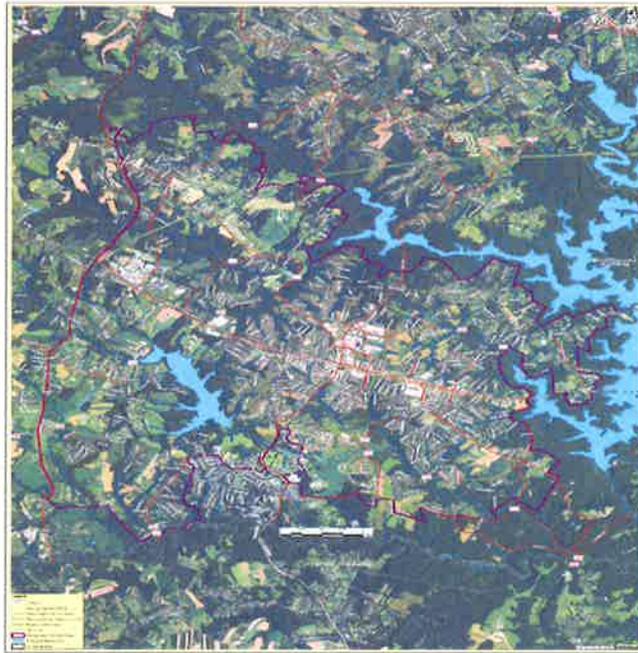


# Freedom Community Area Comprehensive Plan Element 11 Transportation Plan

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***Carroll County Department of Planning***



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***Submitted To:***

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George G. Cardwell, AICP  
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# Element 11. Transportation

## Part 1. Existing Conditions

### **Introduction**

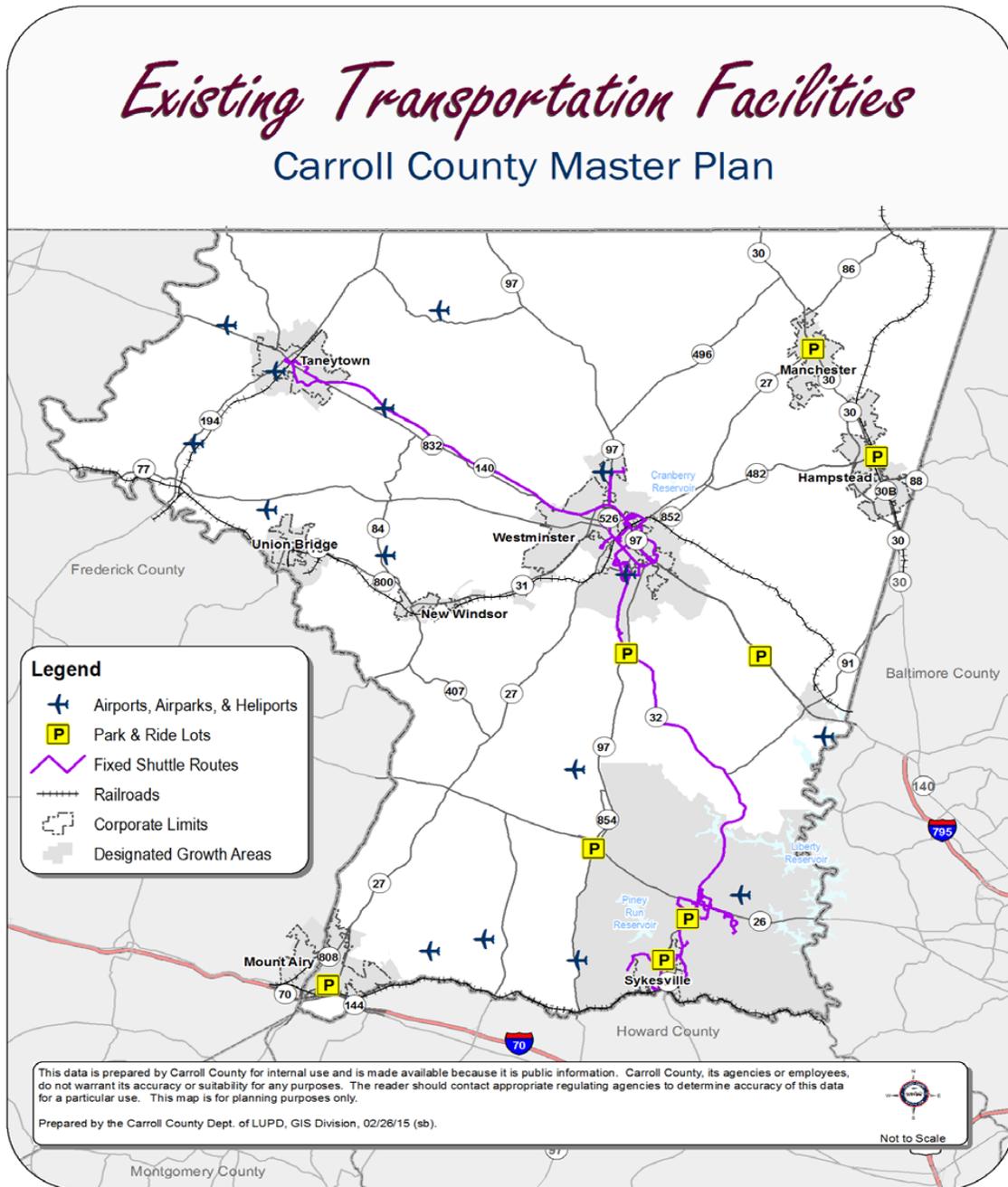
Available census information indicates that journey-to-work travel patterns favor outbound travel to Baltimore County, Baltimore City and Howard County and inbound work-related travel from Baltimore County, Howard County and Baltimore City in that order. Outbound travel volume is far greater than inbound travel on a countywide basis. While the data is not available at a sub-jurisdictional level, similar inferences can be drawn for the census block groups that comprise the Freedom Community Area. This reliance on employment opportunities outside the County does lead to longer periods of travel, far greater use of single occupant and car-pool automobile travel and substantial peaking of travel demand around earlier morning and later afternoon travel periods.

Residents, employees and businesses rely upon the area transportation network for both mobility and accessibility. Frequently these two forces come into conflict as the more the transportation network affords mobility the less access is allowed to and from individual parcels of land, commercial buildings and residences.

The following will be the Transportation Chapter of the *Freedom Community Comprehensive Plan*. The purpose of this chapter is to confirm specific prior recommendations found in the 2001 *Freedom Community Comprehensive Plan* that remain valid, update travel information that has changed since the time of that document's adoption, and provide new or updated recommendations based on the information available.

EL11\_Figure 1 displays the Existing Transportation Facilities Map from the 2014 adopted *Carroll County Master Plan*. The shaded area in the southeast corner of the County is the Freedom Designated Growth Area. The map identifies major highways, available fixed transit routes, park and ride facilities and airfields sited countywide, but also within the Freedom Community Planning Area which includes the Freedom Designated Growth Area.





EL11\_Figure 1. Transportation Facilities, Existing Conditions, Designated Growth Areas including Freedom Area. Source: 2014 Carroll County Master Plan.

The 2001 Freedom Plan was prepared at a time of sustained development activity which generated increased travel demand, revenue and opportunity to address many of the recommendations found in that Plan. A general slowing of growth conditions and the subsequent economic recession beginning in 2008 reduced opportunities to implement recommendations based on a dampening of revenue at all levels of government, plus reductions in development activity which allows the County to implement recommendations as a basis of conditions of development approval.

In February 2014, the County completed the *Freedom Bicycle-Pedestrian Master Plan and Assessment*. This effort established a Vision and Goals for the Freedom Area promoting improved safety for pedestrians and bicyclists, connections among facility segments, a “complete streets” planning philosophy to design for all users of the public right-of-way, and sustainable communities. As reconstruction and retrofit of roadways is a gradual process, creating these goals to inform design decisions is an important step in creating more mobility opportunities for residents and workers throughout the Freedom Area.

Progress was made at designing and constructing segments of the highway facilities noted in the list above, but not to the extent desired in the Plan. Thus these recommendations both in terms of policies and construction remain valid.

## **Transportation Assets in the Planning Area**

Census information shows that the primary mode of travel within Carroll County, and by extension, the Freedom Community Area is by automobile, and it indicates that nearly 75 percent of a work-related travel is made by a single occupant in an automobile. However, it is important to note that Carroll County has a fairly high number of shared riders (two and three persons per vehicle) for work-related travel. That is likely to be based on a longer distance travel to work locations in Baltimore, Anne Arundel, and Howard Counties. For this reason, the highway network’s condition and capacity is the most important aspect of the overall transportation network in the Freedom Community Area.

### Highway

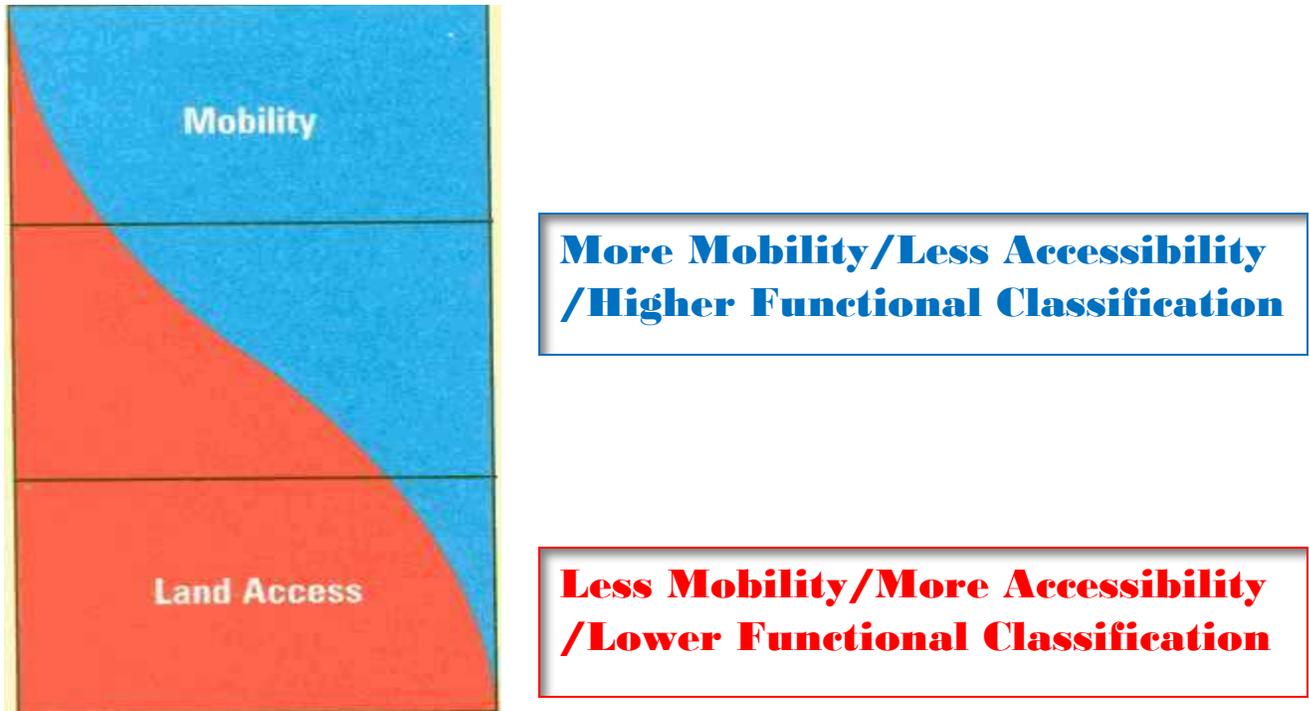
Highways are categorized by ownership and also by functional classification. Ownership is fairly simple, typically State (Maryland State Highway Administration-SHA) or County (Department of Public Works-DPW). There are roadways owned by the Town of Sykesville, however, no major facilities fall into that ownership pattern.

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within

the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in serving the flow of trips through a highway network.

Essentially, functional classification involves the trade-off between ease of mobility (operating and design speeds, number of travel and auxiliary lanes, limits of conflict with cross streets and driveways) and ease of access to adjacent land parcels or activities (number of driveways or intersections per mile of travel, entry and exit onto the roadway from those parcels). The two concepts are opposed so that more mobility yields less accessibility; thus roadways with higher functional classifications (freeway, expressway, arterial) offer less opportunity to access adjacent parcels or activities, whereas lower functional classifications (collector, local) provide more points to access land.

Where this process of classifying roads becomes a problem is when the design of the roadway does not meet the intended purpose of the motorist's use of that road. This frequently occurs when roadways are not designed for their intended purpose at the outset, where right-of-way is constrained, where local roads, commercial and even individual driveways form unimpeded connections between major roads intersections. The diagram below depicts a trade-off between MOBILITY which is the ability to convey larger volumes of traffic through less conflict with side streets, and LAND ACCESS which is the increase in accessibility via driveways, local streets, or at grade intersections with the land use adjacent to the roadway. Thus less conflict between traffic generated by the adjacent land use (like a house or small commercial use) and the traffic using the roadway yields more capacity along that roadway.



EL11\_Figure 2: Functional Classification-- Source: *Safety Effectiveness of Highway Design Features, Volume I, Access Control, FHWA, 1992*

### **Maryland State Highway Administration Facilities**

The Freedom community is served primarily by two Maryland State Highway facilities -- MD 32 (Sykesville Road) and MD 26 (Liberty Road). However, MD 97 (Washington Road) forms a portion of the western edge of the Planning Area.

*MD 32 (Sykesville Road)* is a two-lane, undivided highway connecting Sykesville/Eldersburg to MD 97 and Westminster to the northwest, and I-70 and Howard County to the south. MD 32 serves an average daily traffic (ADT) volume of 26,400 (2015 count by SHA) north of Springfield Avenue and decreases to 9900 at the northern edge of the Planning Area. MD 32 is classified by Carroll County as an intermediate arterial roadway from north of its intersection with MD 91. From the Howard County line north, the posted speed limit on MD 32 is 50 mph. Approaching Freedom Avenue, the posted speed limit drops to 40 mph. Residential driveway and local street access increases on MD 32 between Freedom Avenue and the intersection of MD 26. Access is limited to mostly collector roads along MD 32 from Freedom Avenue south to the Howard County line. MD 32 north of Liberty Road currently provides access to numerous commercial and light industrial properties, including Eldersburg Plaza, Bevard Square Business Park, and the Eldersburg Business Center. Continuing north of Bennett Road, MD 32 provides direct access to residential driveways, local roads, and Freedom Elementary School.

MD 26 (*Liberty Road*) connects the Freedom area to Baltimore County to the east and Mt. Airy and Frederick County to the west. MD 26 is classified by Carroll County as a principal arterial with an ADT of 29,500 (2015 count by SHA) vehicles east of MD 32. The ADT at the Freedom area’s boundaries along MD 26 were 25,000 east of MD 97 and 29,400 at the Baltimore County line to the east. MD 26 provides access to numerous commercial sites along its corridor within the Freedom area, as well as a number of residential driveways. South Carroll Commercial Park, Eldersburg Commons, Freedom Village Shopping Center, and Eldersburg Plaza are a few of the larger commercial sites. Access to a significant number of smaller commercial sites, strip developments, and residential neighborhoods puts a strain on the traffic that is generated along MD 26.

The change in travel demand as measured in annual average daily traffic (AADT) is shown in EL11\_Table 1, below:

*Table 1. Changes in Observed Volumes on State-Maintained Highways*

Route	Location	2000 AADT	2005 AADT	% Chg 2000-2005	2010 AADT	% Chg 2000-2010	2015 AADT	% Chg 2000-2015
MD 26	W of MD 32	22075	25425	15.2	29650	34.3	29442	33.4
	E of MD 32	28375	31125	9.7	25300	-10.8	25082	-11.6
MD 32	N of MD 99	23175	20825	-10.1	19361	-16.5	20140	-13.1
	S of MD 26	23175	27725	19.6	26751	15.4	26470	14.2
	N of MD 26	12175	14725	20.9	14101	15.8	14190	16.6
	N of MD 91	8075	9325	15.5	8981	11.2	8710	7.9
MD 97	N of MD 99	9175	9525	3.8	8841	-3.6	10021	9.2
	S of MD 26	9975	10625	6.5	10161	1.9	10093	1.2
	S of MD 32	14575	14675	0.7	14421	-1.1	14973	2.7
	N of MD 32	17475	22725	30.0	22561	29.1	21910	25.4
Source:	SHA Annual Average Daily Traffic Count Maps							
	Where volume data not available (NA) computation becomes #VALUE							

### ***County Transportation Facilities***

Several roadways within the Freedom Community Planning Area are maintained by Carroll County Department of Public Works (DPW). The travel demand, (measured in ADT) provided by DPW, and the characteristics of some of those roadways of higher functional classification, are noted below:

*Bartholow Road* is a 5-mile collector road, extending from MD 32 to its terminus at MD 97

along the western edge of Freedom. The ADT along the roadway between Johnsville Road and MD 32 was 5,405, as observed by DPW in 2015 (see EL11\_Table 2). This street serves as the main access to Liberty High School as well as residential areas west of Johnsville Road, where the road is rural in nature with little or no shoulder. One travel lane in each direction is provided; the entire alignment is posted for no passing due to the rolling topography and sharp curves.

*Bennett Road* is a 1.3-mile collector roadway extending from Oklahoma Road at its eastern terminus to MD 32 at the signalized intersection of Johnsville Road. The ADT east of MD 32 was 3,730, and west of Oklahoma the count was 3,100 ADT. This street provides direct access to MD 32 for the residential areas in the northeast portion of the CPA.

*Freedom Avenue* is classified as a local road by Carroll County. East of Johnsville Road, Freedom Avenue has an ADT count of 4,180, increasing to 4,368 ADT north of MD 32. Freedom Avenue provides direct access to the Piney Ridge Elementary School, numerous residential driveways, and the neighborhoods of Flohrville and Piney Ridge.

*Johnsville Road* is a 2-mile major collector road with 3,040 ADT south of Bartholow Road and 5,840 south of MD 26. Johnsville Road currently provides direct access to two arterial roadways in the area, MD 26 and MD 32. With the completion of the Johnsville Road extension to its southern terminus at MD 32, it provides a facility to ease some of the congestion on MD 26 and MD 32 as well as Freedom Avenue. Eldersburg Elementary has direct access to Johnsville Road, while Piney Ridge Elementary and Liberty High School are less than one-quarter mile off of Johnsville Road. With the proximity to the schools and the number of residential areas accessing Johnsville Road, significant potential exists for pedestrian traffic as well as relatively-high automotive traffic to be generated.

*Macbeth Way* is classified by Carroll County as a minor collector with an ADT count of 3,315 east of Slacks Road. This street serves the residential neighborhoods of Bonnie Brae, Carrolltowne, and Hilltop. Direct driveway access is provided to residences approximately every 25 feet as well as other local roads feeding onto Macbeth Way. Sidewalks are provided on one side of the street. Macbeth Way currently runs from Brangles Road at the eastern end to just south of Glasgow Circle. The road picks up again around Georgetown Boulevard and extends to MD 32 at its western terminus. A 0.2-mile stretch separates the two constructed roadway segments and, if not connected, Macbeth Way will not form a complete route from Brangles Road to MD 32, thus limiting its utility as an alternate route.

*Obrecht Road* is classified as a major collector and extends west from Third Avenue in Sykesville to its western terminus at MD 97. The ADT on Obrecht Road east of Gaither was 4,347, east of White Rock Road 3,026, and east of MD 97 just 1,632. The counts showed a definite traffic movement pattern from the residential areas along Gaither Road and White Rock Road heading east to access MD 32. Although MD 97 does provide access to I-70, it also has sharp curves that limit sight lines as well as an at-grade railroad crossing that slows the speeds down, making MD 32 the alternative of choice.

*Oklahoma Road* is classified as a major collector street. With a count of 1,831 ADT west of Mineral Hill at its northern end, traffic increases to 5,252 north of MD 26. Oklahoma Road provides direct access to MD 26 for the neighborhoods of Oklahoma, Heritage Heights, Rolling View, and the residential area along Mineral Hill Road. Oklahoma Road Middle School is accessed by Oklahoma Road one-half mile north of MD 26.

*Ridge Road* is the continuation of Oklahoma Road south of MD 26. From Brangels to MD 26, it is classified as a minor arterial. Classified as major collector from MD 26 to Marriottsville Road #2, Ridge Road had an ADT of 8,595 south of MD 26, an ADT of 5,771 south of Slacks Road, and 4,048 west of Marriottsville Road #2. This section of Ridge Road provides direct access to MD 26 for numerous neighborhoods including Carroll Highlands, Harvest Farms, Hilltop, and Carrolltowne. Carrolltowne Elementary School, as well as Eldersburg Commons, have access directly onto Ridge Road. Direct driveway access approximately every 50 feet onto Ridge Road is a result of residential development in the area.

*White Rock Road* is a 2.5-mile stretch of roadway extending from Obrecht Road northward to MD 26 at the intersection of Linton Road. Classified by Carroll County as a minor collector, the ADT count was 2,316 north of Obrecht Road and 3,048 south of MD 26. White Rock Road provides the only access to Piney Run Park via Martz Road. Residential areas that are served by White Rock Road are Brass Eagle Estates, Candlewick, Rolling Hills, and the residences along Streaker Road.

EL11\_Table 2 below shows changes in observed travel demand measured in AADT for the facilities noted above.

Table 2. Comparison of Noted County Roadways

Route	Location	2005 AADT	2015 AADT	% Chg 2005-2015
Bartholow Rd	E of MD 97	3040	2550	-16.1
	E of Linton R	2100	1810	-13.8
	NW of Hodge	4240	4100	-3.3
	SE of Johnsvil	5440	5540	1.8
Bennett Rd	E of MD 32	4470	3730	-16.6
	W of Oklahor	3540	3100	-12.4
Johnsville Rd	W of MD 32 I	3790	3040	-19.8
	SE of Barthol	3870	3040	-21.4
	N of MD 26	4880	4460	-8.6
	S of MD 26	7470	5840	-21.8
	N of Freedom	5590	5000	-10.6
	W of MD 32 S	1600	1760	10.0
MacBeth Way	W of Monroe	2340	NA	#VALUE!
	E of Bonnie B	580	NA	#VALUE!
	E of MD 32	3310	3750	13.3
	E of Georgetc	1790	NA	#VALUE!
Obrecht Rd	E of MD 97	2580	2980	15.5
	Sykesville Lin	5330	4870	-8.6
Oklahoma Rd	N of MD 26	4580	3310	-27.7
	W of Mineral	3000	2380	-20.7
Ridge Rd	S of MD 26	9930	8030	-19.1
	SE of Monroe	8700	8900	2.3
	N of Marriott	190	290	52.6
White Rock Rd	N of Obrecht	3020	2910	-3.6
	S of MD 26	4150	4070	-1.9

Note: Some counts derived from other years of data.

If count not available NA #VALUE appears

Source: Carroll County DPW

### ***Transit***

Transit throughout Carroll County is operated by Ride With Us, which provides four routes called TrailBlazers that are available for public use. Two of these four routes operate on two-hour or three-hour headways providing connections to important locations in Eldersburg and Sykesville areas within the Freedom Community Area and referred to as the South Carroll Shuttle and the Eldersburg to Westminster Shuttle. While such service would not be competitive for home-based work travel they do offer mobility options to persons without access to an automobile on a routine basis. Census information notes that transit use for home-based work travel or journey to work travel is less than 1 percent of all work-related person trips made in the County. This data from the Census is not available at sub jurisdictional geography such as block groups.

The County has a *Transit Development Plan* (TDP) which was updated in 2012 and this document is used to develop a service program, identify capital and operating costs, and evaluate methods of service delivery.

A method used to develop service needs is Transit Dependence Index (TDI) which is an evaluation using Census information concerning age, automobile availability, household income, and disabilities. These statistics are gathered at the Census Block level and arrayed using Census geography.

The current TDP does indicate that there is a moderate TDI percentage within the Freedom Community Area. Figure 2 below displays this information based on color where the darkest colors symbolize the highest need. The colors in the Freedom Community Area show a moderate need. However, the density of the population used to develop this index works against fixed route transit being an effective strategy to reduce this challenge to personal mobility. This leaves only traditional demand/response type transit service as a means of addressing this concern. The cost to operate such service is significantly higher per trip to support demand/response services in comparison to fixed route.

### ***Pedestrian / Bicycle***

The 2001 Freedom Plan noted that there are limited pedestrian and bicycle facilities within the Freedom Community Area. While the relationship between center line miles of roadways including those that serve subdivisions and length of sidewalk and bicycle facilities continues to mirror the amount of travel made in automobiles versus by “human power”, there are factors that are changing the public demand for these facilities. First the Complete Streets or Context Sensitive Design concept is a component of the design of new facilities or the retrofit of existing roadways where the adjacent land use and the potential human use of the road is accounted for in the planning process. National surveys have shown a shift in interest on the part of public requesting the ability to safely use the road right-of-way as a pedestrian or bicyclist, especially for short-distance trips. Finally, there is a desire on the part of transportation professionals, urbanists and environmentalists to

promote walking and bicycling as forms of travel to satisfy trips thus reducing automobile dependency, emissions contributing to ozone formation and motor fuel demand while promoting public health and sustainable land development.

In 2014, the County prepared the *Freedom Bicycle-Pedestrian Master Plan and Assessment* document. The document noted that the Community Area was “marginally served by a highly-fractured network of pedestrian facilities in varying condition” and that Bicycle “facilities are even less well-developed.” The document also embraces the State of Maryland’s five State Goals to (1) Build connected networks, (2) Improve safety, (3) Plan and design for everyone, (4) Strengthen communities, and (5) Promote walking and biking throughout the State.

The County Planning Department inventoried existing and planned pedestrian facilities initiating the study in 2012. That effort noted that the State had designed MD 26 and MD 32 as State Bikeways, whereby those roadways would gain designed facilities through retrofit and upgrade.

In addition to facilities noted on State and County-maintained roadways, the document also identified the requirement for curb, ramp and crosswalk retrofits to help create a connecting network of facilities, much in the same fashion as highway designers consider route continuity for roads.

The *Assessment* identified priority projects and among these are:

- Providing consistent shoulder sections along White Rock Road
- Retrofitting curb ramps and crosswalks throughout the urbanized locations within the Planning Area
- Facilities along MD 26 from Klees Mill Road to Monarch Drive
- Facilities along MD 32 from Freedom Elementary School to Howard County
- Reducing gaps and completing missing links in multiple locations

Map 8 of the *Assessment* identifies a network which when completed will connect neighborhoods to public facilities, commercial opportunities and employment centers. Based on preliminary cost estimates at planning level accuracy, the implementation of the approximately 40 projects noted as costing approximately \$9.3 Million in 2013 dollars. Completion of these routes will require final design which will identify the extent of right-of-way necessary to construct the project including utilities and drainage.

### **Park & Ride Lots**

As noted earlier, most work-related travel is accomplished by singular use of automobiles. However, there is a measurable component of car or van pooling occurring within the County. Most of that travel has origins in the County and destinations elsewhere in

Baltimore and Howard Counties and the City of Baltimore, with less but accountable travel destined for Anne Arundel County, predominately Fort George G. Meade.

While some car or van pool formation occurs in neighborhoods or informal parking locations, a portion of it begins at designated park and ride lots.

According to surveys conducted by the Baltimore Metropolitan Council (BMC), there are a total of seven park and ride lots offering a total of 453 spaces within Carroll County. Of these seven lots, four lots containing 263 spaces are within or adjacent to the Freedom Community Area. Last measured usage of these spaces shows that approximately 40 percent were used during the survey period. Those site are noted on Figure 1.

As there is no public transit providing intercounty travel, the assumption is that these spaces are used for car or van pool formation. There is some possibility that these spaces could support subscription transit, or privately provided transit connecting to employment centers located outside the County.

## **Current Population and Employment**

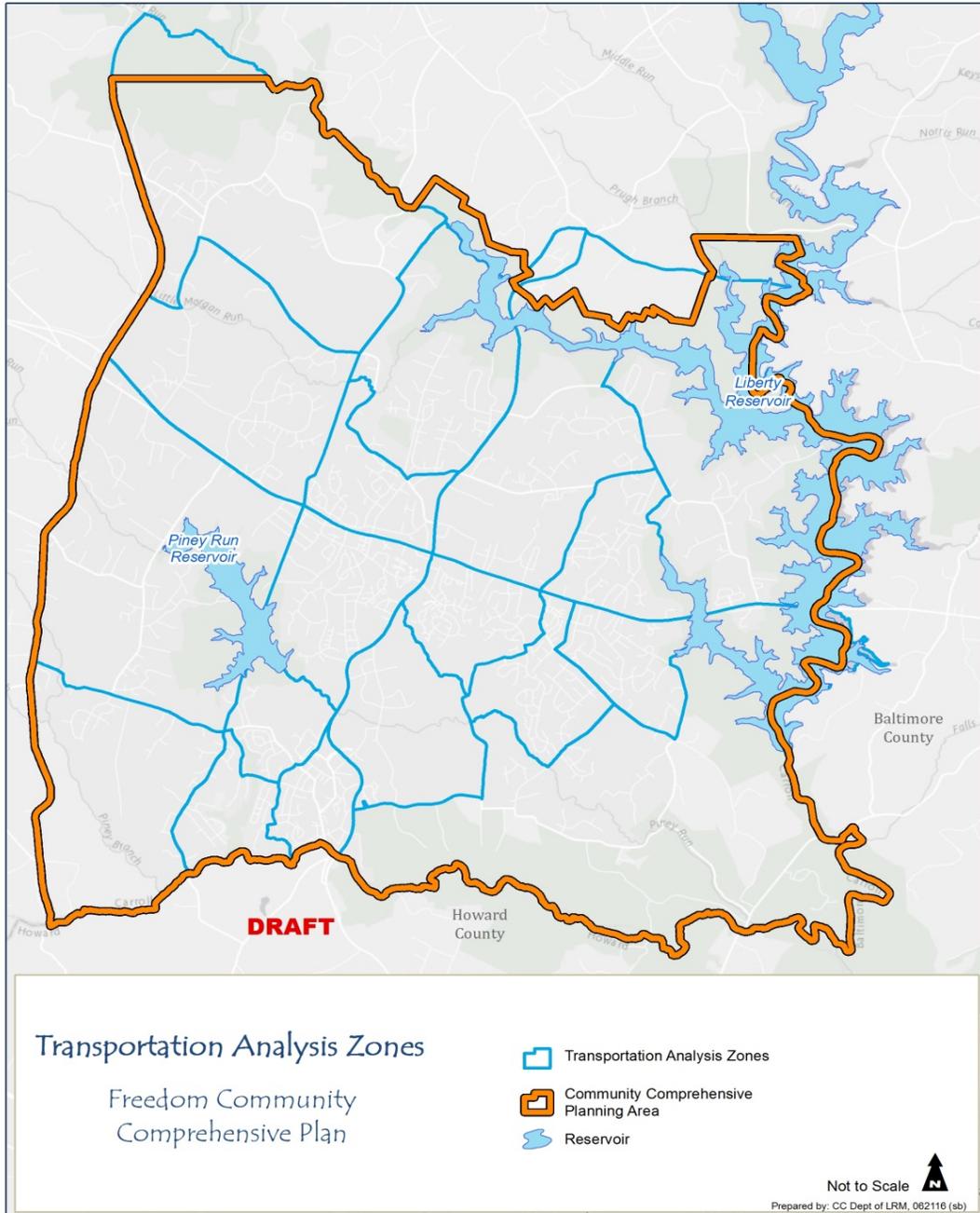
As noted elsewhere in the Freedom Community Comprehensive Plan, this area is noted as a Designated Growth Area and has an estimated current population of approximately 36,000 persons and approximately 10,000 jobs. Census data indicates that most of these jobs are filled by persons not residing in the Freedom Community Area (82%) and a significant percentage of the employment held by those residents (89%) is also located outside the Freedom Community Area. This imbalance between local jobs and residents leads to peaking of travel demand during traditional morning and afternoon peak periods. This peaking is created by time constraints to accomplish longer-distance between jobs and households commonly referred to as home-based work travel (journey to work), mostly using single-occupant automobiles since the employment patterns are dispersed.

To evaluate the impact of changes in population and employment on the regional transportation network, Carroll County relies on the Baltimore Metropolitan Council (BMC) travel demand forecasting capability. The forecasts are created by a “four-step” model process where travel demand (person and vehicle trip generation), distribution (trip origin to destination), mode choice (by what method are the trips made), and assignment (what roads or transit facilities are used to make the trip).

An important independent variable to forecast travel is the amount of population and employment occurring within the modelled area. Population, employment and households are introduced to the model through the use of transportation analysis zones (TAZ) and then subjected to information derived from the census regarding automobile availability, persons residing within the household, and income of the household.

The less area for each TAZ, the more detailed the travel information derived from the calculations can be. Within the Freedom Community Area there are fourteen zones which reflect differences in land use and physical features such as highways and water bodies.

A map displaying these zones is provided in Figure 3.



EL11\_Figure 3 Transportation Analysis Zones in the Freedom Community Area

EL11\_Table 3 below shows the 2010 estimate and the 2030 forecast for population (POP), households (HH) and employment (EMP) for the fourteen zones that comprise the Freedom Community Area. What the table shows is that population and job increases are not assumed to be very dramatic over the twenty-year planning horizon.

EL11\_Table 3 below shows the 2010 estimate and the 2030 forecast for population (POP), households (HH) and employment (EMP) for the fourteen zones (Transportation Analysis Zones—TAZ) that comprise the Freedom Community Area, including the size of the zones measured in Acres (ACRE). Noted in the TAZ data for the year 2010 and forecast for 2030 is only a modest change in employment (all sectors including Retail, Industrial, Office and Other) households, median household income (Med Income).

**Table 3. Demographic Assumptions Round 8 a**

TAZ10	TOTPOP	HH	Med Income	2010					TOTEMP
				Workers	Retail	Office	Indust	Other	
1045	1,488	580	72,870		0	35	16	22	73
1049	1,577	560	98,013		0	63	61	35	159
1050	1,477	510	105,576		54	431	302	394	1,181
1051	1,999	678	116,467		23	204	70	191	488
1052	2,167	748	99,288	1,161	24	107	34	180	345
1053	2,180	658	124,013	1,165	54	74	20	101	250
1054	1,662	573	101,666	793	1,198	465	144	375	2,182
1055	1,408	535	80,169	754	0	178	134	231	543
1056	2,086	694	111,113	1,258	119	164	46	169	498
1057	3,683	1,344	87,841	1,787	325	174	16	280	795
1058	846	10	63,444	0	0	616	103	897	1,616
1059	1,652	512	63,444	470	0	296	64	766	1,126
1060	1,574	655	106,981	1,033	59	385	124	261	830
1061	2,051	897	60,743	1,273	79	132	35	177	423
1062	2,877	1,072	93,155	1,689	504	273	54	267	1,098
1063	3,050	1,057	106,555	1,636	495	326	28	241	1,090
1064	1,890	798	73,830	901	156	95	9	198	459
1065	1,591	525	125,316	769	7	342	79	440	867
<b>TOT</b>									
<b>2010</b>	<b>35,258</b>	<b>12,406</b>	<b>120,749</b>	<b>14,690</b>					<b>14,023</b>

TAZ10	TOTPOP	HH	Med Income	2030					TOTEMP
				Workers	Retail	Office	Indust	Other	
1045	1,548	626	93,265		0	40	18	25	83
1049	1,665	604	125,446		0	72	69	40	181
1050	1,532	550	135,125		62	492	345	449	1,348
1051	2,080	732	149,065		27	232	80	218	557
1052	2,270	815	127,077	1,169	27	122	39	206	394
1053	2,289	717	158,723	1,177	62	85	23	116	285
1054	1,745	624	130,121	801	1,368	531	164	428	2,490
1055	1,606	583	102,607	827	0	203	152	264	620
1056	2,585	894	142,212	1,500	136	187	53	192	568
1057	3,871	1,465	112,427	1,806	371	199	18	319	907
1058	863	11	81,201	0	0	703	118	1,024	1,844
1059	1,732	558	81,201	472	0	337	73	874	1,285
1060	1,770	714	136,924	1,117	68	440	141	298	947
1061	2,268	978	77,744	1,355	91	150	40	202	483
1062	3,011	1,167	119,228	1,700	575	311	61	305	1,253
1063	3,196	1,152	136,378	1,648	565	372	32	275	1,244
1064	1,983	870	94,494	909	178	109	11	226	524
1065	1,671	572	160,390	776	7	390	90	502	989
<b>TOT</b>									
<b>2030</b>	<b>37,685</b>	<b>13,632</b>	<b>154,545</b>	<b>15,258</b>					<b>16,002</b>

POP Change 2010-2030	2427	120 people per year
EMP Change 2010-2030	1979	100 jobs per year
HH Change 2010-2030	1226	60 hhs per year

What the table shows is that population and job increases are not assumed to be very dramatic over the twenty-year planning horizon.

## Current Travel Demand, Crash Information and Level of Service

The Freedom Community Area highway network is composed of urban area and rural area roadways. The capacity of urban area roadways typically is based on the ability of the intersections to process traffic either through the use of traffic signals or signage controlling the access of traffic from the cross streets. To influence the capacity of the roadway, the signalized intersections should be spaced no more than one mile apart. The capacity of rural

sections of roadway is determined based on the geometric characteristics such as number of lanes, lane width, presence of a shoulder along the side of the roadway, percentage of lane miles where passing is prohibited, vertical change in the roadway, and presence of obstructions along the edge of the roadway that limit the availability of shoulders.

***Level of Service (LOS)***

LOS is the grading scale assigned to traffic operations by transportation agencies to determine how efficiently the roadway operates. As is normal in the traditional school setting, LOS grades are expressed as A through F with A being the condition in which the least delay is experienced by motorists and F being the most delay. As with all public facilities the goal is to design for the typical condition rather than expend public dollars for a brief situation, LOS D is the desired condition. The table below found in the Highway Capacity Manual (HCM) expresses level of service by average seconds of vehicle delay.

*Table 4. Level of Service at Intersections*

Level of Service	Intersection Control	
	Signalized	STOP Sign
A	≤ 10 Sec	≤ 10 Sec
B	0-20 Sec	10-15 Sec
C	20-35 Sec	15-25 Sec
D	35-55 Sec	25-35 Sec
E	55-80 Sec	35-50 Sec
F	≥ 80 Sec	≥ 50 Sec

Source: Highway Capacity Manual, 2010

As there are twenty-four hours in a day, there are 24 separate opportunities to evaluate the intersection’s ability to manage the traffic that use it. Normally there are periods (typically less than one hour) when the intersection’s ability to manage traffic is challenged by the amount of demand and those periods are commonly called the peak hour. In more urbanized areas, this period of demand can exceed a single hour during the morning and afternoon peaks. The more urbanized the area, typically the longer the duration of the demand or peak period. As is evidenced in the Freedom Community Area where the

demand for available intersection capacity is very peaked, there are portions of peak hours where the demand may be the same as or even exceed the available supply of capacity.

In the less urbanized or rural areas of the Freedom Community Area, or where controlled intersections are greater than one mile apart, the characteristics or attributes of the roadway section such as number of lanes, width of lanes, presence of shoulders, sidewalks, passing areas determine the level of service of that roadway. The desired design standard remains LOS D along the roadway, but rather than being measured in terms of delay (seconds per vehicle), the grade is established based on density of use (numbers of cars in a given distance of the roadway).

The table (EL11\_Table 5) below displays roadway level of service (LOS) based on vehicle spacing and driver level of comfort.

Table 5. Road Segment Level of Service

Level of Service	Average Spacing	Traffic Flow	Level of Driver Comfort
A	550 Ft	Free Flow	Very High
B	330 Ft	Reasonable Flow	High
C	220 Ft	Stable	Comfortable
D	160 Ft	Approaching Unstable	Some Concern
E	120 Ft	Unstable	Poor
F	Minimal	Breakdown	Much Discomfort

Source: Highway Capacity Manual

Multimodal LOS

The 2010 Highway Capacity Manual and National Cooperative Highway Research Program (NCHRP) Report 616 incorporate tools for multimodal analysis of urban streets to encourage users to consider the needs of all travelers. Stand-alone chapters for the bicycle, pedestrian, and transit have been eliminated, and methods applicable to them have been incorporated into the analyses of the various roadway facilities.

Recently, and especially in towns and urbanized areas, there has been a desire by transportation officials to consider all users of the right-of-way of a road. This movement away from a purely highway and suburban analysis is the result of Complete Streets or a policy that supports the use of the public right-of-way by all users. Typically referred to as Multimodal LOS (MMLOS) considers not only the automobile but also the pedestrian, bicyclist and transit user.

Pedestrian LOS is normally measured in terms of amount of area allocated to pedestrian use (sidewalks, crosswalks, etc.) divided the number of potential users. Bicycle LOS is actually a measure of the bicyclists comfort in using the facility whereby existence of a separate path or trail, signage, posted vehicle operating speeds, design of storm water drainage, percentage of truck traffic or other heavy vehicles all contribute to the bicyclists sense of personal safety.

It is important to note that traditional measures such as intersection and road link level of service does not provide a true indication of the motorists' experiences using the highway network and may not replicate actual travel time of the trip taken. Travel time is the motorist's understanding about the reliability of the highway network, or simply stated the amount of time that the driver expects to spend driving between Point A and Point B. Normally the driver has a tolerance for additional time to make the trip during certain times of the day due to increased demand along the road and at its intersections. However, most human factors searchers note that the tolerance wanes when the time to make the trip is double the amount of time anticipated by the motorist.

Since most motorists, even after having heard presentations on LOS standards, do not think in terms of LOS, rather they consider changes in travel time as time is a very important value for work, commercial and social-recreational travel as time cannot be easily found after it is lost to delay. Many State transportation agencies are evaluating the use of travel time as a means of measuring system performance rather than traditional LOS. The belief is that funds expended for geometric improvements and signals should be targeted to maintain the anticipated travel time rather than chasing an LOS standard.

### **Intersection Level of Service in the Study Area**

The 2001 Freedom Plan provided an evaluation of several signalized and signed controlled intersections along or connecting important roadways in the Planning Area. In instances where the intersection is controlled by a sign rather than a signal, the same type of analysis was used. Table 5 below displays LOS information for those locations where hourly turning movement data were available. This analysis, Critical Lane Volume (CLV) is based on the number of conflicting vehicles assumed to be placed in a lane. Once that number exceeds 1450 the analysis assumes that 90 percent of the capacity (1450/1600) has been used and is normally assumed to be the lower limit of an acceptable policy of use. Where the intersection is not signalized there will be queuing observed on the minor or cross street

while the mainline or major street will operate with less conflict. Please note that Table 6 provides level of service information only where turning movement counts are available.

Table 6. Intersection Level of Service—Critical Lane Volume (CLV)

Intersection	SIG Y/N	CLV 2001 Plan		CLV 2016 Plan	
		AM	PM	AM	PM
MD 26/MD 32	Y	B	D	A	B
MD 32/Raincliff Rd	Y	B	E	NA	NA
MD 26/White Rock Rd	Y	C	B	NA	NA
MD 26/Johnsville Rd	Y	A	B	A	B
MD 26/Oakland Mill Rd	Y	C	D	NA	NA
MD 26/Georgetown Blvd	Y	A	B	A	C
MD 26/Hemlock Dr	Y	A	A	A	B
MD 26/Ridge Rd/Oklahoma Rd	Y	A	A	B	C
MD 26/Monroe Ave	Y	A	A	A	A
MD 32/Johnsville Rd (N)	Y	A	B	NA	NA
MD 26/Carroll Highlands Rd	N	A	A	NA	NA
MD 32/Freedom Ave	N	A	C	NA	NA
MD 32/Piney Ridge Pkwy	N	A	A	NA	NA
MD 97/MD 26 Ramp- MD 97	N	A	A	NA	NA
MD 97/MD 26 Ramp-MD 26	N	A	A	NA	NA
MD 97/Obrecht Rd	N	A	A	NA	NA
Bartholow Rd/Johnsville Rd	N	A	A	NA	NA
Monroe Dr/Ridge Rd	N	A	A	NA	NA
Johnsville Rd/Freedom Ave	N	A	A	NA	NA
Georgetown Blvd/Lee Ln	N	A	A	NA	NA
Carroll Highlands Rd/Harvest	N	A	A	NA	NA
Marriottsville Rd/Ridge Rd	N	A	A	NA	NA
Marriottsville Rd/Arrington Rd	N	A	A	NA	NA

Sources: BMC MD 26 Study  
Available Traffic Impact Studies

## Transportation Network Improvements

As noted earlier in this section, the Freedom Community Comprehensive Plan of 2001 identified several network and intersection modifications. Several of these have been implemented through a combination of County capital investments, conditions of development approval and State funding through the Consolidated Transportation Program (CTP). The tempo of development within Carroll County and elsewhere has been subject to

fluctuations in the national economy thus projects constructed by private sector have not proceeded as quickly as desired. Funding for County and State projects has also been subject to national, state and local revenue availability.

At the State level, projects must be identified in the SHA’s Highway Needs Inventory which is a document periodically updated and used for planning purposes to identify anticipated needs, this was most recently reviewed in the spring of 2015. If the project involves Federal funding participation such as MD 97, MD 26, and MD 32, the projects must be included in the Baltimore Regional Transportation Board’s currently adopted, fiscally constrained, and air quality compliant Regional Transportation Plan which is presently referred to as Maximize 2040.

Table CH7-Table 1, Table 2 and Table 3 of the 2014 *Carroll County Master Plan* identifies multiple projects that are located within the Freedom Community Area and are displayed below in Table EL11\_Table 7.

*Table 7. 2014 Carroll County Master Plan Transportation Projects in the vicinity of the Freedom CPA*

Project	Estimated Cost	Plan Source	Agency
MD 26:MD 32 to MD 97	\$59,000,000	Plan IT 2035	SHA
MD 26:MD 32 to Reservoir	84,700,000	HNI	SHA
MD 32:Howard Co to MD 26	137,500,000	Plan IT 2035	SHA
MD 32:MD 26 to Pine Knob Rd	56,300,000	HNI	SHA
MD 26: Pine Knob Rd to MD 91	113,000,000	HNI	SHA
MD 32: MD 91 to MD 97	183,100,000	HNI	SHA
MD 97: Howard Co to MD 26	195,300,000	HNI	SHA
MD 97: MD 32 to Old Westminster Pk	105,700,000	HNI	SHA
Johnsonville Rd Extended	4,175,600	Freedom	County
Arrington Rd Realignment	NA	Freedom	County
Bandy Ave to Mycroft St	NA	Freedom	County
Conan Doyle Wy Extended	NA	Freedom	County
Dickenson Rd Extended	NA	Freedom	County
Lee Ln Extended	NA	Freedom	County
MacBeth Wy Extended	NA	Freedom	County
Monroe Ave Extended	NA	Freedom	County
Prothero Rd Extended	NA	Freedom	County
Ridenour Wy Extended	NA	Freedom	County
Ridge Rd Relocated	NA	Freedom	County

Source: 2014 Carroll County Master Plan CH7-Tables 1 through 3  
 BMC Maximize 2040, Plan, Plan IT 2035, SHA, Carroll County DPW

## Safety

The 2001 *Freedom Community Comprehensive Plan* identified MD 26/Oklahoma-Ridge Road as a high accident intersection. Since that time, there has not been a recurrence of that issue at this location. Also the Plan identified a segment of MD 26 from Bonnie Brae Road to MD 32 as a high accident segment. Again, no further data is available to suggest that this trend has continued. In neither case does that suggest that there are no further or will be no additional crashes occurring at either spot. But what it does suggest is that signage and geometric improvements coupled with enforcement may have made a difference in behavior resulting in fewer reported crashes per amount of travel.

According to information provided by SHA, statewide statistics comparing Carroll County to the other jurisdictions in the State show that Carroll County motorists experience fewer crashes and fatalities per 100,000 in population than at least nine of the other Counties and the City of Baltimore with 4.7 fatalities per 100,000 in population. However, any number of crashes or fatalities greater than zero is a number to reduce.

## Conclusion

The Freedom Community Area will continue to develop over time and has forecasted modest growth in households, population and employment over the next 20 years. It experiences recurring but short-duration congestion at some of its intersections and has received improvements to its highway network funded from a variety of sources. The primary mode of travel is by automobile and due to availability of transit, density of development, environmental constraints of wetlands, tributaries, grade changes, and land development, this current mode of travel is destined to remain the likely choice into the future.

This network of roadways varies in design from very acceptable levels of access control to segments where there is little effective control of access from adjacent parcels. Across these variations of design efficiencies, there is only small variation of the amount of travel demand or volume of use of those roads. Because most of the employment opportunities exist outside of the Freedom Community Area, travel for work purposes is long in duration and highly peaked as the trips are produced at about the same time daily and compete for available supply at several of the area's major intersections.

The County in partnership with the State of Maryland is identifying these locations and devising a program of capital investments and conditions of approval of development to address them. However, the process to secure funding to design, obtain necessary environmental permits, acquire right-of-way, and construct the improvements requires more time and coordination. Land development, not only in Carroll County, but in surrounding jurisdictions generally occurs on a faster schedule than roadway improvements which will support the trips created by that new development.

The remaining sections of the Transportation Chapter will identify and evaluate strategies including other possible parallel and connecting roadway segments, access and impact associated with new development on the remaining larger parcels through the Freedom Community Planning Area, design considerations like Complete Streets, potential funding sources to support the financing and funding of the transportation program in the County, and offer recommendations to improve and advance the transportation program.

## **Evaluation of Parallel and Crossing Facilities**

### **Introduction**

An important function of any planning document is to provide informed guidance to decision makers about the importance of capital facility staging. Since this is the Transportation Chapter of the Freedom Community Comprehensive Plan, the information highlighted in this Chapter should provide the County with guidance about the importance or priorities of previously identified, but not presently constructed segments of the Plan's transportation network.

The County continues to construct through its capital program or require construction through its ability to condition approval of development, segments of parallel and crossing roadways throughout the Freedom Community Comprehensive Plan area. As capital projects, the County can prioritize segments based on functional classification, cost/benefit, and connectivity to name a few criteria. When the road segments are constructed as conditions of development approval, the County generally loses its ability to prioritize and accepts segments into its road inventory once the facilities are constructed, inspected and found to be consistent with County design requirements.

### **Network Development Scenarios Evaluated**

As noted previously, Sykesville Road (MD 32) and Liberty Road (MD 26), both of which are arterial roadways, constitute the backbone of the area's transportation network. How they function to safely convey travel demand both currently and in the forecast future has an important bearing on the accessibility to businesses and neighborhoods in the area as well as the mobility of workers and residents. The prior study of the MD 26 corridor through Eldersburg, conducted by the Baltimore Metropolitan Council (BMC) assumed four growth scenarios based on differing assumptions about increase in population and employment, and complete or partial construction of additional highway capacity parallel or crossing MD 26.

In brief the scenarios assumed the following:

- Growth of traffic into a forecast year of 2030 based on a 1.5% compounded annual traffic growth (2015 to 2030) and no changes from the forecast in population and employment.
- Forecast year of 2030 with traffic growth (as noted above) with development buildout of currently undeveloped parcels with assigned uses (residential, commercial, etc.) with building square footage and trips.
- Forecast year of 2030 with traffic growth, development buildout and all planned road improvements which includes full build out of planned local road improvements and a reassignment of trips to and from the parcel zones based on the availability and capacity of those improvements.

- Forecast year of 2030 with traffic growth, development buildout and limited road improvements, including a limited number of planned local road improvements and a reassignment of trips based on the availability, capacity and location of those improvements.
- Using professional judgment and the assumptions made regarding trip generation, growth in travel demand, and availability, capacity and location of the local road network, the BMC staff's analysis indicated that:
  - With parcel build out most intersections fail with level of service 'F' using the Critical Lane Volume method to assess Level of Service (LOS)
  - The full and/or limited development of the local road system relieves some of the congestion but not to the present acceptable level of service (LOS D).
  - The full development of the local road system does not significantly improve conditions above the limited local road system, but again not completely using the methods and assumptions of the study.
  - The full development of the local road system reduces the eastbound through traffic volume by 2% along MD 26 in the AM peak hour and a 0.05% reduction with the limited development of the local road system.
  - The full development of the local road system reduces the westbound through traffic volume by 7% along MD 26 in the AM peak hour and a 5% reduction with the limited development of the local road system. An improvement but not a complete solution to the travel demand problem.

*Given the perceived unlikelihood that all road connections and extensions identified on the 2001 Freedom Community Comprehensive Plan can be designed, funded and constructed, it will become necessary for the County to prioritize what are the most important road segments of those which could be constructed. To do that, the County should consider prioritizing roadway segments based on the following selected criteria.*

## Prioritization of Road Segments

This Plan recommends that the County prioritize those facilities which are constructed through the capital program or when other opportunities present themselves based on some fundamental criteria. The criteria are given a points, but are not weighted. The point values are assigned from 0 to 3. In most instances, higher point values are better than lower except where NEIGHBORHOOD IMPACTS are being considered, when criteria are assessed, LOWER points are preferred to HIGHER.

These criteria are:

- **Motorist and Pedestrian Safety**—Where new or reconstructed roadways reduce crash potential and conflict between local and pass through traffic;

3	Most reduction	2	Some reduction	1	Minimal reduction	0	No reduction
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- **Functional Classification**—Whereby roadways of higher functional classification are more important than lower classified roadways and those higher classified roadways can carry more traffic at higher posted speeds limiting conflict;

3	Arterial	2	Major Collector	1	Minor Collector	0	Local
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- **Interconnectivity** among land use activities and communities—Where travel can be satisfied between development areas without having to use major state roadways such as MD 26, MD 32 and MD 97;

3	Most connection	2	Some connection	1	Less connection	0	None
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- **Utility Plan Water/Sewer System**—Facilities located within the planned potable water and sanitary sewer utilities areas avoid conflict between offering new road capacity where there is no policy intent to offer utilities capacity;

1	Within System Boundary	0	Outside System Boundary
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- **Density**—Facilities located in areas with suburban (not rural) densities per the adopted land use plan where more travel is anticipated to be generated on a per acre basis;

3	Highest Density	2	Medium Density	1	Lowest Density
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- **Accessibility to Activity Centers**—Facilities located within commercial and industrial land use designations per the adopted land use plan;

2	More Access	1	Some Access	0	No access
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- **Neighborhood Impact**—Facilities which do not trigger a public need to construct traffic calming devices on existing roadways based on the introduction of more travel induced by the connecting roadways;

3	Least Impact	2	Some Impact	1	Most Impact
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- **Path Options**—Facilities which reduce short distance travel along major roadways by providing short distance path changes limiting the need to use more major roadways for short distance trips;

2	Best option	1	Some option	0	No option
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- **Path Changes**—Facilities which reduce heavy turn volume traffic at signalized intersections along MD 26 in Eldersburg, in particular left turning volumes conflicting with westbound through traffic during the PM peak hour by creating longer distance path changes.

2	Best path	1	Some change	0	No change
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The more frequently these criteria are met by a candidate roadway segment, the higher the priority should be to program and advance the roadway to design, right-of-way acquisition and construction. Conversely the fewer of these criteria are achieved the lower in priority the segment should be considered unless other intervening circumstances avail.

While these criteria are not arrayed in a specific order, reduction of crash potential by separating conflicting movements and short distance travel along major roadways such as MD 26 and MD 32 remains paramount.

Building roadways at the appropriate functional classification (higher classifications conveying a greater volume of traffic) is necessary to create travel path options for motorists seeking other routes through sections of major roadways where intersections are forecast to be operating at less than acceptable levels of service.

Creating connections between larger generators of travel reduces the likelihood that the new travel created by these land uses will have no other option other than the main roadways which are forecast to be operating at less than acceptable levels of service during peak demand periods.

Constructing roadway networks creating more capacity than is needed to support the local land uses outside of the utilities envelope potentially sets a stage for changing system boundaries or increasing densities, both of which engender other conflicts with adopted policies of the County.

Constructing or extending roadway segments in the local network which direct external traffic through residential developments creates the possible need to spend additional County revenue to reduce the attractiveness of that route through neighborhood traffic

calming or other strategies which then, if successful, negates the value of the roadway extension.

Constructing roadway segments which offer a desirable path for the motorist to avoid the succession of intersections which could be operating at less than acceptable levels of service along MD 32 and MD 26 helps to reduce forecast peak period congestion at these locations and improves the performance of these corridors. The key becomes reducing conflicting movements (left turns conflicting with through traffic) especially in the afternoon peak periods where reduction in eastbound left turning traffic conflicts with westbound through traffic on MD 26 and southbound left turns conflict with northbound through traffic on MD 32.

BMC studies indicate that regardless of the extent of through traffic capacity increases, the turning conflicts reduce the value of the through lane improvements. That increase in through movement capacity, coupled with necessary pedestrian/bicycle facility improvements and storm water management requirements will likely create a substantial demand for right-of-way through Eldersburg for both MD 32 and MD 26. This widening of right-of-way requirements will have an impact on adjacent development as well as use of parallel roadways which might have been used as local access or service roadways.

*In all instances and regardless of the typical sections and right-of-way of the existing facilities to which the segment will connect, the candidate roadway section should include safe accommodation for pedestrian and bicycle facilities.*

Due to the location of constraints within the Freedom Community Planning Area such as prime agricultural lands, wetlands and water courses associated with the reservoir and lakes, and existing development, there are few reasonable and permissible opportunities to add new facilities not considered previously in the *2001 Freedom Community Comprehensive Plan*. Given that situation, this Plan recommends that the following facilities be arrayed in priority by the criteria noted above.

Determination of individual segments recommended for design, right-of-way acquisition and construction should be guided by identifying logical segments which when constructed could satisfy part or all of a short distance trip. Even if all necessary right-of-way cannot be acquired at the same time, public ownership of right-of-way where possible is more advisable rather than deferring until the opportunity for a total corridor acquisition is presented. It is also advisable to retain acquired right-of-way even if the entire alignment cannot be procured at the same time.

Considering the BMC analysis as well as the findings and conclusions noted above, the Plan recommends that the County apply these priorities for design, right-of-way and construction of the following roadway segments. While other criteria could be considered, the purpose of these criteria is to identify which facilities should advance to design at which time right-of-way impacts, permitting requirements and construction costs will become better understood.

These recommendations of priority are based on a combination point score value found in detail in Appendix B and summarized in Table EL11\_Table 8 below:

*Table 8 Summary of Evaluation Matrix*

Road Name	To	From	Points	Priority
Dickenson Rd Georgetown Blvd	Oklahoma	Monroe	20	HIGH
Monroe Ave	Londontowne	Bennett	20	HIGH
Ridenour Wy	MD 32	Woburn	20	HIGH
Monroe Ave	Georgetown	Fallon	18	HIGH
Obrecht Rd	Oden Wy	Oklahoma	16	MEDIUM
Pine Knob Rd	Hollenberry	MD 32	13	MEDIUM
Prothero Rd	Livesay	Conan Doyle	12	MEDIUM
Raincliffe Rd	Falling Leaves	Marriottsville Rd # 2	8	LOW
	Slacks	Arrington	9	LOW

HIGH:

- Dickenson Road from Long Meadow Drive to Goddard Park Drive
- Ridenour Way from Georgetown Boulevard to Fallon Road
- Georgetown Boulevard from Londontown Boulevard to Bennett Road
- Monroe Avenue from MD 32 to Woburn Drive

MEDIUM

- Pine Knob from Livesay Drive to Conan Doyle Way
- Monroe Avenue from Oden Way to Oklahoma Road
- Obrecht Road from west of Hollenberry Road to MD 32

LOW

- Prothero Road from Falling Leaves Court to Marriottsville Road No. 2
- Raincliffe Road from Slacks Road to Arrington Road

Using the criteria noted above, the anticipated development and redevelopment within the Freedom Community Planning Area and the forecast need for travel demand relief along MD 26 and at its intersection with MD 32, the area of greatest need is located north of MD 26 and east of MD 32.

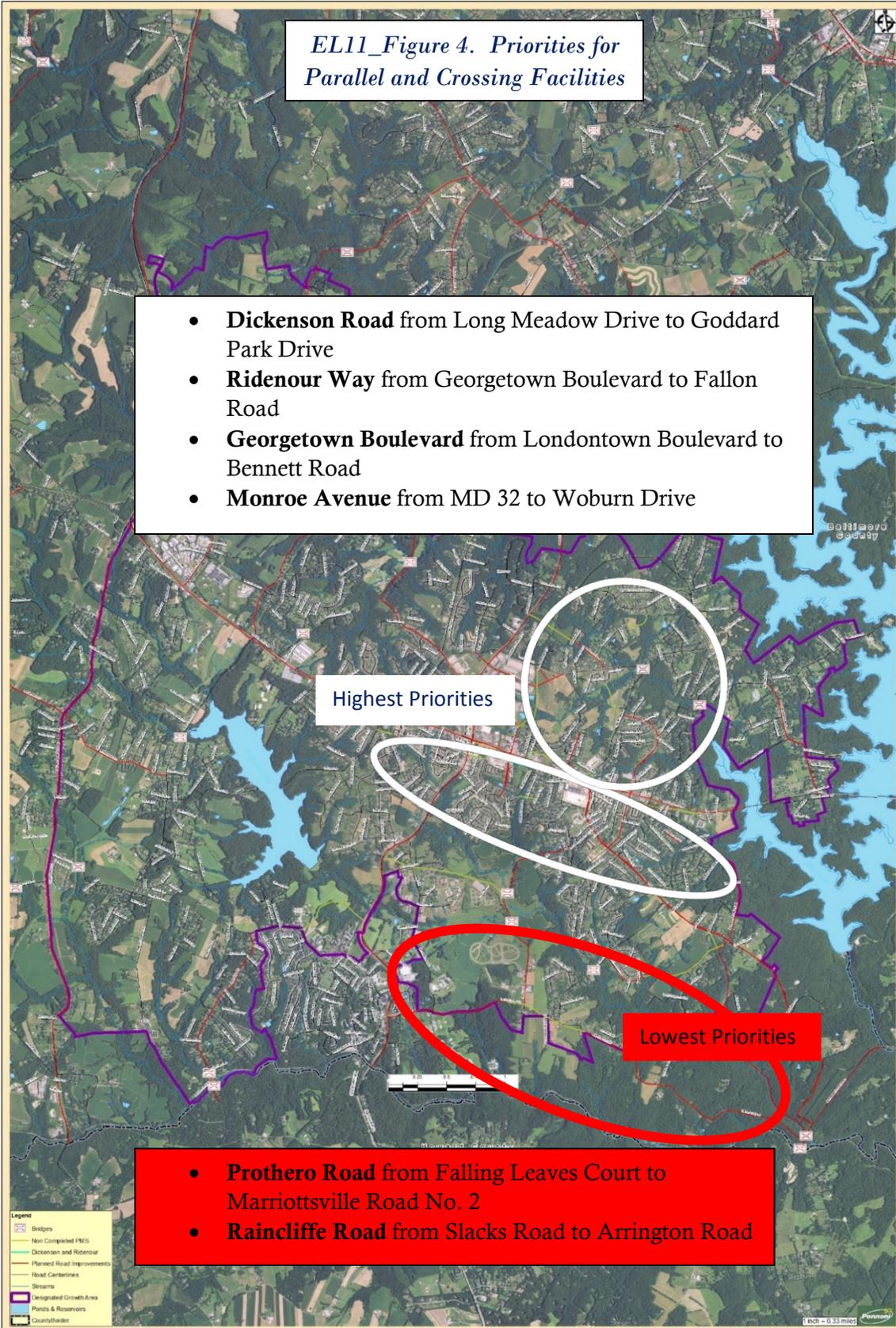
Among the uncompleted roadway sections of note in the above Table 8, Monroe Avenue Extended has been studied previously in August 2007. That study evaluated six alternates

for changes in level of service, impacts and costs, but not necessarily for travel demand benefits in terms of travel time savings experienced by motorists using the facility and the two missing sections of roadway. The value of completing Monroe Avenue is the road's contribution to the overall grid of streets in the Eldersburg area. The travelling public value of the roadway sections must be balanced with the neighborhood and natural environmental impact associated with traffic operations along the roadway and construction of the alignment.

Since the intersection of MD 26/MD 32 serves as the transportation lynchpin for this area, creating more roadway alignment options for motorists, pedestrians and bicyclists reduces the impact to neighborhoods experienced by having fewer options available. Having other street segments in the area grid also reduces the impact at the MD 32/MD 26 intersection noted in the level of service tables by offering motorists other possible paths to take. Finally, having path options helps to preserve the overall networks reliability as measured in the time needed to complete a trip.

While the 2007 study did not provide a recommendation for an alignment or an alternative choice, that study also did not provide evidence of a lack of need to make the complete the alignment between MD 32 and MD 26. Thus retaining Monroe Avenue Extended remains an important recommendation of this Plan.

These recommended High and Low Priority Network Segments are noted in Figure EL11\_Figure 4 below. There is a larger exhibit located in Appendix B depicting the high and low priority segments as a guide. In Figure 4, the High Priorities are shown in **WHITE** while the Low Priorities are depicted in **RED**.



## **Recommendations:**

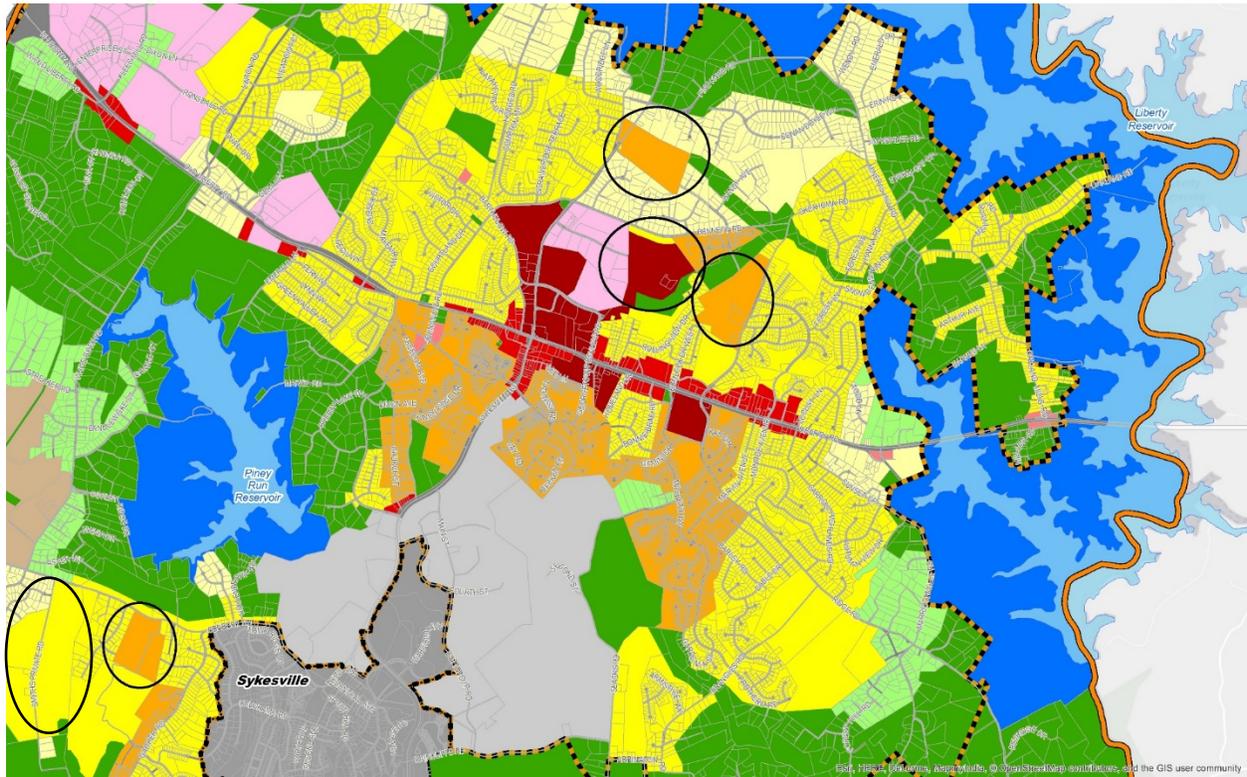
- All Planned Major Streets noted above should be designed and constructed to improve connectivity, to reduce conflicts between short distance and longer distance travel on major roadways, to accommodate all users of the right-of-way (motorists, bicyclists, pedestrians), and to comply with the County's collector standard with designs consistent with adjacent land use.
- Facilitate the development of the limited local road system.
- Review the parcel build out allowance and set-backs with potential review of an impact fee development to assist in ultimate widening of MD 26.
- None of Planned Major Streets or currently unbuilt segments recommended in earlier adopted plans should be removed from this Plan.
- As segments of new roadways are constructed and opened to traffic, the County should coordinate with SHA to create a signing and pathfinding program to improve the knowledge of motorists using the roadways in the area with SHA so that the motorists have knowledge of new available route options in the area.
- Advance the design, right-of-way acquisition, and construction of these segments through use of bonds, partnerships with land owners and developers, conditions of development approval, special assessments or other financing tools that are available.

## **Evaluation of Parcel Access**

### **Introduction**

Although there are opportunities for infill and redevelopment activities, most of the anticipated new development will occur on only a few parcels through the Freedom Community Area. This section focuses on nine parcels which are clustered among the five areas shown in EL11\_Figure 5, below.

Combined these areas consist of approximately 760 acres of which approximately 700 acres would be supporting residential development yielding nearly 1200 residences of various sizes and the balance of around 60 acres on which an office-retail mixed development of 600,000 square feet (gross floor area) allowing for approximately equal allocation for retail and an office park.



*EL11\_Figure 5: Locations of Evaluated Parcels*

As noted in the figure above, most of the parcels of interest are located along Sykesville Road (MD 32) north of Liberty Road (MD 26) and will impact the MD 32/MD 26 intersection along with those parallel and crossing roadways noted in the earlier section of the report.

The remaining four parcels are located along Obrecht Road west of Sykesville Road near the Town of Sykesville and will use Obrecht Road for access to and from the County roadway network.

Given the assumptions of development yield based on the land use designations of the parcels and using estimated trip generation rates provided by the Institute of Transportation Engineers, the 1,200 dwelling units would generate an estimated total of approximately 10,600 daily vehicle trips, on average (ADT). The retail and office development with approximately 600,000 square feet of gross floor area could generate an estimated 12,300 average daily vehicle trips. While it is not possible to accurately forecast the amount of duplicated travel since the development proposals create new trip origins and new trip destinations, some portion of this total estimate will be duplicated and thus reduced in aggregate terms. Also, as these proposals due to their locations offer opportunities to interconnect the projects, some portion of this travel will be experienced as trips made by walking, bicycling or as a transit passenger.

Based on the parcels' location to major roadways (MD 32 and MD 26) and the continued progress toward constructing, extending and connecting the local road network (Monroe, Bennett, Progress, Georgetown, and Oklahoma), the collective impact of these new vehicle trips will be dispersed among the network. The key areas of impact will be the intersections of these roadways. Thus obtaining necessary right-of-way along the mainlines and at the intersections, as well as interconnections of the communities with local roadways to reduce short distance travel along major roads such as MD 32 and MD 26 will be important strategies to reduce the overall impact of the anticipated development of these major parcels.

Where the parcels front State-maintained highways, access will likely be permitted based on SHA access requirements of spacing and number of access points. Similarly, where access of these parcels will occur along County-maintained roadways, location and number of access intersections will be determined by County code requirements. Where possible access should be located across from existing points of access and spaced at intervals which reduce the chance that conflicts will occur with traffic queued at signals.

## **Conclusion**

Specific details about parcel impact cannot be realistically recommended at this level of analysis rather, these parcels should progress through the decisions made at land use designation, at zoning, and then at subdivision or parcel site plan. As the parcel progresses through the various levels of approval, more detailed and more accurate information about

the actual development which generates the travel demand (or vehicle trips) that use the area roadways and which will be experienced by other motorists becomes known. Thus, at a master or comprehensive plan level, the best information available is not sufficient to inform decision makers about intersection impacts.

For that reason, a focused study on the area of the cumulative impact should be conducted so that right-of-way needs, geometric and storm water designs, signal timing changes, both in the Eldersburg area and along Obrecht Road between White Rock Road and MD 32. Having more detailed information about development which is not available at a master plan level will help inform the County and the State about geometric changes, as well as system or demand management strategies which could be employed to address the increased travel demand impact in the planning area.

## **Transportation Demand Management (TDM) Strategies**

### **Background of Travel Demand Management**

Transportation Demand Management (TDM) refers to a set of strategies aimed at reducing the demand for roadway travel, particularly in single occupancy vehicles. These strategies address a wide range of externalities associated with driving (mostly involving the use of single-occupant automobiles), which results in congestion (mostly during peak demand time periods), reduced air quality, less livable communities, reduced public and environmental health, and greater dependence on motor fuels. The goal of employing TDM strategies is to reduce total travel demand or peak period demand. While the first goal has overall desirability, the second goal is more appropriate to the situation experienced by Carroll County motorists.

Currently, Carroll County has an agreement with the Baltimore Metropolitan Council (BMC) to provide demand management assistance using BMC staff. The program is funded through Congestion/Mitigation Air Quality (CMAQ) funds made available by the US Department of Transportation, Federal Transit Administration through the Maryland Transit Administration. This arrangement is similar to that used by Baltimore County.

The recent economic recession, coupled with higher fuel costs resulted in an overall decrease in travel demand, both during peak periods as well as daily. Traffic count tables displayed in the chapter show over all decreases in observed travel even with increases in population over the same period of time. Some of the travel is work-related (journey-to-work travel) but also another contributor is a reduction in discretionary or optional travel. The typical result is fewer total daily vehicle trips and/or reduced travel time during the peak period of travel. Now with an improving economy and reduced fuel costs, travel is returning to, or exceeding, pre-2008 levels.

Some of the most common strategies employed by local and/or State governments are

- Rideshare
- Car and Van Pooling
- Parking Incentives
- Guaranteed Ride Home
- Flex Hours and Schedules
- Telecommuting
- Transit Incentives
- Remote Work Centers

The strategies can be grouped into those which can be implemented on the origin side of the trip such as rideshare, car and van pooling or the destination side of trip such as

parking incentives, transit use incentives, flexible schedules, and remote work centers. Since Carroll County exports a large portion of its work force, effective strategies to reduce peak period travel demand at its intersections requires efforts of employers outside the County to implement strategies to reduce demand at the destination end of the journey-to-work trip. Since the County is promoting the development of employment opportunities within its boundaries, efforts to compel development to impose demand strategies could reduce the County's competitive edge with other jurisdictions which feel less need to require travel reduction programs. However, the County could decide to consider demand management as a means of reducing localized congestion around the employment center rather than imposing geometric modifications as conditions of development approval.

Most TDM programs can be cost effective but, frequently, have little impact overall travel patterns or demand (volume of travel). Many communities implement individual TDM strategies that are worthwhile investments but very few communities have implemented the full range of TDM strategies. There are examples where larger employers have created successful TDM programs which result in reduced localized vehicle trip attraction to their site. Barriers to local governments and, frequently experienced by small-scale employers, are cost to implement the program, the difficulty in monitoring change in travel behavior, dissemination of program information to the traveling public, and documenting the longitudinal value of the strategy in reducing travel demand.

Comprehensive TDM programs that include a variety of individual strategies could make a meaningful contribution to solving County or Regional transportation problems, especially in commuting corridors such as MD 26 and MD 32. As there are many reasons for travel times selected, paths taken, and method of travel selected, no single strategy can be applied to "fit" the overall situation. Thus one size does not fit all conditions, so the most effective program is a changing bundle of TDM strategies that meet individual needs of County residents who commute, especially those who commute distances greater than 20 miles each way.

Further, the development patterns within the County also work against implementation of rideshare strategies. Also the lack of large employers in the County minimizes the attraction side (travel is referred to as productions and attractions of trips) as there is typically no large benefit in creating and sustaining a rideshare program by small-scale employers since the level of benefit is minimal and the amount of work detracts from a human resources or administrative person's paid responsibilities.

The key for these programs to be successful is their ability to offer flexible solutions to individual travel issues such as congestion of the roads at specific times of day, increased travel times to make the same trip and increased travel costs typically measured in motor fuel costs. The strategies are most successful when they provide direct and measurable benefits to the user such as travel time or cost savings.

Through observations within the Freedom Community area, it is apparent that the existing park and ride lots are fairly well used and have sufficient capacity remaining that programs employed to promote greater rideshare activity would not immediately require additional lots or spaces within existing lots both of which require land acquisition and construction funding. Within the earlier portion of this Chapter (Existing Conditions) approximately 60 percent of all available spaces for park and ride are located within or adjacent to the Freedom Community.

Since most of the journey to work activity has destinations beyond the planning area and the average commute is approximately 30 minutes or more, the consideration of ridesharing strategies bears more effort on the part of the County and BMC who is its rideshare contractor.

With typically abundant parking available, lower costs for motor fuel, and minimal time penalties due to facility congestion, any successful demand management program is likely to be the outcome of a regional effort, targeting larger employers located beyond the County, in Baltimore City, or the counties such as Howard, Anne Arundel or Baltimore. Since the reduction of interjurisdictional work travel is the goal, it becomes important that the local agencies direct the regional agency (in this case, the Baltimore Metropolitan Council) to promote TDM strategies across jurisdictional boundaries. Unfortunately, the BMC can offer little incentive to employers to support the programs.

## **Rideshare Recommendations**

Engage the Baltimore Metropolitan Council (BMC) staff to market and promote rideshare strategies with major employers within the Baltimore Region and identify County residents which could benefit from a rideshare program.

Engage the Baltimore Metropolitan Council (BMC) to coordinate rideshare efforts through the Washington Metropolitan Council of Governments (WMCOG) to market and promote rideshare strategies to employers within Montgomery and Prince George's Counties where Carroll County residents are employed and identify those County residents which could benefit from the rideshare program.

## **Transit in the Freedom Community**

### **Transit Background**

Over the span of this Plan, the Planning Area's demographics will change with a graying in place of the population, an influx of so-called millennials, and younger families with children. Combined these three demographic groups will likely compose more than 30 percent of the Planning Area's population. All three groups will pose an increase in demand for transit service based on a non-availability of a vehicle, or an inability or reluctance to use an automobile to satisfy some or all travel requirements. Thus consideration of the availability of transit in the planning area, along with its bus stop locations becomes more important for any plan that looks out for as long as twenty years.

Carroll County offers the Carroll Transit System which is operated, at present, by Ride With Us. Of the four routes available within the County, two routes (the Eldersburg to Westminster Shuttle and the South Carroll Shuttle) serve the planning area. The two routes, similar to the others in the County, are operated on a fixed route delivery system. Both of the routes serving the Freedom Community have capacity to carry more passengers without having to add service. The County also employs a demand response system in addition to these fixed routes.

EL11\_Figure 6 shows the two current routes serving the planning area:

- The Eldersburg-Westminster TrialBlazer operates on approximately three-hour headways or frequency of service, weekdays from 7:45 AM until 5:20 PM and serves major attractions within the Planning Area including major apartment developments, Georgetown Boulevard Shopping Center, the Walmarts, the Community College, Westminster Senior Center, Town Mall, and the Carroll Hospital Center.
- The South Carroll Shuttle operates on approximately two-hour headways, weekdays from 7:50 AM until 4:30 PM and serves major area attractions such as apartment developments, Springfield Hospital, Eldersburg Commons, Eldersburg Library, Carrolltown Center, major grocery stores and the Princess Shopping Center.



EL11\_Figure 6. Transit Routes in Freedom Community Planning Area

## Current Transit Demand

Information from the US Census Bureau’s Census Transportation Planning Package 2015 (CTPP) indicates that, on a countywide basis (assumed to be 130,316 households in 2013), practically 100,000 households had at least one vehicle available for each person 16 years or older. Given the County’s lower density, automobile availability, and infrequency of transit service, it is understandable that transit use for work trips is less than one percent (840 or 87,000 persons) of travel choice.

The County, using a Maryland Transit Administration (MTA) grant, prepared a Transit Development Plan (TDP) in 2012. The TDP is a five-year document which presents the existing service, identifies transit service needs and issues, recommends service to meet the identified needs and prepares operating and capital cost estimates to address the identified transit needs. The needs identified include institutions, hospitals, medical facilities, schools, apartments and denser residential development, low household income concentrations, zero-and-one car households and other indices which are considered by

transit planning professionals to be areas of potential transit demand. The TDP is a countywide document, but does not note issues that are relevant to the Freedom Community Comprehensive Plan.

## **Bus Stop Location Planning**

While the bus service conveys passengers that use it, the bus stop is the actual portal to that service. Location, design, and maintenance are the keys to having that portal provide the most efficient and safe access to the transit service. A goal of transit should be to improve the entire transit experience from the stop, through the ride, to the door of the destination.

Adjacent land use, frequency of service, number of routes serving the same stop all have a bearing on the spacing and location of bus stops. The traditional planning rule is that the spacing individual bus stops should be optimized, meaning that fewer spaces per mile reduces operating costs while more stops per mile increases accessibility of passengers to the bus system. For planning purposes, bus stops should be spaced approximately four to the mile or approximately 1300 feet apart (roughly 400 meters). As walking to the stop and waiting for the bus consume time, closer spacing of stops may improve demand for the service (all other factors remaining unchanged). The more inviting the walking experience is (good sidewalk and pedestrian ramps, protection of moving vehicles, lighting, etc.), the less the time spent in accessing the stop becomes.

Also to be considered is the potential stops location relative to the intersection of streets. In normal situations stops are located on the near side (before the intersection), the far side (beyond the intersection) or mid-block (between the intersections). Each location offers advantages/disadvantages for the bus operator, the motorist, the pedestrian and the passenger, based on vehicle turns (especially right turns from the major or minor street), block length, intersection controls (signal versus STOP/YIELD) and pedestrian volume. Thus each location decision should be the result of an analysis product involving the transit operator and the traffic engineer, concerning pedestrian/passenger safety and security, operational efficiencies, and traffic flow.

Another key understanding is demand for the stop. The typical determinate of demand becomes the density of employees at businesses and the density of dwelling units in residential areas. Similar to other facility decisions, the density of development measured in employees and/or households per acre is a good barometer of demand.

Bus Stop Planning should be considered as part of site planning where uses and densities could promote transit use. Noted above, the standard for suburban areas is half-hour frequency and that frequency or headway is optimized when densities of five-to-seven households per acre or 15-30 employees per acre is achieved. Stop placement distance is noted above.

Stop placement should be provided minimizing the walking distance between the buildings which generate the demand and the stop where the bus is accessed. Walking through large parking areas which is typical of suburban settings should be minimized to

reduce pedestrian/vehicle conflicts and improve both the safety and security of the passenger. At the site planning stage if densities are within the range of potential transit use, the buildings should be sited as close to the transit route (major street) as possible and when not possible, the quality of the walking experience should be improved by providing safe sidewalks, pedestrian ramps and barriers to reduce pedestrian/vehicle conflicts.

Since shuttle service frequencies presently provided in the Freedom Community Planning Area are long by typical suburban standards, the quality of the bus stop and the amenities provided at that location should afford the passenger an opportunity to avoid the weather, a place to sit, and information about bus schedule adherence. The stop will be required to meet all ADA standards regarding shelter size, sidewalk and ramp designs and dimensions.

## **Transit Recommendations**

Provide periodic monitoring of ridership, dissemination of transit program information including advertising and outreach to employment and activity centers are keys to the transit system's growth and value to the community and the planning area.

Include transit needs during the site planning and subdivision process where potential densities and uses would be supported by more convenient transit availability.

Coordinate with SHA and transit operators to include stop placement requirements (like right-of-way, utility, drainage) during road design or reconstruction of existing roadways where routes exist, or where routes are identified in the County's Transit Development Plan

Evaluate Bus Stop conditions and provided amenities following the Transit Development Plan cycle and establish a schedule to upgrade stops based on changes in ridership.

Consider creating an "Adopt a Bus Stop" program with larger employers, communities and other major attractions such as shopping centers

## A Complete Streets Policy

### **What are Complete Streets?**

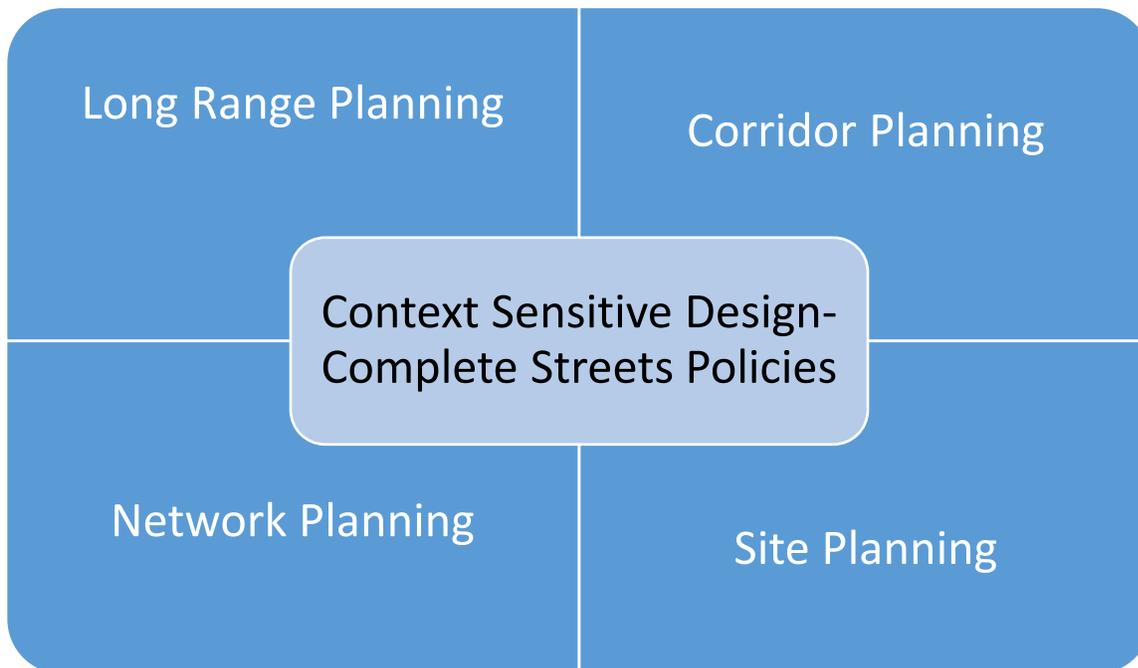
They serve ALL roadway users (motorists, pedestrians, bicyclists, transit users, freight deliveries)

- They create interconnected, multimodal networks
- They provide safe mobility for all users, regardless of age or abilities
- They vary by land use context and function of the roadway
- They are based on the community desires for mobility
- They are the outcome of good planning and design

### **What aren't Complete Streets?**

What aren't Complete Streets?

- They are NOT a Special Type of Street or Design Prescription
- They are NOT a mandate for immediate retrofit of all existing streets
- They are NOT a SILVER BULLET but part of a combination of land use design, environmental consideration and demand management

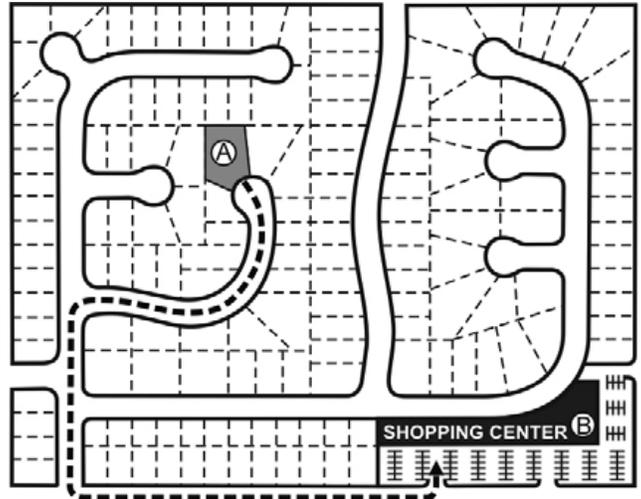


*EL11\_Figure 7: Transportation Planning Relationship to Context Sensitive Design-Complete Streets*

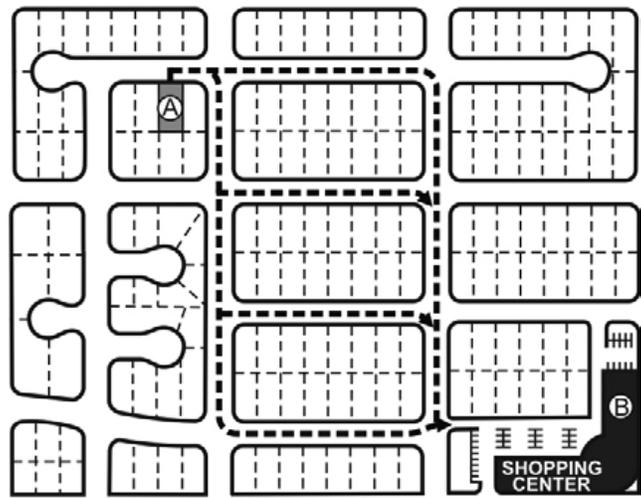
A Complete Streets Policy, with implementation strategies in place, can offer a more effective way to focus public and private transportation infrastructure investments. Of the more than 3,000 counties across the United States, more than 800 presently have adopted a Complete Streets Policy. Additionally 32 States, plus the District of Columbia have adopted Complete Streets Policies. The State of Maryland through the Maryland Department of Transportation has an adopted Complete Streets Policy. Also of note, the Baltimore Metropolitan Council has provided funding through the Unified Planning Work Program to jurisdictions to study and to adopt a local Complete Streets Policy.

Obviously not all policies are the same, nor should they be. However, where policies have been implemented through thorough review and amendments to local codes, standards and details, the experience has been that jurisdictions have, at least, partially mitigated traffic congestion, reduced conflicts among users of the rights-of-way, and promoted the safer use of the right-of-way of the by alternate modes of travel such as walking, bicycling and transit use. Again, the journey to a complete streets network, like all long trips, begins with a single step.

EL11\_Figure 8 below illustrates the concept of connectivity a core concept of Complete Streets, between a “production” or residential subdivision which is adjacent to an “attraction” or in this instance, a shopping center. This connection serves multiple trip purposes such as potential employment, social-recreation, and/or shopping. The distance between the ends of the trip is fairly short and with an appropriate connection, the path of the trip does not have to include any major roadways, or necessitate the use of a motor vehicle, which can lead to conflict along roadways due to vehicles used in short distance trips are turning against through traffic making longer distance trips. This concept incorporated into site design and subdivision practice can promote a safe means of conducting the trip on local streets through a planned grid pattern of streets reducing potential conflicts and possible crashes and leading to improved safety for residents and viability/liveability for the neighborhood.



(A) Conventional suburban hierarchical network.



(B) Traditional urban connected network.

EL11\_Figure 8: Travel Options between a Conventional and Traditional Neighborhood to Commercial Activity

The Freedom Community is a Designated Growth Area (DGA) and applying a Complete Streets Policy in a DGA has merit as additional residential and commercial development are likely to occur during the span of this Plan. Improving connectivity, reducing congestion, enhancing safe travel are all recommendations noted in the Transportation Chapter (page 57) of the adopted *Carroll County Master Plan* (2014).

There are several examples of templates from which a more localized Complete Streets Policy can be prepared and adopted, subject to County Commission action. A general source for such templates is the Complete Streets Coalition of Smart Growth America. There are also examples from various local governments in the Baltimore Region.

Generally, a successful Complete Streets Policy (The Policy) includes each of the following elements:

### **The Policy sets a Vision**

A strong vision can inspire a jurisdiction to follow through with implementing its Complete Streets policy. Policies can differ, depending upon certain variables, such as jurisdiction's size, responsibility for facilities, funding opportunities, population, land use characteristics and demographics.

### **The Policy specifies all users**

A true Complete Streets policy must apply to everyone using the public right-of-way regardless of abilities. A sidewalk without curb ramps is useless to someone using a wheelchair. A street with an awkwardly placed public transportation stop without safe crossings is dangerous for riders. A fast-moving road with no safe space for cyclists will discourage those who depend on bicycles for transportation. Since most deliveries require use of single-unit or larger trucks, freight traffic must be planned with those vehicles in mind. Older adults and children face particular challenges as they are more likely to be seriously injured or killed along a roadway. Automobiles (still 90 percent of work travel) are an important part of a 'complete' street as well, as any change made to better accommodate other modes will have an effect on personal vehicles too. In some cases, like the installation of curb bulb-outs, these changes can improve traffic flow and the driving experience.

### **The Policy applies to all projects (through the capital program or as a condition of development approval)**

There is a common philosophy that multi-modal streets have been treated as 'special projects' requiring extra planning, funding, and effort. The Complete Streets approach is different. Its intent is to view all transportation improvements as opportunities to create safer, more accessible streets for all users, including pedestrians, cyclists, and public transportation passengers. Under this approach, even small projects can be an opportunity to make meaningful improvements. In repaving projects, for example, an edge stripe can be shifted to create more room for cyclists. In routine work on traffic lights, the timing can be changed to better accommodate pedestrians walking at a slower speed. A strong Complete Streets policy will integrate Complete Streets planning into all types of projects, including new construction, reconstruction, rehabilitation, repair, and maintenance.

## **The Policy must allow for exceptions**

Just as every zoning code permits variances and departures, a successful Complete Streets Policy must include a process to handle exceptions to providing for all modes in each project. The Federal Highway Administration's guidance on accommodating bicycle and pedestrian travel named three exceptions that have become commonly used in Complete Streets policies: 1) accommodation is not necessary on corridors where non-motorized use is prohibited, such as interstate freeways; 2) cost of accommodation is excessively disproportionate to the need or probable use; 3) a documented absence of current or future need. There are areas of Carroll County and the Freedom Designated Growth Area where there are existing topological and environmental constraints. In addition to defining exceptions, there must be a clear process for granting them, where a senior-level department head must approve them. Any exceptions should be kept on record and be publicly-available. Again, as noted earlier, no size fits all occurrences.

## **The Policy will create a network**

Ultimately, a Complete Streets Policy should result in the creation of a complete transportation network for all modes of travel. A network approach helps to balance the needs of all users. Instead of trying to make each street perfect for every traveler, communities can create an interwoven array of streets that emphasize different modes and provide quality accessibility and connectivity for all users. This can mean creating bicycle boulevards to speed along bicycle travel on certain low-traffic routes; dedicating more travel lanes to bus travel only permitting queue jumper lanes at busy intersections; or creating pedestrian segments of routes that are already in high demand by walkers. It is important to provide basic safe access for all users regardless of design strategy, and networks should not require some users to take long detours.

## **The Policy is used by all agencies on all roads**

Carroll County's highway network has multiple agencies, Maryland State Highway Administration, Department of Public Works, and municipalities thus creating a fluid network can be difficult due to coordination among agencies. Normally Complete Streets Policies are adopted by a single jurisdiction and applied only to that agency's roadways, which can cause network problems disjunction. For instance, a bike lane on one side of a bridge disappears on the other because the road is no longer controlled by the agency that built that bike lane. SHA has a Complete Streets Policy in place reducing some of that concern, but any adopted policy will require coordination with the municipalities and adjacent counties where non-State highways cross boundaries. Further, some roadways may be constructed by private interests and not transferred to the public inventory, in that instance, including Complete Streets Policy elements in sub-division regulations, road design manuals, standards and specifications will be necessary to provide guidance to private developers as they construct or retrofit their facilities.

## **The Policy should be reflected in the County's Regulations, Manuals, Specifications and Standards**

Carroll County, like most contemporary jurisdictions, has adopted subdivision regulations, a zoning code, site plan requirements, a design manual, landscaping and stormwater manuals, along with standards and specifications. Following the adoption of a Policy, the County should initiate a task to review their codes, regulations, policies, manuals, standards and specifications to reduce internal conflicts and to ensure their ability to accommodate all modes of travel, while still providing flexibility to allow designers to tailor the project to unique circumstances. Again, as noted earlier, a variance or exemption procedure is a key component to any policy and should be provided within the County's codes as necessary. It is doubtful that this effort will result in a re-write of all codes, regulations, manuals and procedures, but the review step is a very important step in successfully implementing the Policy. There is much guidance available from the American Association of State Highway Transportation Officials (AASHTO), from other jurisdictions (over 800 counties have policies in place), Federal Highway Administration, the Americans with Disabilities Act Accessibility Guidelines (ADAAG), and SHA, to mention a few.

## **The Policy should be context-sensitive**

An effective Complete Streets policy must be sensitive to the community context and adjacent land use pattern. Every land use decision is actually a public facility decision at the same time. Being clear about this in the initial policy statement can allay fears that the policy will require inappropriately wide roads in quiet neighborhoods or miles of little-used sidewalks in rural areas. Such inclusion within the Policy can reduce the likelihood that a traffic calming project will be necessary following the opening of the roadway or the connection of that road to a larger network. A strong statement about community and land use context can help align transportation and land use planning goals, creating livable, strong neighborhoods. In instances where these two actions are married into the community design, the property values of the neighborhoods or commercial developments have been positive. Studies conducted by Smart Growth America found that Complete Streets projects positively related to local economic goals. Of the 37 projects included in the survey, the results included increases in employment in 11 places, increased property values, and/or total private investment in 14 places. Communities reported increased net new businesses after Complete Streets improvements, suggesting that Complete Streets projects made the street more desirable for businesses. In eight of the ten communities with available data, property values increased after the Complete Streets improvements. And eight communities reported their Complete Streets projects at least partly responsible for increased investment from the private sector. These data support the economic outcomes reported anecdotally by many communities.

## **The Policy should include performance measures**

The traditional performance measure for transportation planning has been vehicular Level of Service (LOS) – a measure of automobile congestion. Complete Streets planning requires taking a broader look at how the system is serving all users. Communities with Complete Streets policies can measure success through a number of ways: the miles of on-street bicycle routes created; new linear feet of pedestrian accommodation; changes in the number of people using public transportation, using a bicycle or walking in lieu of using an automobile to make the same trip, number of new street trees; and/or the creation or adoption of a new multi-modal Level of Service standard that better measures the quality of travel experience, adding a level of service (or comfort) for walking and biking. The current edition of Highway Capacity Manual (2010) includes this new way of measuring LOS. It is also well-documented in National Cooperative Highway Research Program (NCHRP) Report No. 616. Use of multi-modal level of service standards can allow for more effective mitigation strategies, and multi-modal network improvements promoting the mobility options for all users of the right-of-way.

## **The Policy must be implemented to be successful**

Merely adopting a policy is a legislative action, but advancing that policy from a legislative act into a countywide practice is not easy. Following adoption of the Policy some leadership and momentum is necessary to move that Policy to implementation. Typically included in the Policy Statement should be the creation of a task force or commission to work toward policy implementation. There are four key steps for successful implementation: 1) Review and modify, as necessary, existing procedures so that the result will be the accommodation of all users on every project; 2) Review and Develop, as necessary, new design policies and guides; 3) Provide workshops and pursue educational and training opportunities to transportation professionals, community leaders, and residents to stay current as this movement continues to evolve and build upon successes and learn from failures; and 4) Adopt methods and procedures ways to measure system performance and collect data on how well the streets are serving all users.

## **Candidate Complete Streets Policy for Consideration**

*This Complete Streets Policy is to ensure that Carroll County and its agencies and partners routinely plan, design, construct, operate, and maintain new and modified transportation network and systems in a manner that provides all users safe and efficient access to a comprehensive, integrated, and connected multi-modal network of transportation options.*

*It is well-understood that the implementation of the Policy is a journey and not a short trip. While significant efforts to improve pedestrian, transit, bicycle and motor-vehicle (including freight) activities have been and will remain at the forefront of the County's efforts to improve the livability of its communities and businesses, the incorporation of this Policy will provide the following:*

- ✓ *Clearly defined and implementable changes to the overall project development process that will evaluate all applicable transportation modes during the project scoping phases and utilize enhanced designed practices to be established by the County through the review and, as necessary, amendment of its regulations, codes, manuals, guides, standards, specifications and handbooks.*
- ✓ *Defined department and individual roles and responsibilities through all phases of project development and implementation to ensure that the greatest number of elements related to safety, accessibility, and convenience are considered for the transportation or community facilities under consideration.*
- ✓ *A documented procedure through which exemptions and variances can be requested and reasonably adjudicated.*
- ✓ *Defined and evaluated performance measures to track success, failures and short-comings and to create a system for encouraging greater levels of participation.*

*The Policy states that all public and private transportation projects, both new and retrofit, in Carroll County shall be designed and constructed in accordance with the following Complete Street Guiding Principles. These include:*

- ✓ *Providing safe access for all users, including the elderly, young, abled and disabled, by designing and operating a comprehensive, integrated, and connected multi-modal network of transportation options. Pedestrians, bicyclists, motorists, transit users, and freight operators should be accommodated safely and should benefit from the facilities and its amenities.*
- ✓ *Desiring that all transportation projects shall be designed and constructed to include accommodations for pedestrians, bicyclists, public transit, motor vehicles (including trucks) operated by users of all legal ages and abilities, to the extent possible. Carroll County and its agencies will work with partner agencies at the Federal, State, Regional and local levels, including but not limited to Federal Highway Administration, Maryland State Highway Administration, Maryland Transit Administration, Maryland Department of the Environment, Maryland Department of Natural Resources, the Baltimore Regional Transportation Board, adjacent jurisdictions, and local jurisdictions, through mutual planning efforts to ensure Complete Streets principles are incorporated in a context sensitive manner.*
- ✓ *Adhering to accepted guidelines, or adopted design standards as updated, and construction specifications, and using the best available standards.*
- ✓ *Incorporating context sensitivity and public involvement to ensure that the needs of the community are properly identified and addressed using a balanced approach that will advocate a comparable level of safety and mobility for all users of the right-of-way.*
- ✓ *Approaching every transportation system improvement and project phase as an opportunity to create safer, more accessible streets for all users. The project phases include, but are not limited*

*to planning, programming, design, right-of-way acquisition, construction, construction engineering, reconstruction, operation and maintenance. Other changes to transportation systems and facilities on streets and rights-of-way, including capital improvements, privately funded improvements, minor projects and major maintenance must also be included in this approach.*

- ✓ *Adhering to this policy by any privately constructed streets and transportation facilities and development access permitting procedures.*

Both the 2001 *Freedom Community Comprehensive Plan* and the 2014 *Carroll County Master Plan* identified the need to improve interconnectivity of neighborhoods and commercial developments. Both Plans stressed the need to provide for safe use of the right-of-way and to promote the improved mobility of people and goods movement. Complete Streets is a tool to assist the County and its agencies to achieve these policies and recommendations.

## **Transportation Funding Strategies**

### **Background**

The United States, the State of Maryland and Carroll County all are facing challenges in maintaining investments in the highways and transit systems. Funding decisions, programs and strategies have impacts at each level of government that is charged with providing infrastructure and services.

According to the US Department of Transportation, as reported by the Pew Charitable Trusts, at the Federal level, the Highway Trust Fund (HTF) which is the source of most Federal Funding including transfers to the State and the County, has fallen by 12 percent per annum in real terms. Over 98 percent of Federal funding for surface transportation flows from the HTF to State and Local governments. Thus, as the State experiences this decline in funding availability it has passed this problem along to local governments, including Carroll County. The Congressional Budget Office projects that, absent of funding reforms, trust fund shortfalls will grow to \$162 Billion over the next ten years. The CBO also notes that to merely maintain the current performance level of the highway network and transit programs, an additional \$13 Billion will be required above the funds that should be presently spent.

Much of the source of this funding problem can be traced to the fact that the motor fuel tax, the major source of revenue for surface transportation (highways and transit) has not kept pace with the cost of construction and maintenance. Between 2002 and 2012, the Federal Highway Administration noted that Federal motor fuel tax revenues fell by \$15 Billion, or 31 percent in real terms, while a similar drop at State level collections was noted at 19 percent. Again, as revenues drop at the State level, that decline in funding availability is felt by County and municipal governments. Thus each level of government will look to the next level below for assistance in making difficult choices for investments, for financing (which is not actually funding) strategies, and partnerships. Ultimately, local governments, such as Carroll County, will need to consider new sources of funding, such as partnerships with development and others with transportation interests, and users of transportation infrastructure.

The following table (Table 9) identifies some potential local funding sources but several of these may offer only marginal return from the effort and could require changes in code and/or creation of new positions to manage anticipated revenues.

EL11\_Table 9: Potential Funding Sources

Possible Sources	Advantages	Disadvantages
Use of General Revenue	Cost is spread broadly	Competition with other needs
Property Taxes	Cost is spread broadly	Public acceptability
Lease Revenue	Little impact to general fund	Low yield
Advertising Revenues	Little impact to general fund	Low yield
Concession Revenues	Easily adjusted based on need	Low yield
Employer/Payroll Taxes	Builds market to support transportation	Potential relocation incentive for businesses
Car Rental Fees	Responsive to inflation	Low yield
Vehicle Lease Fees	Responsive to inflation	Low yield
Parking Fees	User fee	Low yield
Transfer/Recording Fees	Highly related to development activity	Susceptible to market swings and development activity
Room/Occupancy Taxes	Others pay, not residents	Low yield
Business License Fees	User fee	Potential relocation incentive for businesses
Utility Taxes/Fees	All households pay	Energy conservation reduces potential yield
Personal Income Taxes	Broad tax base	Does not capture non- resident use of transportation system
Donations of Right-of-Way	Reduces project costs	May not be available when needed
Sin Taxes	Universal source, residents and visitors	Low yield, much competition
Impact Fees	Direct relationship to need	Legal challenges to collect sufficient funds for projects, only expansion, not operation
Tax Increment Financing	Can fund local need	Value of development may not yield sufficient funds to build the project.
Special Assessment Districts	Can fund local need	Potential to evaluate other jurisdictions for reduced costs
Joint Development	Reduces public costs	Available public properties may be not sufficient
Value Capture	Reduces public costs	Change in transportation facility must increase value of property substantially.
Community Development Districts	Reduces public costs for localized projects	Increases tax burden and makes other areas more competitive
Right of Way Leases	Reduces public costs for projects	Right-of-way must be attractive for development purposes.
Road Utility Fees	Reduces public costs to build	May impact prior rights and

Possible Sources	Advantages	Disadvantages
Developer Conditions	projects Reduces public costs	incur other public obligations May make other areas more attractive for development due to reduced costs.
General Obligation Bonds	Traditional source of financing	Increases public debt and incurs new obligations to maintain
Tax Credit Bonds	Does not impact general fund	Commitment to future revenue stream
General Anticipation Notes	Does not impact general fund	Commitment to future revenue stream

With less certainty at the Federal and State level, developable parcels remaining within the Freedom Community Planning Area as well as Countywide, and legal anticipations of permissible development based on the zoning and land use, the County must evaluate other methods to fund capital facility expansion while also maintaining its present inventory at acceptable levels of efficiency.

## **Recommendations**

### **Background**

This section of the Transportation Chapter identifies recommendations which should be implemented in the near term (present to ten years) and in the longer term (ten to thirty years). Typically, recommendations can be bundled into facility, program or policy groups.

Some of the recommendations will require a longer lead time as they will require planning, alternatives analysis, detailed engineering, right-of-way acquisition and construction prior to full implementation of the recommendations which involve capacity expansion, extension or a new facility on new alignment. Program recommendations may require additions or amendments to the County's operating or capital budgets. Policy recommendations usually require public and political support, may require amendments to existing procedures, codes and regulations, guidelines, and/or practices.

Thus adoption of the Plan and its recommendations does not guarantee an overnight change. Rather implementation of the Plan's recommendations will come about as the outcome of the County's efforts to maintain the reliability of its transportation network, to create access to its developed or developing parcels, and to promote the mobility of its residents.

Based on the information available, the analysis prepared and transportation's relationship to the natural and built environment of the Freedom Community Planning Area, the following recommendations are provided:

- ✓ Affirm and continue to implement the prior recommendations in the adopted *Carroll County Master Plan (2014)* and the current *Freedom Community Comprehensive Plan (2001)* as they remain viable transportation recommendations going forward.
- ✓ Conduct a more-detailed land use/transportation interaction and traffic operations study of the Eldersburg area concentrating on land use patterns, total trip generation, increased connectivity, and existing and planned transportation facilities within a geographic area bounded by Pine Knob Road, Oklahoma Road, Liberty Road (MD 26) and Johnsville Road. This operations study should provide more specific right-of-way, traffic operations, and geometric design guidance for implementation of the local area network, multimodal access and the assessment of impact to adjacent neighborhoods and developments.
- ✓ Coordinate with the Maryland Department of Transportation and the County's elected officials to advance roadway and intersection projects along Sykesville

Road (MD 32) and Liberty Road (MD 26) throughout the planning area. Identify these projects in the County's Construction Priority Letters.

- ✓ Collect and maintain travel times for various times of the day along major roadways in the Freedom Community Comprehensive Plan Area to establish a baseline of reliability. Periodically monitor travel times to quantify changes in facility reliability. Publish travel time results as a means of documenting travel reliability.
- ✓ Consider using reliability and accessibility as measurements of system performance and include them in future land use assessments and development review and site plan approval considerations, including traffic impact analyses and potentially, adequacy tests.
- ✓ Evaluate existing methods used by the County to fund transportation improvements through the capital program and as conditions of development approval to determine whether the existing sources provide sufficient funding to expand the transportation network to meet anticipated travel demand.
- ✓ Identify other potential sources for funding transportation projects including necessary infrastructure to promote bicycle, pedestrian, transit use (such as passenger shelters) as well as roadway and intersection capacity, road extension or new road alignment projects.
- ✓ Reduce total travel demand along Sykesville Road (MD 32) and Liberty Road (MD 26) within the Eldersburg area by extending and connecting parallel and crossing roads reducing turns and conflicts at intersections along these major roads that are made by short distance trips using these roads.
- ✓ Advance to design, right-of-way acquisition and construction the extensions of Dickenson Road, Georgetown Boulevard, Ridenour Way (referred to as the Ridenour Connectivity Corridor) and Monroe Avenue, where feasible and practical, to reduce travel demand and frequent turning movements along MD 32 and MD 26 in the Eldersburg area.
- ✓ Evaluate the alignment extension of Obrecht Road to MD 32 given the natural and built environmental constraints along the alignment. Consider preparing an alternatives analysis of possible improvements to the Third Avenue/Springfield Road intersection and the Springfield Road/Sykesville Road (MD 32) intersection to provide acceptable capacity for Obrecht Road.
- ✓ Partner with land developers to provide local and collector streets that support local development-generated travel, include facilities to safely accommodate pedestrians and bicyclists, and connect neighborhoods.

- ✓ Promote public-private partnerships and Design/Build strategies to fast-track design and construction of transportation facilities including streets, sidewalks, trails, transit passenger shelters and, park and ride lots.
- ✓ Promote the importance of Transportation Demand Management (TDM) in reducing longer distance travel which use major roadways within the County to access job locations outside the County. Evaluate the present program and determine whether the TDM Agent's responsibilities should reside within County government, a private contractor or remain with the Baltimore Metropolitan Council (BMC).
- ✓ Direct the TDM Agent to market and promote rideshare strategies with major employers within the Baltimore Region and identify County residents which could benefit from a rideshare program. Periodically monitor the change in use of TDM programs by County residents and employers.
- ✓ Direct the TDM Agent to coordinate rideshare efforts through the Washington Metropolitan Council of Governments (WMCOG) to market and promote rideshare strategies to employers within Montgomery and Prince George's Counties where Carroll County residents are employed and identify those County residents which could benefit from the rideshare program.
- ✓ Promote more use of the existing transit system by conducting periodic monitoring of transit ridership, disseminating transit program information (schedules, routes, stop locations) including advertising and outreach to employment and activity centers to promote the transit system's growth and value to the community and the planning area, incorporating transit needs such as building accessibility and passenger connectivity during the site planning and subdivision process where potential densities and land uses would be supported by more convenient transit availability and/or accessibility, coordinating with SHA and transit operators to include stop placement requirements (like right-of-way, utility, drainage) during road design or reconstruction of existing roadways where routes exist, or where routes are identified in the County's Transit Development Plan and evaluating Bus Stop conditions and provided amenities following the Transit Development Plan Cycle and establish a schedule to upgrade stops based on changes in ridership.
- ✓ Consider creating an "Adopt a Bus Stop" program with larger employers, communities and other major attractions such as shopping centers, where bus transit routes exist or where they are identified in the most recent Transit Development Program.

- ✓ Create and convene a working group to evaluate the County's regulations, codes, design manuals that direct or provide guidance for the design and operations of transportation facilities within the County to determine the requirement for potential amendment if the County were to adopt a Complete Streets Policy.
- ✓ Consider the adoption of a Complete Streets Policy within the Freedom Area.
- ✓ Ensure that necessary right-of-way is acquired through purchase, dedication or condition of development approval to construct roadways which safely accommodate pedestrian and bicycle use.
- ✓ Require pedestrian and bicycle connections between developments even if roadways are not constructed.
- ✓ Continue to program and fund projects ranked in the *Freedom Bicycle and Pedestrian Master Plan* (2014).
- ✓ Initiate Countywide Transportation Analysis and Multimodal Plan.