32 in this area traverses rolling terrain with low density residential and agricultural land uses.

Within the limits of the nine-mile study corridor between MD 108 and MD 144, existing MD 32 is a two-lane undivided highway with partial access control south of Burntwoods Road and no access control north of Burntwoods Road. South of the study limits, from MD 108 to I-97, MD 32 is a 30-mile, fully access-controlled, divided highway. Full access control means that all vehicular access is limited to grade separated interchanges. Partial access control on MD 32 means access is limited to public road intersections such as Linden Church Road, Dayton Shop entrance, Ten Oaks Road, and Burntwoods Road in the study area. North of Burntwoods Road, there are no access controls; therefore, driveways are numerous and could serve one or multiple residences. MD 32 crosses Terrapin Branch, Middle Patuxent River, Clyde's Branch, and Benson Branch on structures or large culverts.

Currently, traffic signals operate at the intersections of east and west Linden Church Road, Ten Oaks Road, Burntwoods Road, MD 144, and the I-70 ramps. A new signal will be added at the entrance to Dayton Shop in 2005. Turn lanes are provided at intersections along the length of the project to improve traffic operations. Left and/or right turn lanes are located at Linden Church Road (east and west), Dayton Shop, Ten Oaks Road, Burntwoods Road, River Valley Chase/Parliament Place, Rosemary Lane, MD 144, and the I-70 ramps.

The existing right-of-way is 300 feet wide south of Burntwoods Road. The right-of-way is generally 150 feet wide north of Burntwoods Road. The right-of-way expands at interchanges and intersections.

B. Background

1. Systems Linkage and Regional Plan Consistency

MD 32 serves not only central Howard County, but also provides a link between Annapolis and the central and western parts of the State. This section of MD 32 from MD 108 to I-70 is part of the

“Patuxent Freeway” system that stretches from Annapolis, the State Capital, to I-70, a total distance of 40 miles (refer to **Figure S-1**). It is part of a high volume transportation corridor that will provide a safe and efficient route for people and goods between the Eastern Shore and Western Maryland, while bypassing the more densely populated areas of Baltimore and Washington, DC. This system connects the north-south arterial routes leading to the major employment centers of Washington, DC and Baltimore and is included in the 2001 Baltimore Regional Transportation Plan.

2. Master Plan Consistency and County Support

MD 32 first appeared as an access controlled freeway in the 1971 Howard County General Plan and was described as the Patuxent Freeway in the 1969 Major Thoroughfare Plan, a component of the 1971 Howard County General Plan. In 1989, a corridor study was initiated by the State Highway Administration (SHA) to consider the widening of MD 32 from MD 108 to I-70. The roadway followed a new alignment north of Burntwoods Road which extended to the northwest to connect to the existing I-97 interchange; this alignment was referred to as the MD 32/ MD 97 Connector. After facing strong opposition from the public and elected officials, then Governor Schaffer directed the study to be dropped. Subsequently, the widening of MD 32 from MD 108 to I-70 was included again in the 1991 Howard County priority letter. Two years later in a 1993 letter to the Maryland Secretary of Transportation, County Executive Ecker requested that SHA study the widening MD 32 on the existing alignment and add the project to the Consolidated Transportation Plan (CTP). SHA initiated project planning in 1994.

The upgrading and widening of MD 32 to a four-lane Principle Arterial from MD 108 to I-70 is identified in the Howard County Comprehensive Transportation Plan, 2010 Highway Element. This designation permits both grade separated and at-grade intersections. The Howard County General Plan 2000 recognizes MD 32 as a regional through route with congested conditions during morning and evening peak periods. The Howard County Public School System, in a letter dated November 15, 2004, stated their support, “by having service/access roads, this would eliminate having school bus stops along MD 32. This would create a safer situation for the residents and traffic that use MD 32.” The Howard County Department of Fire and Rescue Services also sent a letter stating their support for the highway improvement project.

3. Highway Needs Inventory and CTP History

MD 32 is listed on the State Highway Administration's (SHA) current 2001 Highway Needs Inventory (HNI). MD 32 from MD 108 to I-70 is listed for nine miles of freeway reconstruction.

The improvement of MD 32 from MD 108 to I-70 is included in the Primary Development and Evaluation (D & E) portion of the 2006-2011 Draft Consolidated Transportation Program (CTP). This section of MD 32 first appeared in SHA's D&E portion of the 1990-1995 CTP in the 1990-1995 edition's D&E portion as part of a MD 32/MD 97 Corridor Study for a four-lane divided highway from MD 108 to MD 26 (in Carroll County). This project was deleted from the following years CTP and subsequently added in the 1994-1999 CTP as the subject of this study, MD 32 from MD 108 to I-70. It has remained in the CTP since 1994.

C. Need for the Project

1. Completion of the Patuxent Freeway System

When the roadway was built in the late 1950s/early 1960s, it was intended to be the initial two lanes of a four-lane divided highway and was anticipated to be able to handle traffic demand to the year 2000. Additional construction was anticipated after the year 2000. Building this section of MD 32 from MD 108 to I-70 will provide a four-lane divided highway with full access control for the last segment of the Patuxent Freeway, helping to provide continuity for the remainder of the highway system. The last stage of improvements to MD 32, south of I-70, will connect the interstate system of I-70 to I-95, MD 295, I-97 and US 50.

2. Regional Growth

During the ten years MD 32 has been under study, development has continued to occur within the study area independent of the construction of the roadway. Baltimore Metropolitan Council (BMC) Round 6 Forecasts from 2004 illustrate the growth that is projected to occur between 2000 and 2025 within the Transportation Analysis Zones¹ (TAZ) that encompass the MD 32 study area. The population is projected to increase 38.4 percent or from 6,900 to 9,550. The number of households is projected to increase from 2,180 to 3,224 or 47.9 percent. Employment is expected to increase 16.3 percent, which represents a projected increase of 460 jobs (from 2,830 to 3,290). **Figure I-1** illustrates the projected growth in the TAZs in the immediate study area.

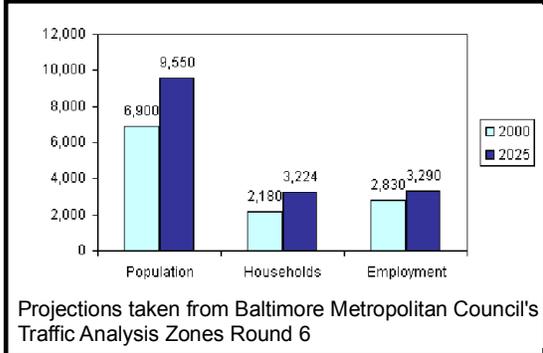
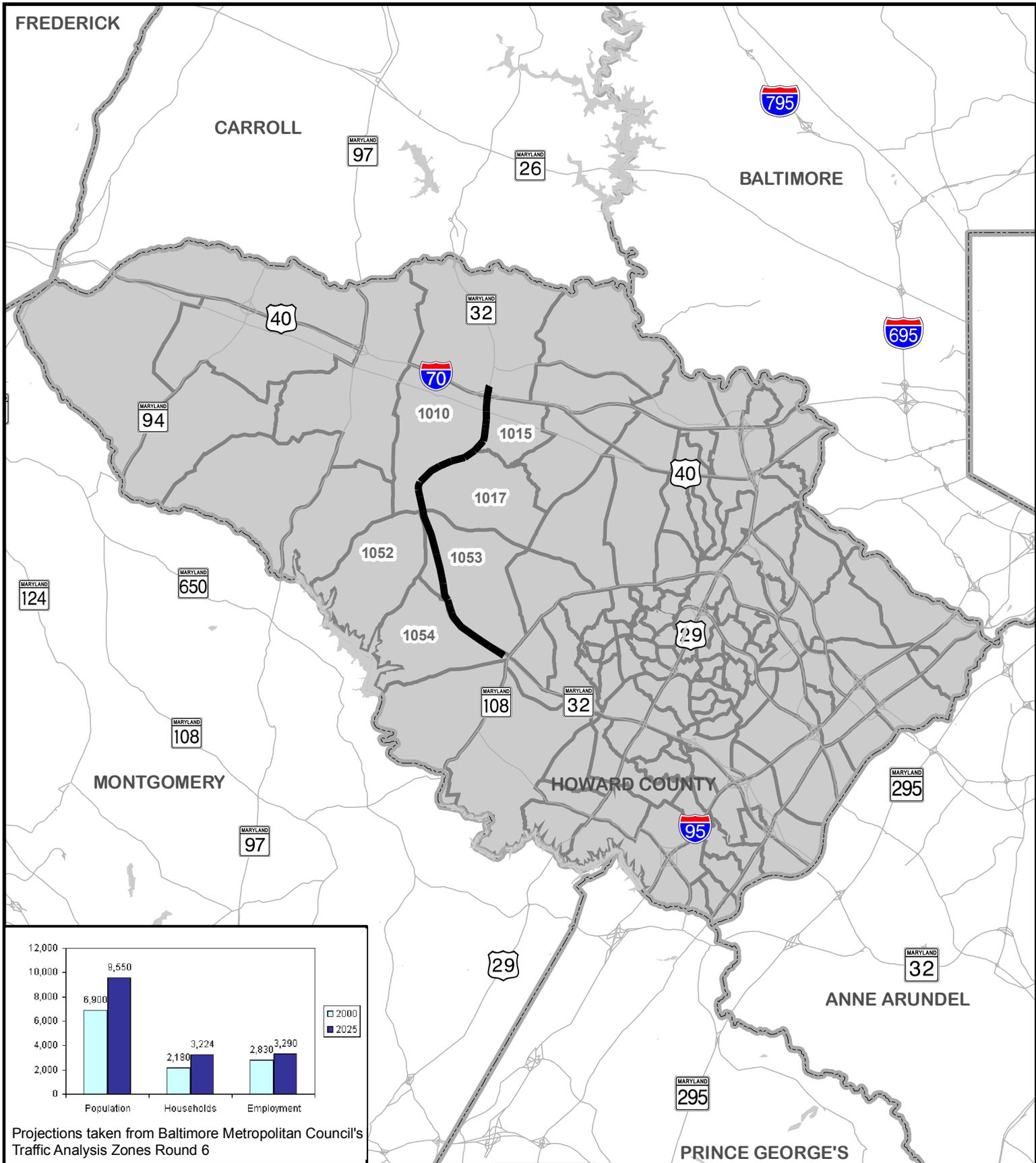
The BMC Round 6 Forecasts also illustrate similar growth trends in the greater surrounding area of MD 32. The population is projected to increase by 41.5 percent or from 20,270 to 28,690 persons. The number of households in the surrounding area is projected to increase by 51.2 percent, an increase of 3,291 households between 2000 and 2025. Employment is projected to increase by 15.4 percent which represents an increase of 910 jobs (from 5,925 to 6,835). **Figure I-2** illustrates the projected growth in the area of traffic influence of the MD 32 Planning Study.

3. Traffic and Safety

a. Average Daily Traffic

Average daily traffic (ADT) is the average number of vehicles traveling on a roadway during a 24-hour period. The current ADT (2003) along MD 32 ranges from 23,900 vehicles per day just south of the intersection with MD 144 to 26,400 vehicles per day just south of the intersection with Linden Church Road. The projected 2025 No-Build ADT for these areas are 31,600 and 35,900 vehicles per day respectively, an increase of 36 percent. Truck traffic on MD 32, including school buses, comprises 11 percent of the 2003 ADT and 10 percent of the 2025 ADT. Under a No-Build option, MD 32 would be unable to function effectively as a minor arterial by 2025.

¹ Transportation Analysis Zones (TAZs) are small areas used in transportation planning to summarize demographic characteristics and travel data. TAZs follow census geography boundaries and are generally one or more block groups. TAZs are identified by 1- to 4-digit numbers, ranging from 1 to 1151, as defined by the Baltimore Metropolitan Council.



LEGEND

- MD 32 Study Area
- Transportation Analysis Zones

1 inch = 3.5 miles

**MD 32 PLANNING STUDY
MD 108 TO I-70**

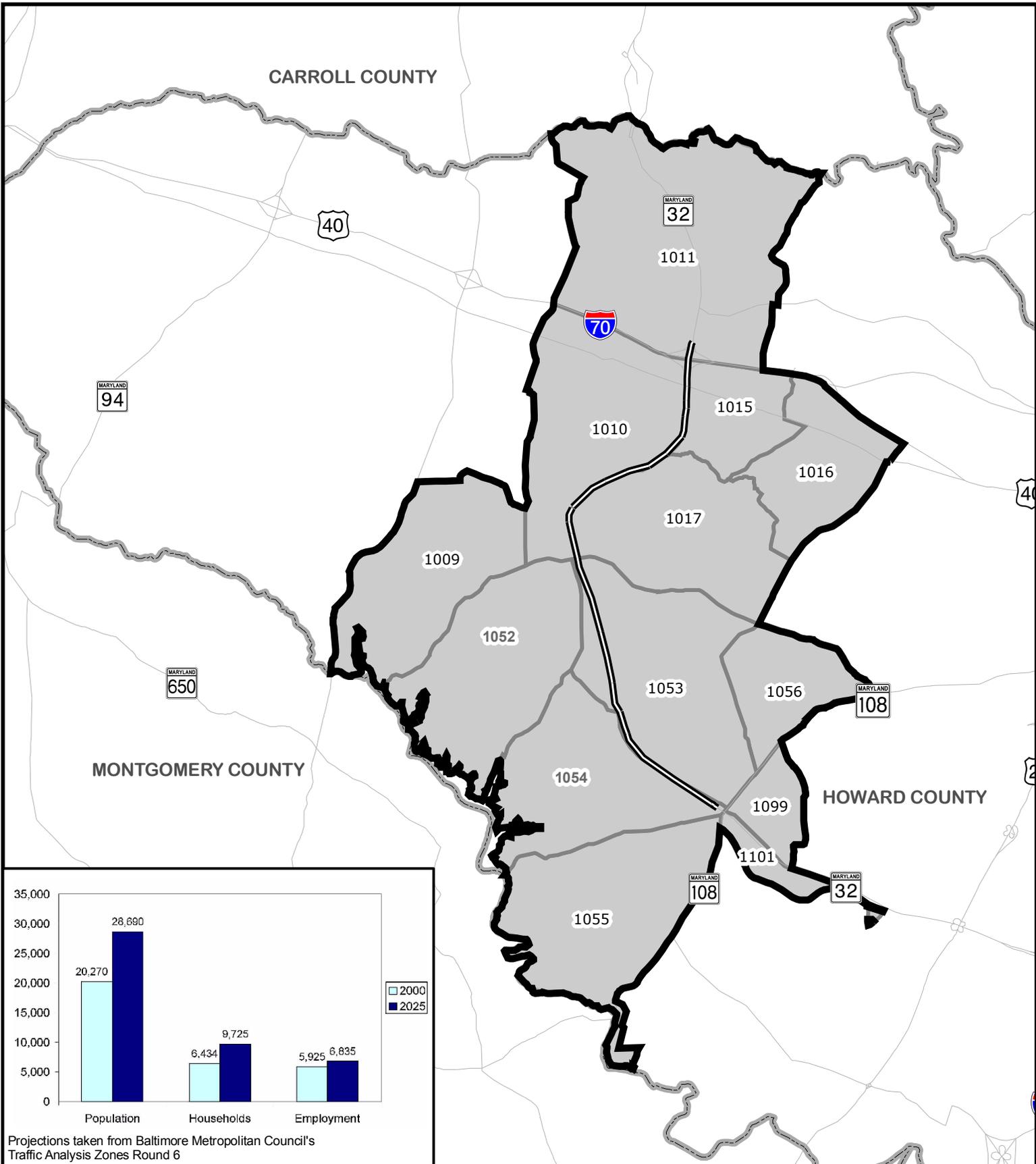
**Transportation Analysis Zones
in Project Vicinity**

Source: Round 6 TAZ; BMC, 2004

Maryland State Highway Administration

September 2005

Figure I-1



LEGEND

-  Area of Traffic Influence
-  Transportation Analysis Zones
-  MD 32 Study Area



1 inch = 2 miles

**MD 32 PLANNING STUDY
MD 108 TO I-70**

Area of Traffic Influence

Source: Round 6 TAZ; BMC 2004



September 2005

Figure I-2

b. Peak Hour Traffic

Peak hour traffic volumes were developed for 2003 and 2025 to analyze existing and future levels of service (LOS). The morning peak hour occurs between 7:00 and 8:00 a.m. while the afternoon peak occurs between 5:00 and 6:00 p.m.

c. Level of Service

Traffic flow is measured by determining the level of service (LOS) along any given section of a roadway. LOS designations from A to F coincide with conditions that drivers experience while traveling along the roadway. A brief explanation of the various levels of service is listed below:

- LOS A - free traffic flow, low volumes, high speeds;
- LOS B - reasonably free flow, some speed restrictions;
- LOS C - stable flow, increasing traffic volumes;
- LOS D - approaching unstable flow, heavy traffic volumes, decreasing speeds;
- LOS E - unstable flow, low speeds, high traffic volumes approaching roadway capacity, temporary delays;
- LOS F - forced or breakdown flow with extended traffic delays.

The MD 32 mainline would operate at LOS F during the peak periods in the 2025 No-Build scenario (refer to **Section IV** for more LOS information). **Table I-1** presents the intersection levels of service for the existing and 2025 No-Build traffic scenarios. For an arterial of this type, LOS D would be appropriate; however, LOS C would be desirable.

Table I-1: Intersection Levels of Service

Intersections	2003 LOS		2025 No-Build LOS		Existing Distance Between Intersections
	AM	PM	AM	PM	
MD 32 @ East Linden Church Road ¹	A	D	A	F	2.22 miles
MD 32 @ West Linden Church Road ¹	F	A	F	A	0.17 miles
MD 32 @ Dayton Shop	-	-	-	-	1.38 miles
MD 32 @ Ten Oaks Road ¹	E	E	F	F	1.42 miles
MD 32 @ Burntwoods Road ¹	F	D	F	F	0.21 miles
MD 32 @ Pfefferkorn Road	E	D	F	F	0.25 miles
MD 32 @ Rosemary Lane	D	E	F	F	1.38 miles
MD 32 @ MD 144 ¹	E	E	F	F	1.49 miles
MD 32 @ I-70 Interchange (WB Ramps) ²	B	A	E	C	0.30 miles
MD 32 @ I-70 Interchange (EB Ramps) ²	C	B	F	D	0.27 miles

Notes: 1 Signalized intersections
 2 Half signal

d. Accident History

Overall, the section of MD 32 between MD 108 and I-70 experienced an average accident rate of 95.3 accidents per 100 million vehicle miles (acc/100 mvm) during the three-year study period from 2001 to 2003, see **Table I.2**. This accident rate is nearly equal to the average statewide rate of 95.2 acc/100 mvm for similarly designed highways. During the three-year study period, there were two fatal accidents, which resulted in three deaths. One fatal accident occurred in 2001 and the other in 2003.

In terms of the nature of the accidents, most of the accident rates along MD 32 were within range of the statewide averages; however, the rear-end, truck-related, and “other” collisions have rates significantly higher than the statewide average for similar highways. The high rate of “other” type collisions could be attributed to U-turn and animal-related accidents. Rear end collisions and truck related accidents are roughly doubled in the study area compared to the statewide average. The high number of rear-end accidents could be attributed to congestion at the signalized intersections, as well as unexpected left turning vehicles in the northern portion of the study area where there are no access controls and many driveways have access directly onto MD 32. Accidents resulting in property damage are also significantly higher than the statewide average. The percentage of nighttime and alcohol related accidents were significantly less than those of similar highways across the state.

Table I-2: Accident History – January 1, 2001 through December 31, 2003

Accident Type	Total Accidents	Study Rate ²	Statewide Rate ²
Fatal	2	0.8	1.8
Injury	81	31.2	46.4
Property Damage	164	63.3 ¹	47
Total Accidents	247	95.3	95.2
Angle	18	6.9	16.2
Rear End	118	45.5 ¹	22.4
Fixed Object	37	14.3	21.8
Opposite Direction	14	5.4	7
Sideswipe	11	4.2	2.8
Left Turn	12	4.6	5.3
Pedestrian	0	0	0.9
Parked Vehicle	4	1.5	1.2
Other Collision	33	12.7 ¹	5.4
Truck Related	38	14.7 ¹	8.5
Nighttime	58	23	32
Wet Surface	72	29	28
Alcohol Related	9	4	8

Notes: 1 Significantly higher rate than the statewide average accident rate for similar type highways

2 Accident rates signify number of accidents per 100 million vehicle miles traveled (acc/100 mvm)

As stated above, the accident rate on MD 32 in the study area is 95.3 accidents per 100 million vehicle miles from 2001 through 2003. If the project is fully implemented, the facility would become a four-lane roadway with full control of access. The average statewide accident rate for this type of facility is 38.7 accidents for every 100 million vehicle miles traveled. This is an anticipated reduction in accident rate of 56.6 accidents for every 100 million vehicle miles traveled. Based on these historical accident rates, the no-build condition could result in approximately 113 accidents per year by 2025. This compares to the build condition projected to result in only 68 accidents per year by 2025.