CAMBRIDGE SYSTEMATICS

Aberdeen Station Area Transit Needs Assessment and Market Analysis

Task 1 – Transit Needs Analysis

final

report

prepared for

Maryland Department of Transportation

prepared by

Cambridge Systematics, Inc.

with

KFH Group, Inc.

March 2009

www.camsys.com

final report

Aberdeen Station Area Transit Needs Assessment and Market Analysis

Task 1 – Transit Needs Analysis

prepared for

Maryland Department of Transportation

prepared by

Cambridge Systematics, Inc.
4800 Hampden Lane, Suite 800
Bethesda, Maryland 20814

with

KFH Group, Inc.

March 2009

Table of Contents

1.0 Background **1-1**
1.1 Report Content 1-2

2.0 Service Area Characteristics **2-1**
2.1 Geographical Area 2-1
2.2 Demographics –Destinations, Origins, and Travel Patterns 2-1

3.0 Existing Transit Related to APG **3-1**
3.1 Harford Transit 3-1
3.2 Cecil Community Transit 3-4
3.3 MTA Commuter Bus 3-5
3.4 MARC/Amtrak 3-8
3.5 Carpools and Vanpools 3-11
3.6 Taxi and Intercity Bus 3-11
3.7 Pedestrian/Bicycle 3-11
3.8 Park-and-Ride Lots 3-12
3.9 APG Sponsored Services 3-13

4.0 Transit Improvements Already Planned **4-1**
4.1 Harford TDP Fixed Route Service Alternatives 4-1
4.2 MARC Growth and Investment Plan (MGIP) 4-1
4.3 MTA Commuter Bus Improvements 4-2
4.4 Multimodal Center 4-3
4.5 Other Possible BRAC Improvements 4-3

5.0 Challenges **5-1**
5.1 The Nature of EULs 5-1
5.2 Getting Transit onto Post 5-2
5.3 Other Challenges 5-2

6.0 Transit Opportunities **6-1**
6.1 Transit Markets 6-1
6.2 Transit Opportunities 6-2

7.0 Planning Assumptions **7-1**

8.0 Potential Improvement Strategies **8-1**
8.1 Ridesharing Program 8-1
8.2 Transit Improvements Already Planned 8-4
8.3 Aberdeen BRAC Transit Improvements Alternatives 8-6

Table of Contents
(continued)

9.0 Impact of Service Improvements on Aberdeen Station 9-1
9.1 Number of Buses to/from Aberdeen Station 9-1
9.2 Buses at One Time (Need for Bus Bays) 9-1

10.0 Cost Estimation and Funding Analysis 10-1
10.1 Preliminary Operating Costs Estimates 10-1
10.2 Preliminary Capital Costs Estimates 10-4
10.3 Revenue Sources 10-6

11.0 Prioritization Needs 11-1
11.1 Priority Matrix 11-1
11.2 Preliminary Priorities 11-2

Appendix A
Maps of Development Areas from APG-BRAC EIS A-1

Appendix B
Summary of Experiences at Other Bases B-1

Appendix C
DOD Regulations on Shuttles and Mass Transit C-1

List of Tables

2.1 Summary of Midcase Scenario Impacts from Sage Policy Group Report 2-5

2.2 APG Home-Based Work Productions/Attractions by Mode to APG *Aberdeen and Edgewood Areas* 2-9

2.3 APG Home-Based Work Productions/Attractions by Mode to APG *Aberdeen Area* 2-10

2.4 APG Home-Based Work Productions/Attractions by Mode to APG *Edgewood Area* 2-10

3.1 Daily Ridership at Key Stops 3-3

3.2 MTA Commuter Bus Routes in Harford County 3-6

3.3 MARC Service Timetable 3-9

8.1 Carpooling Versus Driving Alone 8-2

8.2 Harford TDP Operating Service 8-5

8.3 Aberdeen BRAC Operating Service Transit Improvements Alternatives 8-9

8.4 MARC Service Enhancements 8-20

9.1 Total Potential Number of Vehicles Accessing the Aberdeen MARC Station Daily 9-2

10.1 Operating Cost of Service 10-2

10.2 Vehicle Capital Cost Estimates 10-5

11.1 Alternative Priority Matrix 11-2

List of Figures

2.1 Aberdeen Proving Ground and Surrounding Area 2-2

2.2 Conceptual Site Plan 2-4

2.3 Harford County Projected Population Density *2015* 2-7

2.4 Aberdeen Total Attraction Trips by TAZ *2000* 2-11

2.5 Aberdeen Total Attraction Trips by TAZ *2015* 2-12

2.6 Aberdeen Total Attraction Trips by TAZ *2035* 2-13

2.7 Edgewood Total Attraction Trips by TAZ *2000* 2-15

2.8 Edgewood Total Attraction Trips by TAZ *2015* 2-16

2.9 Edgewood Total Attraction Trips by TAZ *2035* 2-17

2.10 Aberdeen Proving Ground (APG) Drive Time Analysis 2-19

3.1 Harford Transit 3-2

3.2 Glasgow Routes 40 and 41 Express 3-5

3.3 MTA Route 420 Commuter Bus 3-7

3.4 MARC Train Service 3-8

8.1 Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives 8-8

8.2 Aberdeen Transit Improvements and Regional Population Density 8-12

8.3 Aberdeen BRAC Transit Improvements and BRAC Households by TAZ 8-13

8.4 Aberdeen BRAC Transit Improvements and Total Attraction Trips to APG in 2000 8-14

8.5 Aberdeen BRAC Transit Improvements and Total Attraction Trips to Edgewood in 2000 8-15

List of Figures
(continued)

8.6 Aberdeen BRAC Transit Improvements and Total Attraction Trips to APG in 2015 8-16

8.7 Aberdeen BRAC Transit Improvements and Total Attraction Trips to Edgewood in 2015 8-17

8.8 Aberdeen BRAC Transit Improvements and Total Attraction Trips to APG in 2035 8-18

8.9 Aberdeen BRAC Transit Improvements and Total Attraction Trips to Edgewood in 2035 8-19

A.1 Aberdeen Proving Ground *Harford County, Maryland* A-1

A.2 Aberdeen Proving Ground *Proposed Action Development Areas* A-2

A.3 Aberdeen Proving Ground *Proposed Action Development Areas on the Northern Peninsula* A-3

A.4 Aberdeen Proving Ground *Proposed Action Development Areas on the Southern Peninsula* A-4

A.5 Harford County *Development Envelope* A-5

1.0 Background

In November 2005, the Department of Defense (DOD) began a process called Base Realignment and Closure, or BRAC, to reorganize so that it could be more efficient and effective. This was the sixth round of BRAC and it will result in the reduction of 13 installations around the country.[1] The required completion date for BRAC actions is September 15, 2011.[2] As a consequence of the BRAC process, the number of jobs at the Aberdeen Proving Ground (APG) installation is slated to increase substantially.

The Chesapeake Science and Security Corridor (CSSC), home to Aberdeen Proving Ground, includes Harford, Baltimore, and Cecil Counties and Baltimore City, Maryland, as well as strategic partners Chester, York, and Lancaster Counties in Pennsylvania, New Castle County, Delaware, two metropolitan planning councils (Baltimore and Wilmington), the Greater Baltimore Committee, and the Economic Alliance of Greater Baltimore. CSSC brings together eight jurisdictions in three states to ensure a successful BRAC implementation and high quality of life for those who live and work in our growing defense community. The APG-CSSC Regional BRAC Office is grant funded through the Office of Economic Adjustment and serves as a communications clearinghouse and event coordination hub for regional BRAC-related information and activities.

Maryland Department of Transportation (MDOT), Maryland Transit Administration (MTA), and State Highway Administration (SHA) have been working with the APG region and Maryland's other BRAC impacted regions to identify BRAC-related transportation priorities, including studies on intersection improvements, station relocation, station capacity, and other transit needs.

Historically, transit planning in this region has focused on moving people southbound to jobs in Baltimore and Washington, D.C. However, the service analysis needs to address a variety of origins and destinations as the total transit capabilities must now accommodate workers inbound to central/eastern Harford County from Baltimore County and Baltimore City to the south, Cecil County and southern Delaware/Pennsylvania to the north, and from western Harford County.

Due to the unknowns of BRAC impacts, overall growth, and commuter behavior, the purpose of this study is to define the scope of improvements which may be needed to meet anticipated growth as well as to increase transit ridership at the current Aberdeen and Edgewood MARC Stations. MDOT, MTA, and SHA are working with Harford County,

---

[1] APG Maryland Welcome and Relocation Guide, 2007-2008, page 6.

[2] Harford County BPAC Action Plan. Revised May 1, 2008, page 1.

the City of Aberdeen, and APG to study transit, optimal location of the station, and facility needs for multimodal connectivity. This study is the first of two phases and includes both the *Market Analysis of Aberdeen Area* and *Transit Needs Assessment.* This report addresses the existing conditions for the *Transit Needs Assessment* only.

The Transit Needs Assessment is focused on a number of goals:

- To identify transit needs and multimodal connections in the Aberdeen area, particularly due to BRAC, projected population and ridership growth, and improvements anticipated in the MARC Growth and Investment Plan (MGIP).
- To determine whether the transit needs in the Aberdeen area can be accommodated at the existing Aberdeen MARC/Amtrak Station.
- To promote the use of mass transit by inbound and outbound commuters/local area residents and relieve congestion.

1.1 Report Content

This report includes:

- Service Area Characteristics, including current and anticipated changes in demographic and land use as a result of BRAC as they relate to transit potential;
- Existing Transit Services, including bus, commuter rail, shared ride services, bicycle/pedestrian, and taxi/intercity bus;
- Transit Improvements Already Planned or Programmed;
- Conclusions Regarding Additional Transit Opportunities;
- Summary of Potential Transit Markets;
- Potential Improvements;
- Preliminary Cost Estimates and Funding Analysis; and
- Initial Prioritization of Services.

2.0 Service Area Characteristics

2.1 Geographical Area

Aberdeen Proving Ground (APG) is comprised of two geographically separated areas. The main post, referred to as the Aberdeen area, is on the northern peninsula, and the Edgewood area is on a peninsula to the south. The APG is primarily within Harford County on 39,000 acres of land, and 33,000 acres of water. (See Figure 2.1.)

The impact area for BRAC-related changes at APG has been described as the seven jurisdictional areas that includes Harford, Cecil, and Baltimore Counties and Baltimore City in Maryland, as well as York and Lancaster Counties, Pennsylvania and New Castle County, Delaware.[3] Obviously, the area most impacted will be Harford County.

2.2 Demographics – Destinations, Origins, and Travel Patterns

Destinations – How Many New Jobs and Where Will They Be Located?

Currently, more than 7,500 civilians work at Aberdeen Proving Ground, and more than 5,000 military personnel are assigned there. In addition, there are nearly 3,000 contractors and private business employees embedded on the proving ground.[4] The post is home to more than 2,000 military family members.

It is anticipated that by 2011, there will be between 18,000 to 23,000 new jobs at the post.[5] This includes an additional 8,200 military jobs that are set to move to APG. Contractor support, both on and off the post, is expected to increase by 10,000 to 15,000 jobs. The number of contractor jobs that could be located at the Enhanced Use Lease (EUL) sites at APG could account for 5,000 jobs by 2011 and 5,000 more jobs in the years beyond 2011.

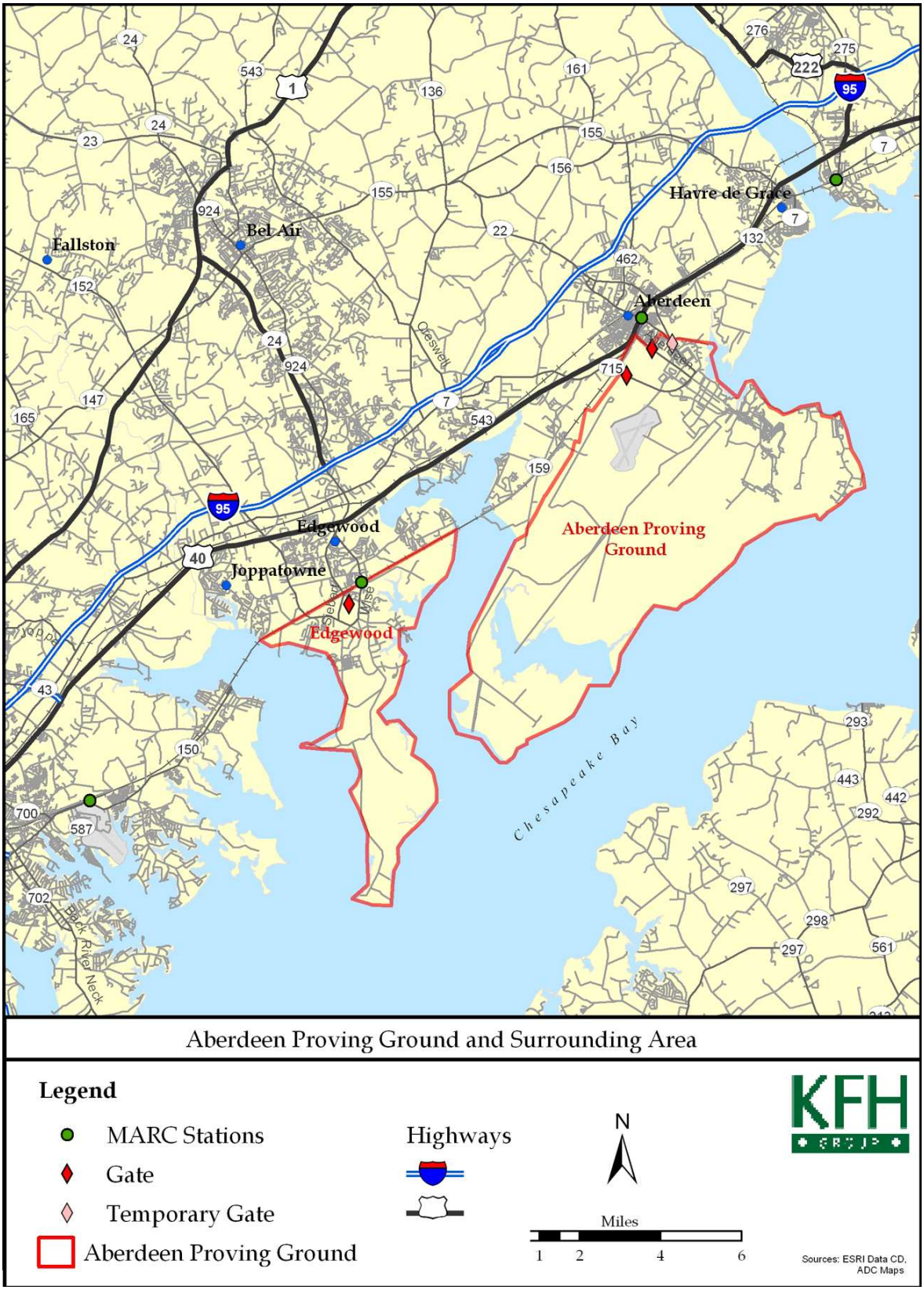
---

[3] Chesapeake Science and Security Corridor (CSSC) Consortium and Sage Policy Group Report on *Aberdeen Proving Ground BRAC Impacts on Seven Jurisdictions*, September 2007.

[4] APG web site. Also Harford TDP, page 1 to 20.

[5] One estimate is that there could be as many as 28,000 to 33,000 new jobs associated with APG as a result of BRAC but this includes the indirect jobs – secondary jobs – needed to support the growth (e.g., in the restaurants and retail areas surrounding the post).

Figure 2.1 Aberdeen Proving Ground and Surrounding Area



The majority of the employees filling these new positions are civil service rather than military who are entitled to available post housing. These civilians will live off the installation and commute from homes in the local region.

On-Post Jobs. There currently are nine major army commands at the APG with nearly 70 tenants and 15,500 military and civilian personnel.[6] To accommodate BRAC changes, construction of new housing currently is underway near the MD 22 gate.[7] Construction of 13 buildings part of the Army's Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) functions also are under construction near the MD 715 gate.

Currently, there are three gates for personnel and visitors to APG, two for the Aberdeen area and one for the Edgewood area:

- Aberdeen Area Gates – MD 22 (open weekdays) and MD 715 (24/7); and
- Edgewood Area Gates – MD 24 (24/7).

In addition, during construction, the Aberdeen area is using the gate at Aberdeen Boulevard. This is an important gate due to its proximity to the Aberdeen train station.

Enhanced Use Leases (EUL). Contractors building on Federal land under enhanced use leases (EUL) will continue to build for future housing and employment centers as necessary to support the shifts in functions at APG.

Current EUL sites anticipated for APG are:

- **Aberdeen Area –** A 400-acre EUL at Maryland Boulevard (MD 715) referred to as the G.A.T.E. It is anticipated that this will be a two million-square-foot development – OPUS is the developer and the project is sometimes referred to as "OPUS East." Looking at the site plan for the complex (see Figure 2.2), it appears that some parcels in the development may be able to be served through the Aberdeen Boulevard gate. It also appears that the roadway configuration in the EUL is not particularly transit-friendly.

- **Edgewood Area –** There was a 1,300-acre EUL planned within the boundaries of the Edgewood area referred to as the Lauderick Creek project. It is unclear whether this will move forward.

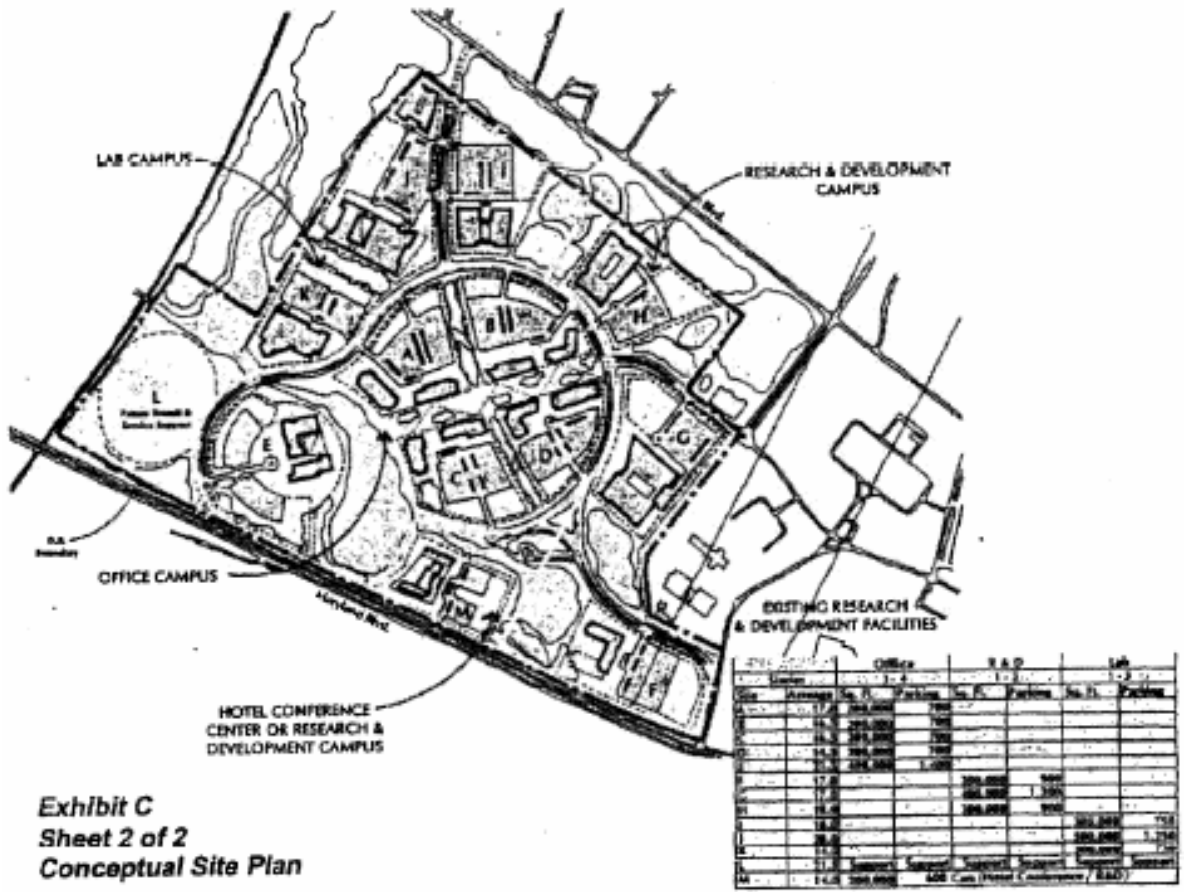
It is unclear, but important from a transit standpoint, whether the EUL building will be inside or outside the fence. Apparently, the developer and building tenants have some say on where the fence line is located.

---

[6] State of Maryland BRAC Action Plan Report. December 2007.

[7] Telephone conversation with Syretta Gross on August 12, 2008.

Figure 2.2 Conceptual Site Plan



Other Off-Post Development. Off-post development also is increasing as a result of BRAC. Corporate Office Properties Trust (COPT) plans to build the largest office park in Harford County just outside the post near the MD Route 22 gate. The office complex is slated to be 800,000 square feet and the site has been annexed into the City of Aberdeen. The COPT site is planned to have an 800,000-square-foot office complex that would, presumably, employ some contract and support personnel. Apparently, the entire COPT development will be outside the fence/gate. No site plan currently is available for the COPT site.

Other projects that include mixed uses also are being developed. Belcamp, just south of Aberdeen, but in between the Edgewood area and APG also is being looked at for development.[8]

---

[8] Sernovitz, Daniel. *COPT Plans Harford Company Office Park*. Baltimore Business Journal. July 20, 2007.

Summary. All this is still developing. It is not yet known where the support and contract jobs will be located (inside or outside the fence) and which gates will be involved.

Origins – Where Will People Live?

Where new employees will live is still being determined. The local Maryland jurisdictions in the Baltimore region have identified where they assume the new BRAC-related housing will be located and provided these assumptions as inputs to the Baltimore Metropolitan Council's (BMC) travel demand model (discussed below).

Sage Policy Group Report. In addition, the Sage Policy Group report for the Chesapeake Science and Security Corridor (CSSC) estimates that the APG BRAC will create almost 28,000 jobs, attract 17,000 households, and increase the population in the seven jurisdictions affected by about 45,000 people (Table 2.1).

Table 2.1 Summary of Midcase Scenario Impacts from Sage Policy Group Report
2008

Jurisdiction	Employment	Households	Population
Harford County	19,236	7,059	19,059
Baltimore County	4,849	5,168	13,954
Cecil County	1,460	1,984	5,357
Baltimore City	941	877	2,368
York County	586	835	2,254
Lancaster County	266	379	1,025
New Castle County	281	380	1,025
Total	**27,619**	**16,682**	**45,042**

Transit Potential Areas from the Transportation Development Plan (TDP). I-95 carries the most traffic through Harford County.[9] The 2000 Census reported that 52 percent of Harford County residents worked within the county. Baltimore County and Baltimore City were the main out-of-county destinations for Harford residents. Seventy-seven percent of people working in Harford County live in the county.

The recent TDP also looked at population density as an indicator of where fixed route transit services might be appropriate in the County. Typically, the rule of thumb is that areas with population densities of 1,000 persons per square mile may be able to support some form of fixed route service, albeit at relatively low service frequencies. Areas with 2,000 persons per square mile or greater may be able to support fixed route transit with higher frequencies. Figure 2.3 from the TDP indicates that the areas along the I-95/U.S. 40 and MD 24 corridors could support fixed route services.

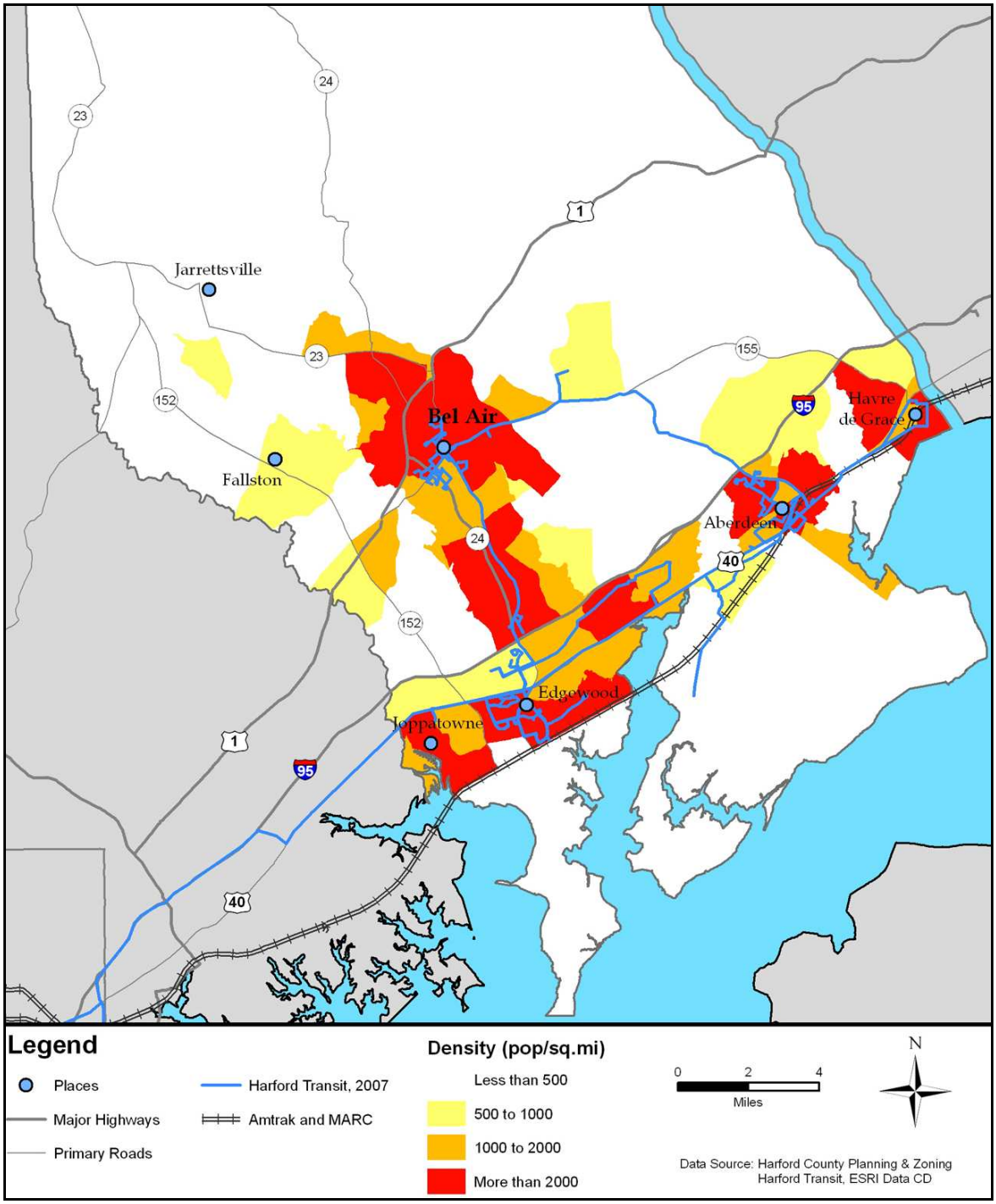
The Maryland BRAC Report. A study by the Maryland Department of Planning (MDP) analyzed the counties that are directly and indirectly impacted by the influx of BRAC related workers. A major component of this report was the potential impacts on housing supply and demand.

For each transportation analysis zone (TAZ), a determination was made that estimated new household demand by jurisdiction and income grouping. Using this projected household demand, the report predicts the capacity of each jurisdiction's existing and projected housing inventory to satisfy the expected demand.

Next, an allocation of BRAC housing demand to housing supply was performed. In Harford County, there is an abundance of households projected by TAZ. The highest numbers are primarily situated along MD Route 24, the I-95/U.S. Route 40 Corridor between Edgewood and Riverside, and around Aberdeen and Havre de Grace. However, significant concentration is also projected for the northwest portion of the County including Jarrettsville. In Cecil County, the primary allocation of households is around Rising Sun (north-central part of the County) and around Elkton. The highest BRAC housing potential for Baltimore County is in White Marsh and in the surrounding area just southeast around Middle River.

[9] Harford County TDP, page 1-20.

Figure 2.3 Harford County Projected Population Density
2015



Travel Patterns – Linking Origins with Destinations

Travel Patterns from the Model. One tool that is being used to predict the need for transit trips to/from the APG is the Baltimore Metropolitan Council's (BMC) model.[10] The current BMC travel model and database covers 10 jurisdictions: Baltimore City, District of Columbia, and the counties of Baltimore, Anne Arundel, Carroll, Harford, Howard, Frederick, Montgomery, and Prince George's. There are a total of 1,421 zones and 42 external stations.[11] The model inputs include the location, within TAZs, of current and anticipated housing, jobs, and transportation infrastructure.

At this point in the process, the model is being used to explore the total number of trips that are predicted to be attracted to and produced from the two TAZs representing the APG areas in 2000, 2015, and 2035. It is important to keep in mind that these are not jobs, rather the trips produced from or attracted to (Productions and Attractions) a particular zone; so one job at APG could involve two trips "attracted" to the area, one trip to and one trip from.

The model inputs have been updated by the local jurisdictions to account for changes attributable to BRAC. It is noted that the update includes new jobs located on the post, including within the new EULs, as well as on surrounding off-post sites. The analysis done to date only includes attractions to the on-post jobs. When the model is run for the alternatives, we also will look at productions/attractions to the surrounding TAZs.

This analysis allowed us to look at potential transit corridors to/from the post. Once alternatives have been developed, we will run the model to estimate whether demand for the alternative warrants implementation. While the model is not an effective tool to predicting ridership, per se, it will allow us to compare alternatives.

Travel Patterns To/From APG. As shown below, the model results indicate that the TAZs that encompass APG attracted about 20,000 trips and produced about 13,000 trips. BRAC increases attractions to over 33,000 in 2015 and almost 47,000 in 2035.

---

[10] The Cube/TP+ software package developed by Citilabs, version 3.2.1, is used to apply the current BMC model and this same software was selected for the new model. This model uses the conventional "four-step" process. The model was calibrated using a 2001 home interview survey, 2000 Census data, and a 1996 on-board transit survey. Personal travel is categorized by seven-trip purposes. The nonpersonal (vehicle) trips are classified as commercial, medium truck, and heavy truck. The trip production model uses trip rates, applied to households. The trip distribution model is a standard gravity model. Mode choice uses a nested-logit model. The time of day model is a factor model which splits daily trips into four time periods: a.m. peak (6:30 a.m. to 9:30 a.m.), midday (9:30 a.m. to 3:30 p.m.), p.m. peak (3:30 p.m. to 6:30 p.m.), and night (6:30 p.m. to 6:30 a.m.).

[11] The model was enhanced in 2006 to meet the new requirements for the Federal Transit Administration's (FTA) New Starts capital grants program for fixed guideway transit systems.

Looking at the APG as a destination that might be served with transit, BRAC is projected to increase the potential number of trips by 63 percent by 2015 and 129 percent in 2035. Note that few transit trips are projected since there currently is little transit service offered to the post. Another thing of note is the relatively high level of ridesharing, with about one-third of all trips in the HOV mode. This indicates that this group of commuters may be more receptive to ridesharing than the population as a whole,[12] as shown in Table 2.2.

Table 2.2 APG Home-Based Work Productions/Attractions by Mode to APG

Aberdeen and Edgewood Areas

		Daily – All Day		
		Year		
		2000	2015	2035
Single-Occupancy Vehicle (SOV)	Productions	7,260	9,745	12,061
	Attractions	12,961	22,326	32,024
High-Occupancy Vehicle (HOV)	Productions	6,163	7,190	8,127
	Attractions	7,518	11,005	14,827
Transit	Productions	29	31	27
	Attractions	1	1	2
Total	**Productions**	**13,452**	**16,966**	**20,215**
	Attractions	**20,480**	**33,332**	**46,853**

Tables 2.3 and 2.4 break out the productions and attractions by area. As shown, by far, most of the trips are to/from the Aberdeen area. However, it is worth noting that the Edgewood area is expected to have almost a 600 percent increase while the Aberdeen area is projected to increase only 85 percent. However, the distribution of new jobs between the two areas is uncertain; there does not seem to be consensus among local planners and DOD on this issue.

[12] Nationally, 12 percent of commuters' journey to work via carpool; in Maryland, this figure also is 12 percent.

Table 2.3 APG Home-Based Work Productions/Attractions by Mode to APG
Aberdeen Area

		Daily – All Day		
		Year		
		2000	2015	2035
Single-Occupancy Vehicle (SOV)	Productions	6,160	7,496	9,397
	Attractions	12,004	15,828	23,422
High-Occupancy Vehicle (HOV)	Productions	4,919	5,497	6,281
	Attractions	6,727	8,165	11,299
Transit	Productions	20	20	17
	Attractions	1	1	2
Total	**Productions**	**11,099**	**13,013**	**15,695**
	Attractions	**18,732**	**23,994**	**34,723**

Table 2.4 APG Home-Based Work Productions/Attractions by Mode to APG
Edgewood Area

		Daily – All Day		
		Year		
		2000	2015	2035
Single-Occupancy Vehicle (SOV)	Productions	1,100	2,249	2,664
	Attractions	957	6,498	8,602
High-Occupancy Vehicle (HOV)	Productions	1,244	1,693	1,846
	Attractions	791	2,840	3,528
Transit	Productions	9	11	10
	Attractions	-	0	0
Total	**Productions**	**2,353**	**3,953**	**4,520**
	Attractions	**1,748**	**9,338**	**12,130**

Figures 2.4, 2.5, and 2.6 provide a graphical representation of the model predicted attractions to APG from the various TAZs in the region; beginning in 2000 and then in 2015 and 2035. Again, these numbers do not include trips from Cecil County (20 percent in 2000 – probably concentrated in Perryville), Pennsylvania (3 percent), and Delaware (2 percent).

Figure 2.4 Aberdeen Total Attraction Trips by TAZ
2000

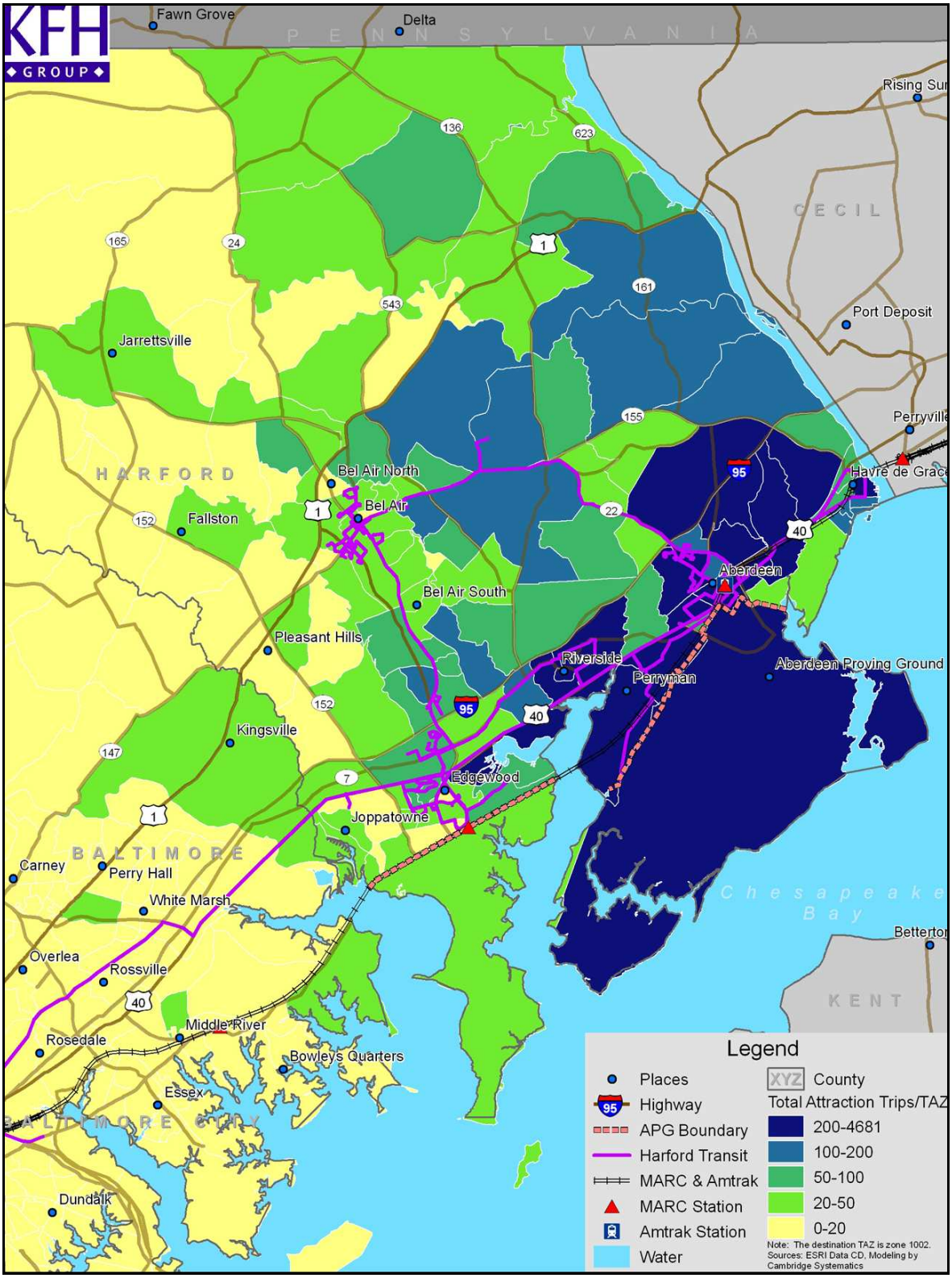


Figure 2.5 Aberdeen Total Attraction Trips by TAZ
2015

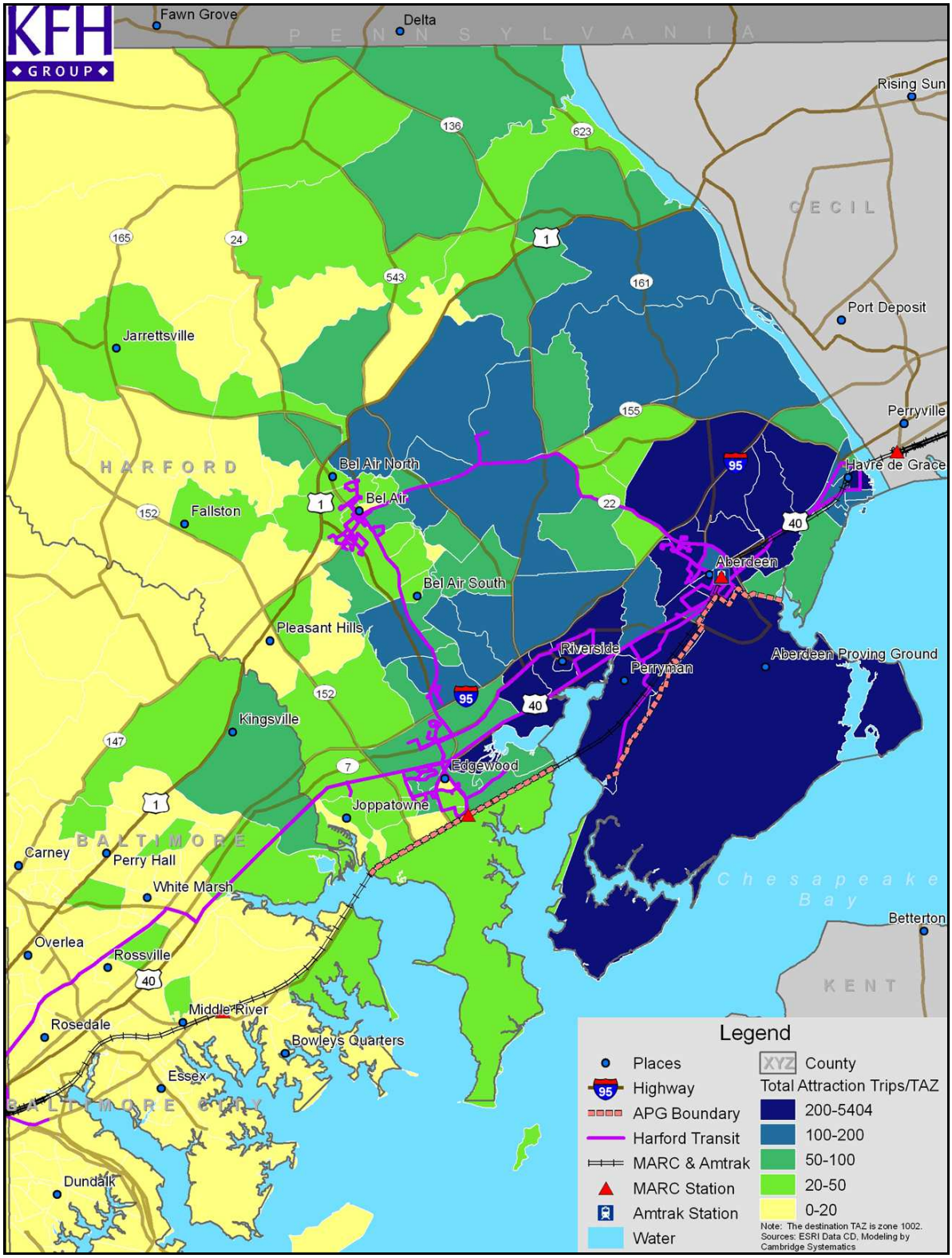
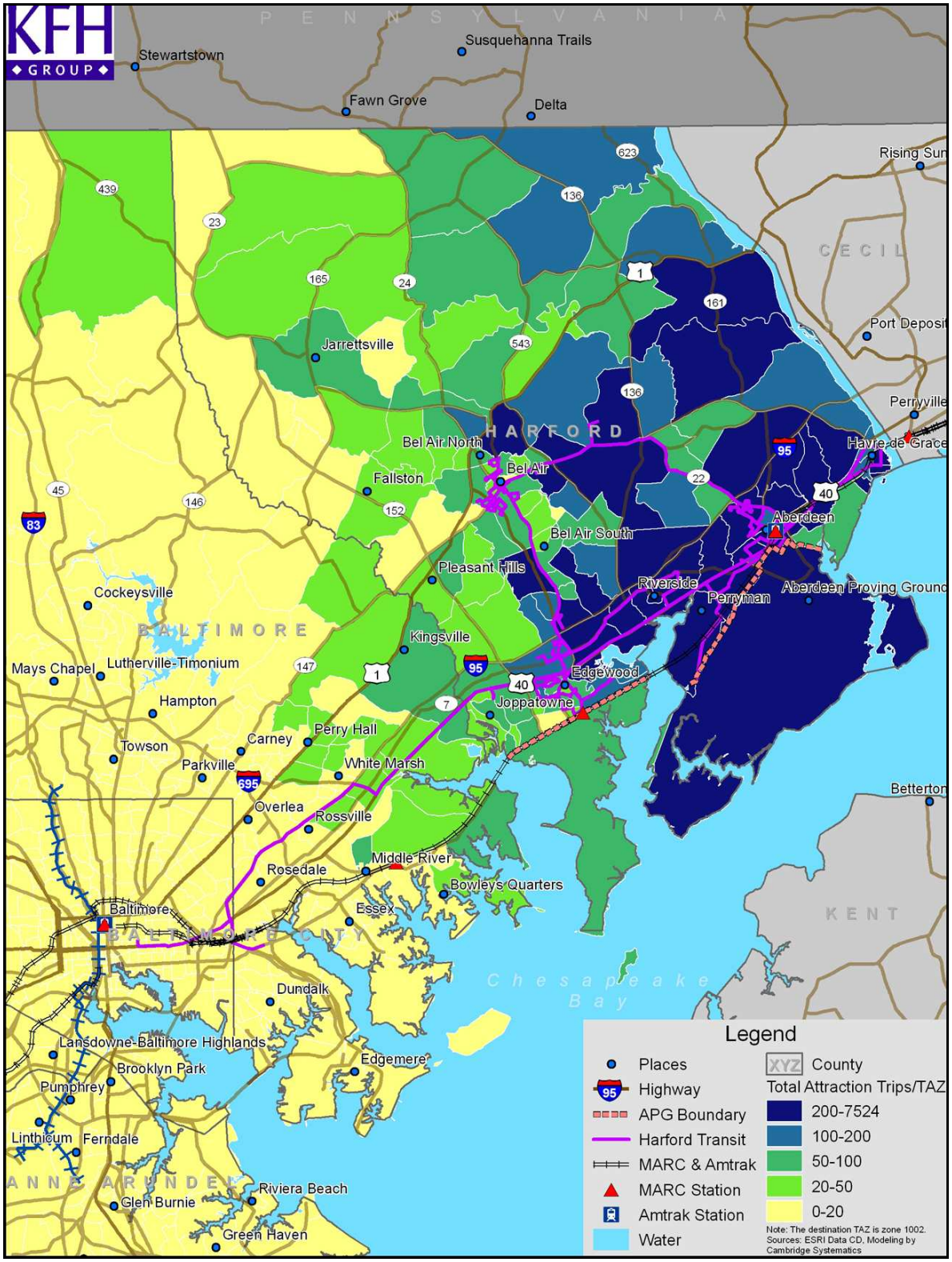


Figure 2.6 Aberdeen Total Attraction Trips by TAZ
2035



Assuming transit might be able to capture 5 to 10 percent of the trips, only those areas in dark blue or perhaps mid-blue color would warrant some type of local fixed route services to the post. Major corridors include:

- From Havre de Grace;
- Within the City of Aberdeen;
- Along the I-95/U.S. 40 corridor north of Aberdeen; and
- Along Pulaski Highway/U.S. 40 from Edgewood to APG.

There also are some areas along the MD 161 corridor and MD 543/MD 136 corridors with moderately high numbers of trips to the Aberdeen area. In 2015 and 2035, the areas with higher concentrations of trips spread to more TAZs along I-95. The model does not show a significant number of trips from people living in Baltimore and commuting to the post, although those trips might have a higher transit mode split because of their length.

Looking at the same set of maps (Figures 2.7, 2.8, and 2.9) for trips attracted to the Edgewood area shows a potential need for transit along the MD 24 corridor from south of Bel Air. This corridor already is served by Harford Transit on three routes although the routes do not go to APG.

External Trips to the Post. The model does not include the area north of Harford County. However, 2000 Census data indicate:

- **Cecil County.** Twenty percent of the employees at APG commuted from Cecil County; and
- **North of Cecil County.** Two percent of the employees at APG commuted from Delaware and three percent commuted from Pennsylvania.

Potential Impact of Transit Oriented Development on Transit Use

The ridership estimates performed to date do not take into account the increase in transit use that can occur if a higher density mixed use Transit Oriented Development (TOD) project were created in the area. However, research shows that effective TOD can achieve transit commuter mode splits of between 5 percent to 50 percent. Given the level of transit service in Aberdeen (commuter rail and local bus service but no heavy or light rail line), it is likely that the transit mode split would be on the lower side, perhaps 5-10 percent, as compared to the current Harford County mode split of 1 percent based on the 2000 Census. Some experiments with the Transit Villages Initiatives in New Jersey, have shown that at 16 communities where aggressive steps were taken to revitalize the quarter-mile to half-mile radius around a commuter train station, communities with only commuter rail and local transit can increase transit usage significantly.

Figure 2.7 Edgewood Total Attraction Trips by TAZ
2000

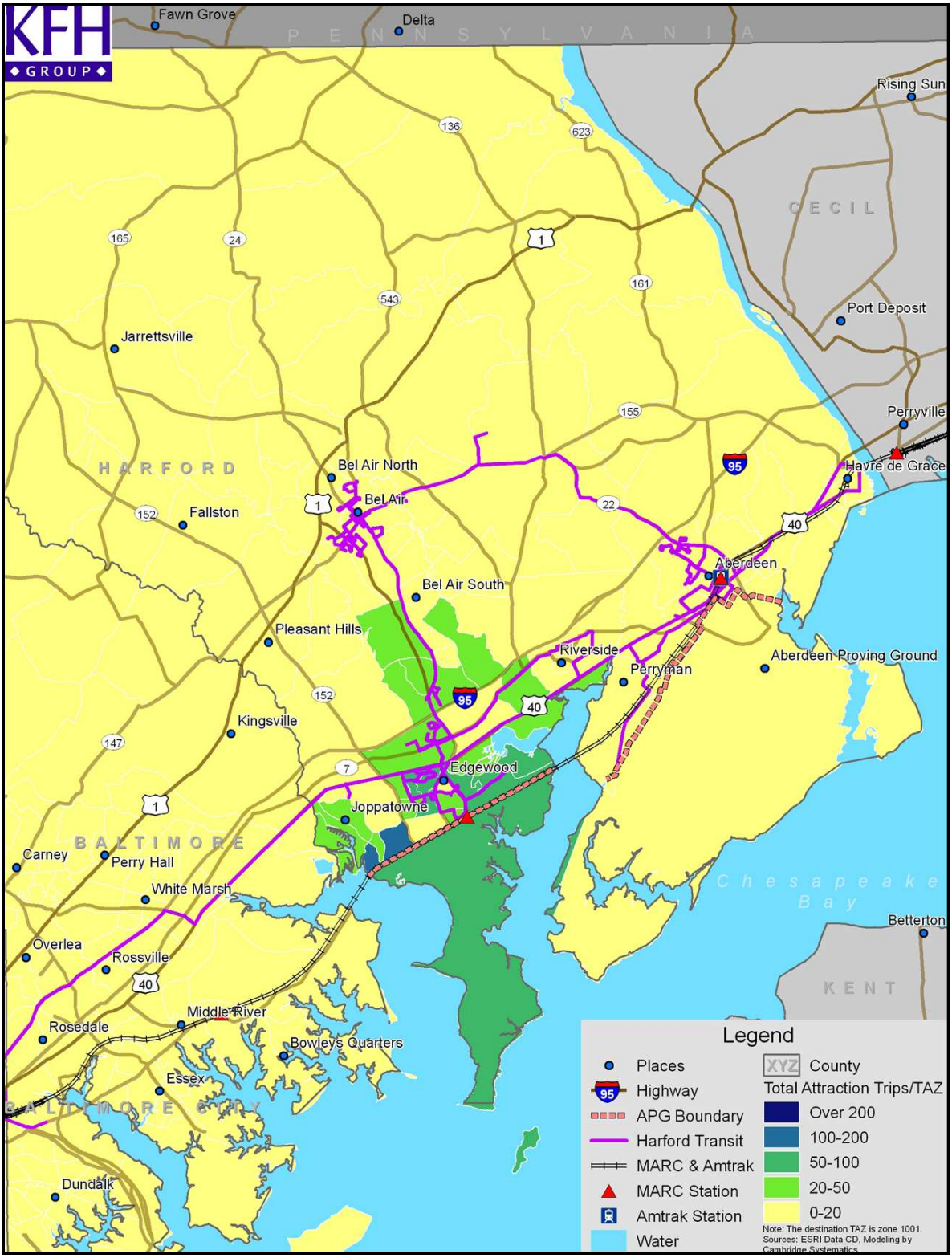


Figure 2.8 Edgewood Total Attraction Trips by TAZ
2015

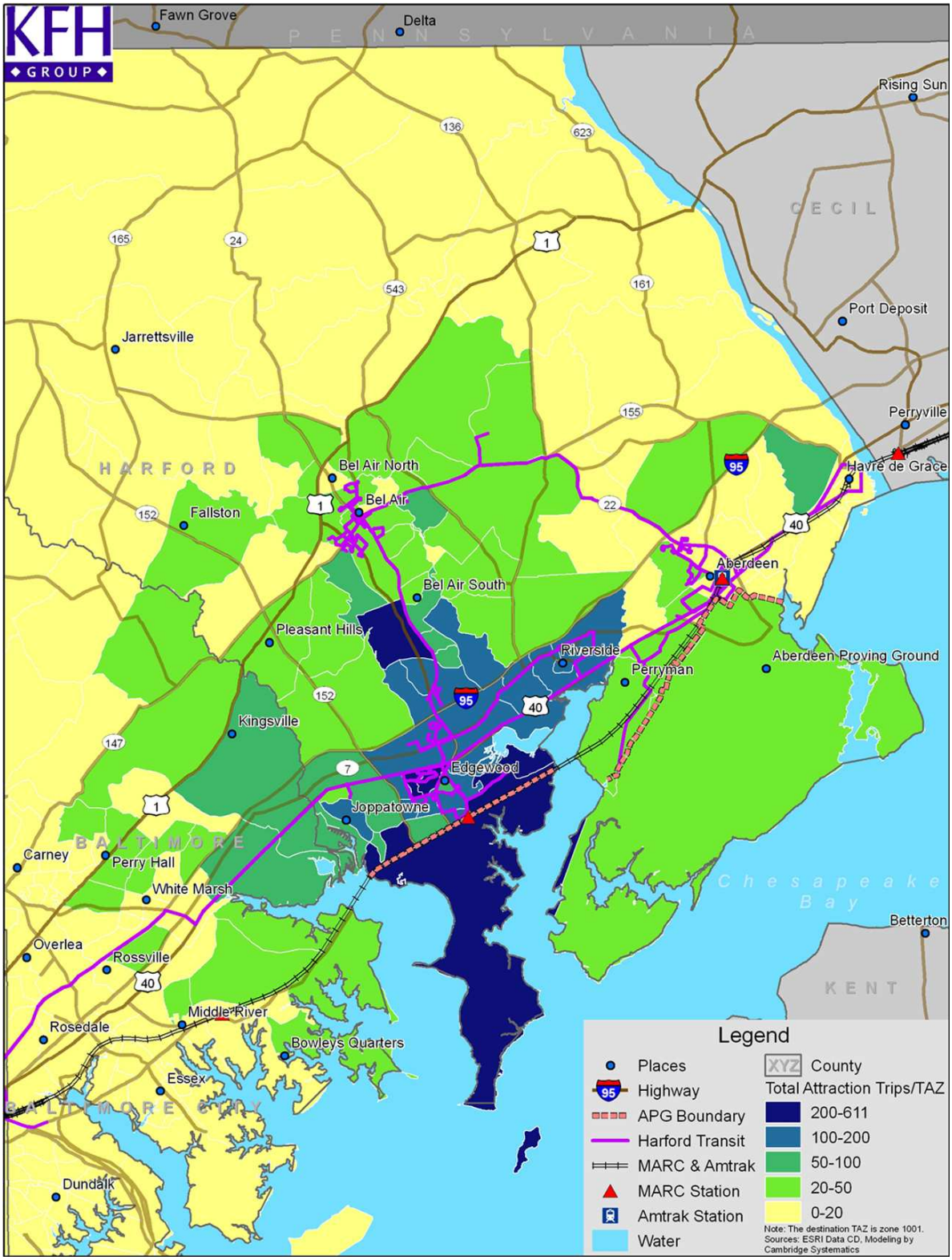
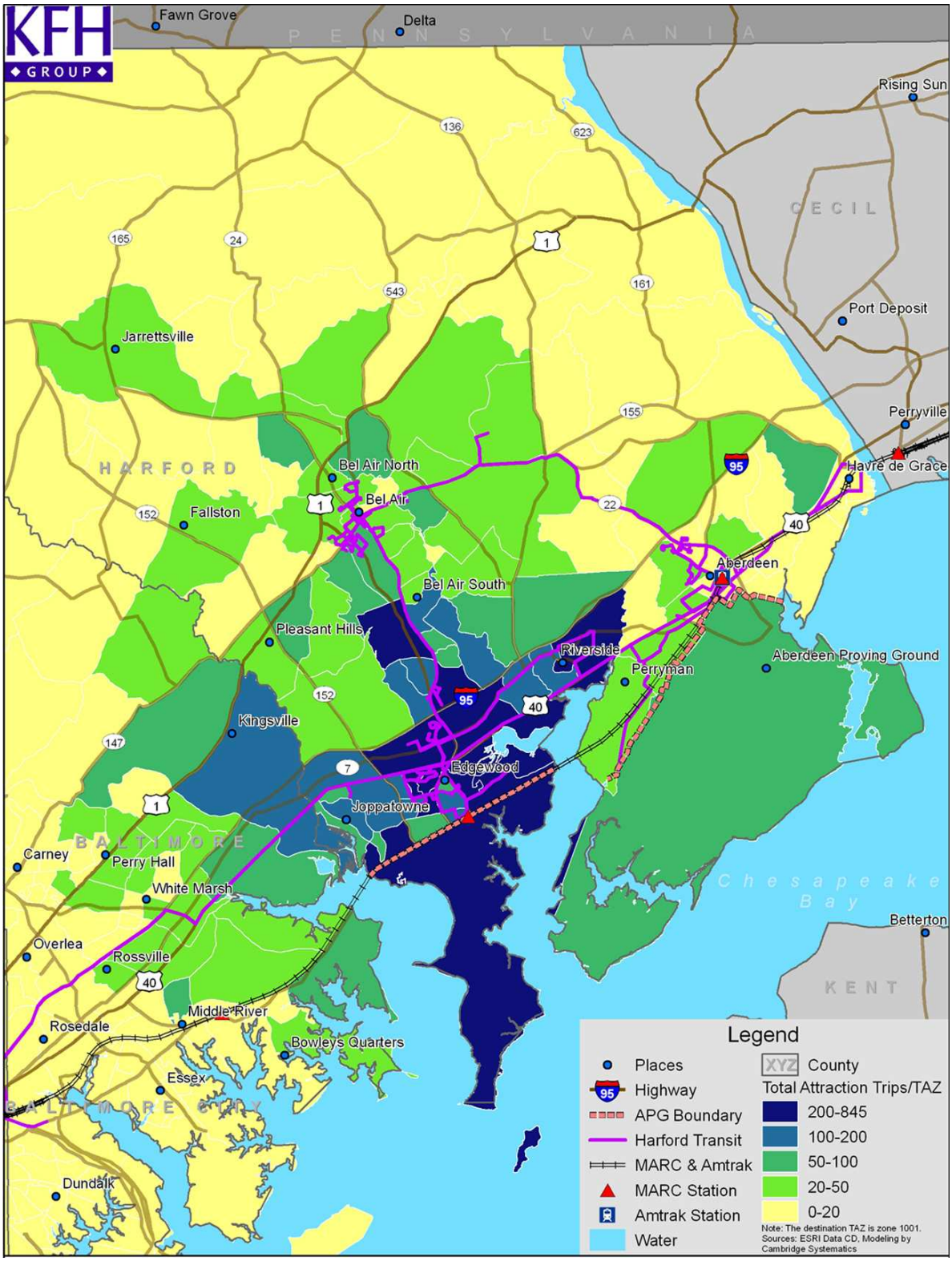


Figure 2.9 Edgewood Total Attraction Trips by TAZ
2035



Other Studies of Travel Patterns

The market analysis is being performed concurrently by BAE. Other reports provide some clues as to commuter preferences:

Sage Report. The report produced by the Sage Policy Group in September 2007, *Aberdeen Proving Ground BRAC Impacts on Seven Jurisdictions,* included a number of conclusions that could affect transit use.

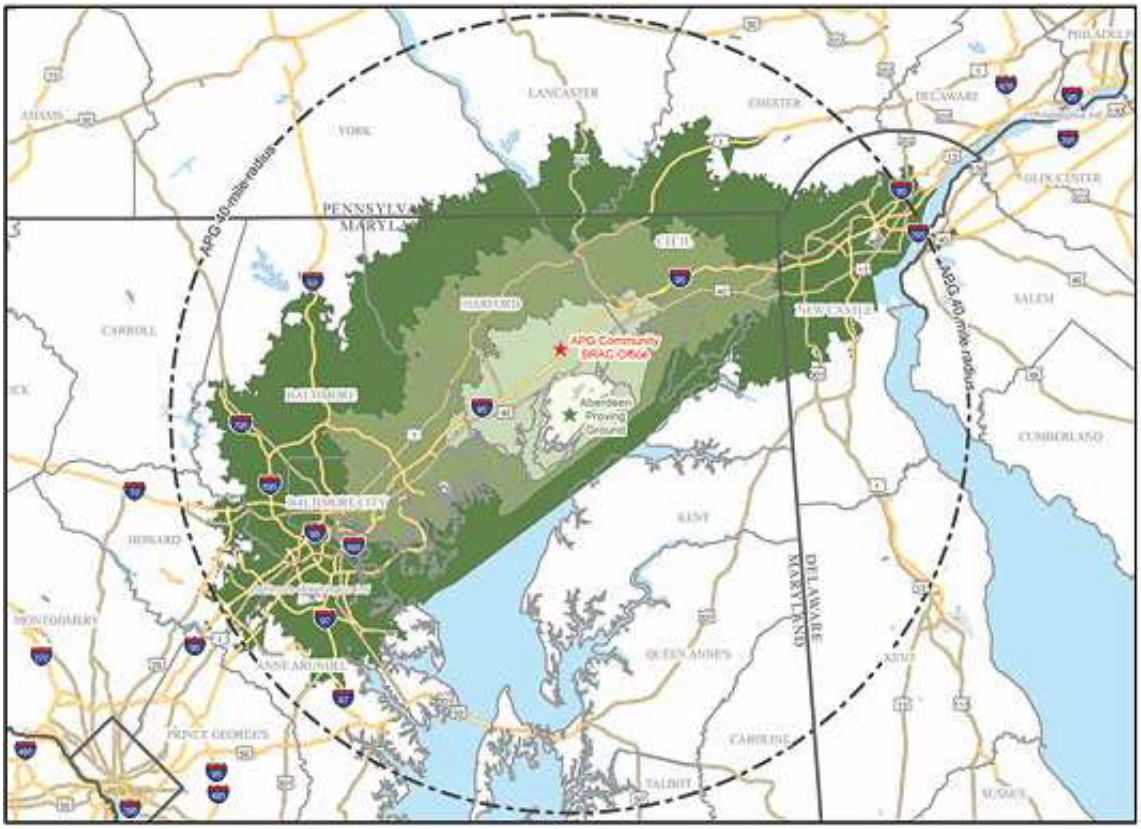
- BRAC-related households average income is $109,000 in 2007 dollars;
- Eighty-six percent of commuters will live in owner-occupied housing; increase 17,000 households/45,000 population;
- Commuters by County:
  - Forty-six percent would live in Harford;
  - Twenty-six percent in Baltimore County;
  - Thirteen percent in Cecil County;
  - Three and one-half percent in Baltimore City; and
  - Eleven and one-half percent in Howard and Anne Arundel Counties; Pennsylvania.
- Preferences for shorter commutes:
  - Fifty-five percent – will only commute 30 minutes or less; and
  - Thirty percent – willing to commute 31 to 44 minutes.

Chesapeake Science and Security Corridor (CSSC) Drive Time Analysis. Figure 2.10 shows the travel sheds for various auto commute times. Communities within the 30-minute drive time that 55 percent of commuters are willing to travel are shown in white and light green. This includes the communities along I-95/U.S. 40 in southern Harford County and into the southern end of Cecil and very northern end of Baltimore County. The shed would include a corridor most of the way north to Bel Air.

Expanding the commuter time shed to 45 minutes (medium green) picks up a broader area, including all of Bel Air and the I-95 corridor from Baltimore City to Delaware border.

When applying these preferences to transit service, it has to be acknowledged that transit travel times are longer than drive-along travel times. A rule of thumb would be that travel times on transit are generally two times the auto times. Depending on the mode (speed), this could make our potential transit shed to the white and light green areas.

Figure 2.10 Aberdeen Proving Ground (APG) Drive Time Analysis
0 to 60 Minutes – 15-Minute Intervals



Fort Monmouth, New Jersey Relocation Survey. A relocation survey was conducted of Fort Monmouth employees in 2006 which also incorporated their current and planned transportation preferences. Two of the key questions and responses are highlighted below.

- How far are you willing to commute to APG?
  - 10 miles or less (15 minutes or less) – 12 percent
  - 10-20 miles (15-30 minutes) – 39 percent
  - 20-30 miles (30-45 minutes) – 32 percent
  - 30-40 miles (45-60 minutes) – 11 percent
  - More than 40 miles (more than 1 hour) – 6 percent

The vast majority of respondents – 83 percent revealed that they are only willing to commute a maximum of 45 minutes.

- Which transit option are you most likely to use?
  - Auto – Drive Alone – 78 percent
  - Carpool/Vanpool – 10 percent
  - Commuter Bus – 1 percent
  - Local Transit/Neighborhood Shuttle – 2 percent
  - MARC/Commuter Rail with Shuttle – 8 percent

The response underscores the notion that the new employment shed is predominantly "choice" commuters – individuals with access to a car and not transit dependent. If this survey is a true representation of future transportation preferences, a ridesharing program which highlights carpool and vanpool options should be a central component to the transportation alternatives available to the region.

Conclusions on Transit Markets

Clearly, most of the new jobs at APG will be filled by people with a choice of automobile over transit – often referred to as "choice riders." Attracting this group of people to transit could help alleviate projected increases in traffic at morning commuter approaches to the Aberdeen area at I-95/Exit 85 and various points along U.S. 40 and MD 7, 22, 24, 755, and 543.

It is important that Harford Transit also serve people employed at the secondary or induced jobs at the retail establishments that will follow employment growth at the post; people who may be transit dependent.

3.0 Existing Transit Related to APG

This section presents the existing transit services available for commuters to and from the APG and related facilities.

3.1 Harford Transit

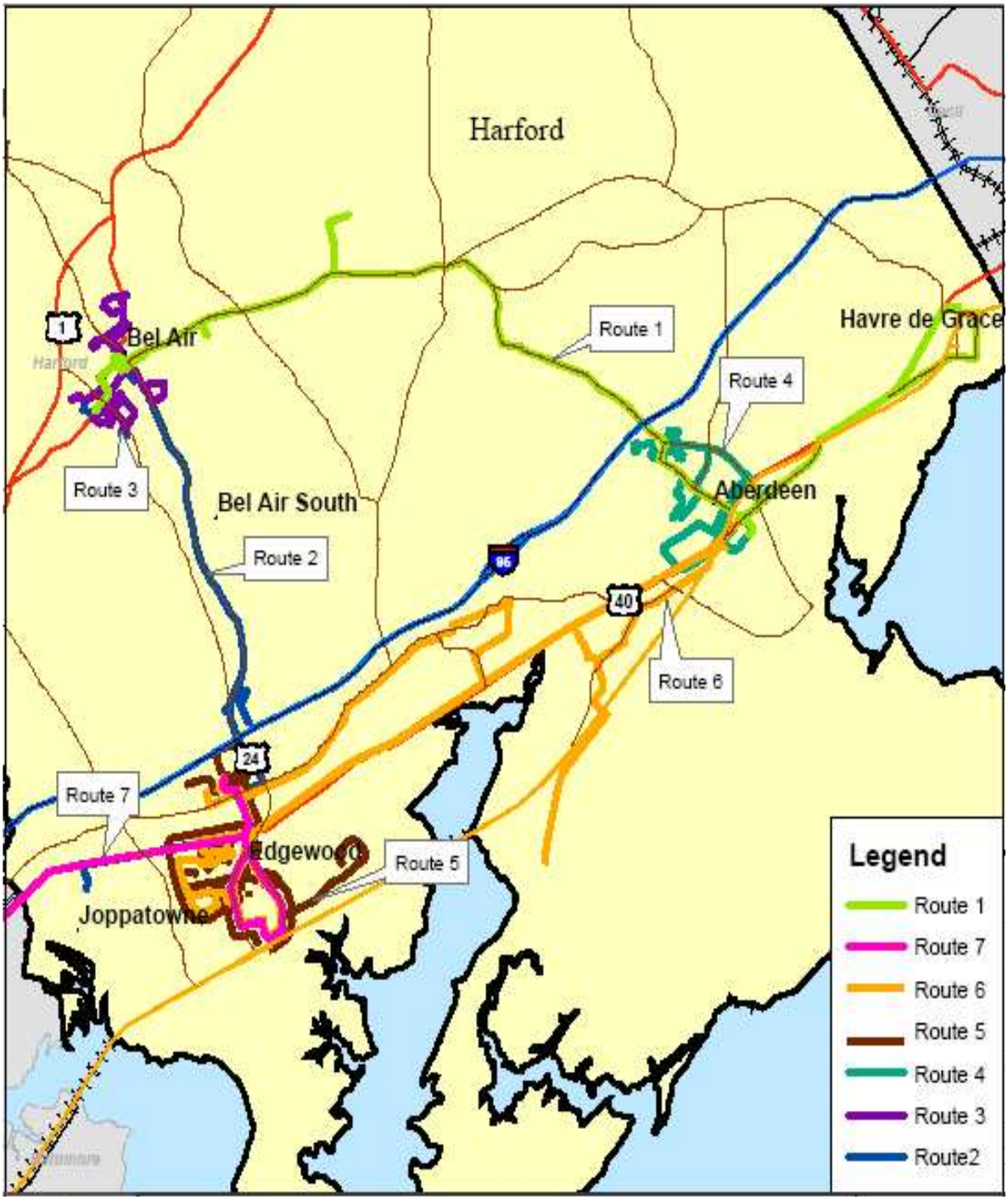
Services

Harford Transit operates seven deviated fixed routes in the county, Monday through Friday. Routes 1, 4, and 6 serve the city of Aberdeen. Routes 2, 5, 6, and 7 serve Edgewood Park-and-Ride/Edgewater Village. None of the Harford Transit routes currently serve either of the post areas. No transit services currently are provided north to Cecil County or into Delaware/Pennsylvania. However, Route 7 is a new Job Access Reverse Commute (JARC) route that provides reverse commute service to the south from Edgewater Village to Baltimore.

As shown in Figure 3.1:

- Route 1 runs east-west from Havre de Grace to the Aberdeen Amtrak/MARC Station. Part of this route overlaps with MTA Route 420;
- Route 2 runs north-south from Joppatowne to a park-and-ride lot on MD 24 to Abingdon and Bel Air;
- Route 4 serves Aberdeen at the MARC Station and key shopping, employment, and housing locations;
- Route 5 serves residential and employment centers in Edgewood;
- Route 6 runs northeast-southwest from Aberdeen to Edgewood. The service runs from the Aberdeen MARC Station to the Edgewood Shopping Plaza; and
- Route 7 is a Job Access Reverse Commute (JARC) route that runs from the Edgewood Village Shopping Center to Baltimore.

Figure 3.1 Harford Transit
Routes 1 through 7



Routes run generally between 6:00 a.m. and 6:30 p.m. with the exception of Route 6, which starts an hour earlier, and JARC Route 7. Route 7 operates four runs in each direction per

day. Southbound trips are at 5:13 a.m., 1:38 p.m., 3:30 p.m., and 11:55 p.m. Northbound trips originate at 5:50 a.m., 2:20 p.m., 4:30 p.m., and 12:35 a.m. Most intermediate stops require a passenger to call request a stop for either direction of travel.

Ridership

Based on reports from 2004 to 2007, of the six non-JARC routes, the two most traveled routes that travel to Aberdeen or Edgewood are Route 1 with 89,322 one-way trips and Route 6 with 44,718 total one-way trips in 2007. All routes experienced a decrease in ridership between 2006 and 2007 except for Route 1, whose ridership grew 21 percent.

Table 3.1 shows the average daily use of key stops in the Aberdeen and Edgewood areas among the non-JARC fixed routes. These numbers were compiled from a three-day period of data collection in February 2006.[13]

Table 3.1 Daily Ridership at Key Stops *In Aberdeen and Edgewood*[a]

	Aberdeen Train Station	Edgewood Park-and-Ride	Edgewater Village[b]
Route 1	132		
Route 2		10	103
Route 4	9		
Route 5		0	66
Route 6	107	Not served	55

[a] Route 7 is funded by JARC and data were not available.

[b] Edgewater Village is on the north side of Edgewood.

Connectivity

One finding from the most recent Harford County Transportation Development Plan (TDP) was that the circuitous nature of the routes discourages potential customers and limits productivity of routes.

[13] By Glen Hoge of the MTA.

Although multiple routes serve the Aberdeen MARC/Amtrak Station, there is no current Harford Transit connection to the Edgewood MARC/Amtrak Station or either area of the APG post. Furthermore, the park-and-ride lot closest to the Edgewood area of the APG is rarely used by people riding transit. Ridership in the Edgewood area is highest further north near U.S. 40, west of MD 24.

There also is no general public transit service between Cecil and Harford Counties although the TDP includes a route that connects to Perryville.

3.2 Cecil Community Transit

Services

Cecil Community Transit has a number of services, including fixed routes, door-to-door services, and ADA complementary paratransit.

"THE BUS" is a fixed route public transportation system, involving bus stops and set times. The system has two bus routes; one providing service between Elkton and Glasgow, via U.S. 40. The second provides service between Elkton and Perryville, also via U.S. 40.

- The Glasgow Connection is a fixed route in Elkton for all ages that begins at 5:30 a.m. and ends at 6:15 p.m. Monday through Friday and from 9:00 a.m. to 2:15 p.m. Saturdays. This connection travels between the Town of Elkton and People's Plaza in Glasgow, Delaware.

- The Perryville Connection is a fixed route in Elkton for all ages that begins at 6:00 a.m. and ends at 6:30 p.m. This connection travels between Elkton, North East, Perryville, the MARC Train, and Perry Point, Maryland.

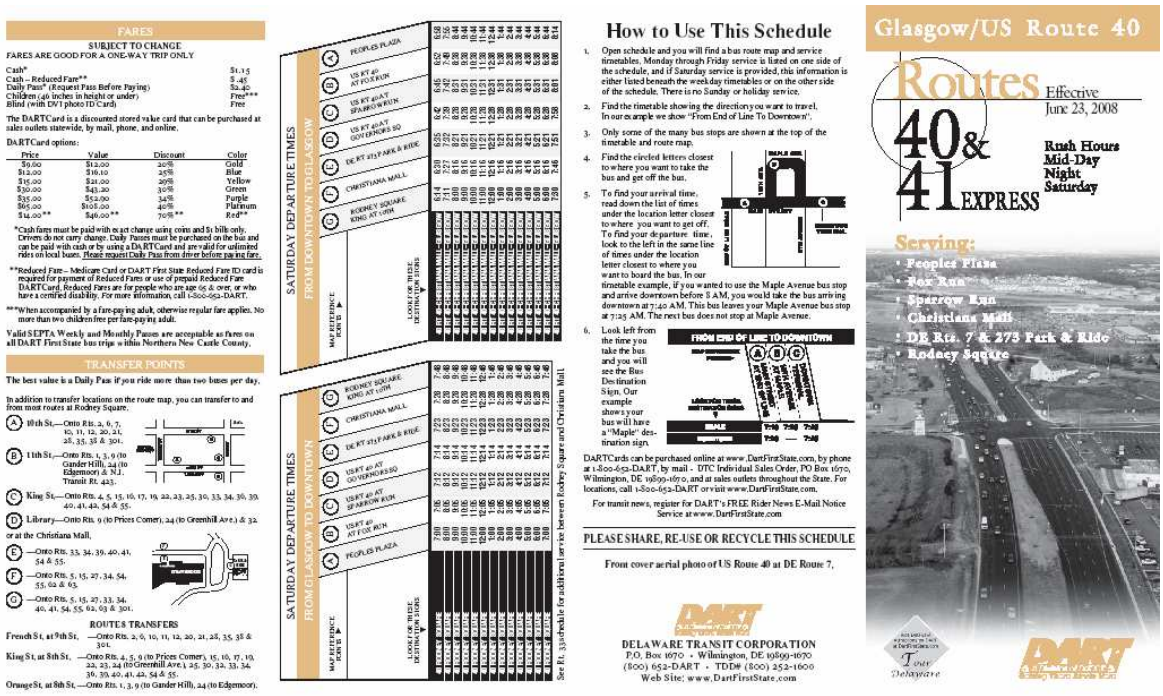
The **C.T. Cruiser** is a countywide, curb-to-curb transit service for all ages, which must be scheduled in advance. The C.T. Cruiser operates Monday through Friday from 8:00 a.m. to 4:00 p.m., on a first-come, first-served basis.

Connectivity

While Cecil Transit does not connect directly to Harford Transit routes, its does provide connections to other services that could serve APG commuters. From the north, there are some, albeit limited, connections to DART services in Delaware. To the south, there are connections to MARC services.

DART First State. As indicated, the Glasgow Connection allows Cecil County riders the ability to transfer at People's Plaza in Glasgow to DART First State's Route 40 service to Christiana Mall, Delaware Park-and-Ride lots on DE 7 and DE 273 and Wilmington's Rodney Square. DART First State's Bus Route 40 connects to Cecil Community Transit's "The Bus," with service to Elkton and Perryville, Maryland.

Figure 3.2 Glasgow Routes 40 and 41 Express



■ 3.3 MTA Commuter Bus

Services

MTA operates four fixed routes that serve Harford County. Route 420 runs between Havre de Grace and Baltimore with a stop at the Aberdeen MARC Station. Routes 410, 411, and 412 all run roughly from Bel Air to Baltimore, without service to Edgewood or Aberdeen. The MTA commuter buses generally run in peak directions (into Baltimore in the morning and out in the afternoon/evening), during peak commute hours. Route 420 is the only route with a stop near APG with its stop at the Aberdeen MARC/Amtrak Station. For residents in the southern portion of the County, the 420 also serves the White Marsh Park-and-Ride (but has no stop at the Edgewood MARC Station). Route 420 also has one midday run outbound.

Table 3.2 MTA Commuter Bus Routes in Harford County
Average Daily Ridership for FY 2008

MTA Route	Commuter Bus Service	One-Way Trips (FY 2008)
420	Havre de Grace/Downtown Baltimore	286
410	Churchville and Bel Air/Downtown Baltimore	289
411	Hickory and Bel Air/Downtown Baltimore	267
412	Forest Hill and Bel Air/Downtown Baltimore	157

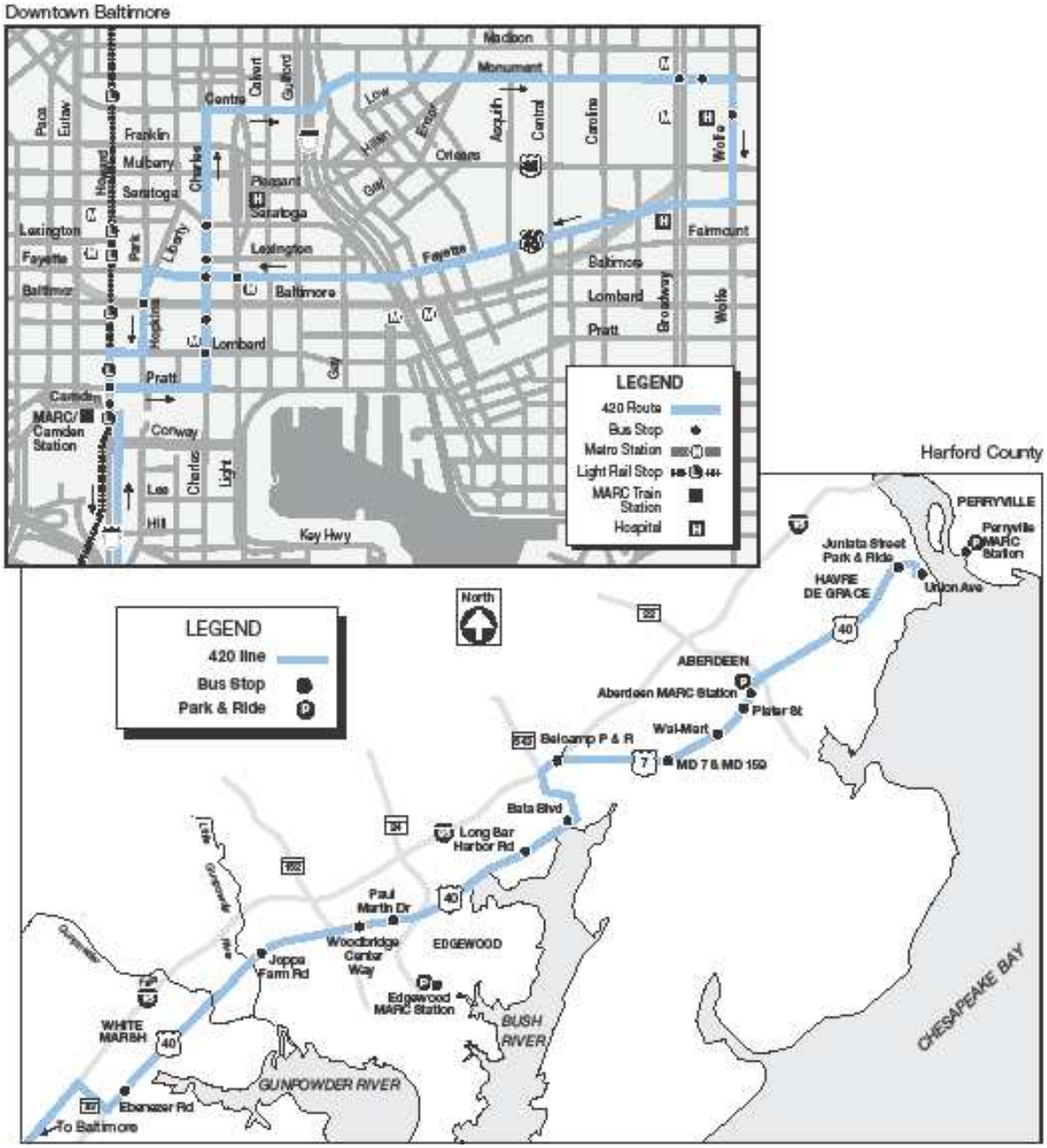
Recent figures for the Route 420 (September 2008) indicate that ridership has increased to about 353 daily one way trips. Only 9-10 riders board and alight at the Aberdeen MARC Station which is to be expected since the MARC service parallels the Commuter Bus route to a large extent. On January 12, 2009, MTA reduced services on Commuter Bus routes in Harford County by:

- Eliminating the 412 route; and
- Eliminating one round trip (one am run and one p.m. run) on the 420, 411, and 410 routes.

Connectivity

It is possible for a passenger on an MTA commuter bus to connect with other transit systems such as the MARC Train at Aberdeen, WMATA through a connection with the MARC Train at Union Station, Harford County Transit, through a connection at the Aberdeen MARC Station, and MTA buses in Baltimore City and County.

Figure 3.3 MTA Route 420 Commuter Bus

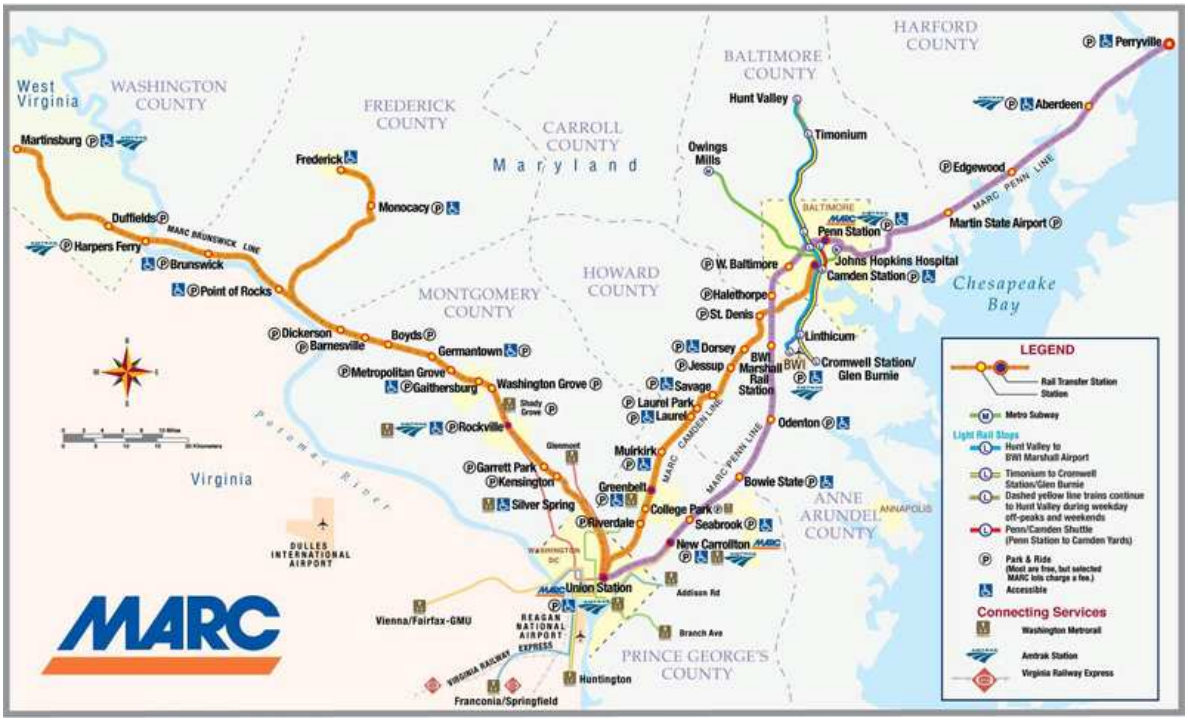


3.4 MARC/Amtrak

Services

The MARC Penn Line runs from Perryville in Cecil County to Union Station in Washington, D.C., with stops in Aberdeen and Edgewood Monday through Friday. There are 12 stations on the 75-mile route and services are oriented in the traditional peak directions with most service operating into Baltimore or Washington the a.m. peak and outbound in the p.m. peak. Both stations are staffed during limited hours.

Figure 3.4 MARC Train Service



The Penn Line operates Monday through Friday. The service generally operates in the peak hours and peak direction and, with eight daily trips in each direction, headways are about 45 minutes to 1 hour. There is little service during the off-peak and no service on weekends. On weekdays, one trip is northbound in the morning, two trips are south in the evening, and one trip is northbound in the midday. Trip times vary and some runs stop at stations that allow for discharging passengers only. A southbound trip from Aberdeen to Baltimore's Penn Station takes between 28 and 47 minutes. Aberdeen to Washington's Union Station takes between 1 hour and 17 minutes and 1 hour and 35 minutes. The timetable of the MARC service is shown in Table 3.3.

Table 3.3 MARC Service Timetable

PENN LINE NORTHBOUND Monday through Friday only — Effective 09/08/08

TRAIN NUMBER		400 S	402 S	506	406	408 S	410	412 S	414 S	416 S	418	520 S	422	424 S	A148 Amtrak	426 S/Q	428 Q	530 Q	432 S/Q	450 Q	534 S/Q	436 Q	538 S/Q	440 S/Q	A188 Amtrak	442 S/Q	544	446	448
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
Washington	DP	5:54	6:45	7:12	7:21	7:37	8:15	8:45	9:30	10:30	11:15	12:25	1:20	2:15	z3:02	3:27	4:15	4:24	4:46	5:10	5:20	5:34	6:05	6:49	z7:10	7:30	8:40	10:05	11:00
New Carrollton	DP	6:05	6:55	7:23		7:49	8:26	8:56	9:41	10:41	11:26	12:36	1:31	2:26	z3:13	3:38		4:35	4:58	5:21	S	5:45	6:16	6:51	z7:22	7:41	8:51	10:16	11:11
Seabrook	DP	6:08				7:53	8:30		9:45	10:45	11:30	12:40	1:35	2:30		3:42		4:39	5:02	5:25		5:50	6:21	6:56		7:46	8:55	10:20	11:15
Bowie State	DP	6:14				7:58	8:35		9:50	10:50	11:35	12:47	1:42	2:37		3:49		4:46	5:08			5:56	6:27	7:03		7:52	9:01	10:26	11:21
Odenton	DP	6:19		7:35		8:03	8:41		9:56	10:56	11:41	12:54	1:48	2:42	No Fixed Return Service Washington	3:56		4:53	5:18		S	6:02	6:33	7:10	No Fixed Return Service Washington	7:59	9:07	10:32	11:27
BWI Marshall Airport	DP	6:26	7:10	7:42		8:11	8:50	9:11	10:03	11:03	11:48	1:01	1:56	2:49	z3:31	4:05	L4:40		5:27		L5:44	6:11	6:42	7:18	z7:28	8:07	9:16	10:39	11:34
Halethorpe	DP					d8:15	d8:54		10:07	11:07	11:52	1:06	2:01	2:54		L4:11	L4:46		5:34		L5:54	6:16	L6:47	7:23		8:12	d9:21	d10:43	d11:38
West Baltimore	DP					d8:21	d9:00		10:14	11:14	11:59	1:13	2:08	3:01		L4:17	L4:52		5:42		L6:03	6:25	L6:54	7:30		8:18	d9:27	d10:49	d11:44
Baltimore/Penn	DP	6:45	7:25	8:00	7:53	8:37	9:12	9:30	10:27	11:27	12:12	1:22	2:17	3:12	z3:46	4:27	5:04	5:14	5:57	6:01	6:12	6:37	7:06	7:45	z7:56	8:30	9:36	11:03	11:59
Martin Airport	DP			8:12								d1:34			Weekly Monthly Ticket Holder Only			L5:25			d6:22		L7:16		Weekly Monthly Ticket Holder Only		d9:47		
Edgewood	DP			d8:25								d1:48						L5:35			d6:34		L7:26				d9:57		
Aberdeen	DP			d8:33								d1:58			z4:09			d5:43			d6:49		L7:36		z8:17		d10:05		
Perryville	AR			8:46								2:10						6:02			7:02		7:51				10:18		

PENN LINE SOUTHBOUND Monday through Friday Only — Effective 09/08/08

TRAIN NUMBER		401 S/Q	503 S/Q	405 Q	407 Q	509 S/Q	411 Q	513 S/Q	A151 Amtrak	415 S/Q	417 S/Q	A181 Amtrak	419 S	521	423 S	425	427 S	429 S	431 S	433	535 S	437 S	439	A85 Amtrak	441 S	443	445	A137 Amtrak	447	A179 Amtrak
		AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM	PM
Perryville	DP		4:40			5:40		6:30	r6:52					9:01							3:00									
Aberdeen	DP		4:48			5:48		6:38	7:00			8:37		9:08							3:08			5:15						
Edgewood	DP		4:58			5:58		6:48	r7:07					9:17							3:16									
Martin Airport	DP		5:10			6:10		7:00						9:27							3:25									
Baltimore/Penn	DP	4:40	5:25	5:56	6:17	6:25	7:00	7:15	x	7:40	8:10	Y	9:05	9:45	10:50	11:40	12:40	1:40	2:45	3:30	3:45	4:50	5:20	5:42	6:25	7:25	8:40	8:51	9:30	10:40
West Baltimore	DP	4:47	5:32	6:02	6:25	6:33	7:07	7:22		7:47	8:16		9:11	9:51	10:56	11:46	12:46	1:46	2:51		3:51	S	5:26		S				9:36	
Halethorpe	DP	4:53	5:38	6:08	6:30	6:38	7:13	7:28		7:52	8:21		9:16	9:55	S	11:51	12:51	1:51	2:56		3:57	S	5:31						9:41	
BWI Marshall Airport	DP	4:59	5:44	6:14	6:37	6:45	7:19	7:35	x	7:58	8:26	Y	9:21	10:03	11:05	11:56	12:56	1:56	3:01	3:44	4:02	5:03	5:36		6:39	7:38	8:53	9:04	9:46	10:53
Odenton	DP	5:06	5:52	6:22	6:45	S	7:27	S		8:07	8:33		9:28	10:10	11:12	12:03	1:03	2:03	3:08		4:09	5:10	5:43		6:46	7:45	9:00		9:53	
Bowie State	DP	5:13	5:59	6:29		6:55	7:34			8:14	8:40		9:35	10:15	11:18	12:09	1:09	2:09	3:14		4:15	5:16	5:49		6:51	7:51	9:06	Weekly Monthly Ticket Holder Only	9:59	Weekly Monthly Ticket Holder Only
Seabrook	DP	5:19	6:06	6:36		7:01	7:41			8:20	8:46		9:40	10:21	S	12:15	1:15	2:15	3:20		4:21	5:21	5:55		S				10:05	
New Carrollton	DP	5:24	6:10	6:41	6:56	d7:05	7:46		x	8:24	8:50	Y	9:45	10:25	11:26	12:19	1:19	2:19	3:24	4:01	4:26	5:25	6:00		6:59	7:59	9:14	d9:17	10:09	d11:12
Washington	AR	5:37	6:23	6:56	7:09	7:25	8:00	8:05	8:19	8:36	9:10	9:43	10:06	10:40	11:40	12:35	1:35	2:35	3:41	4:20	4:42	5:38	6:15		7:15	8:25	9:30	9:37	10:25	11:20

c Connecting bus. Passengers change from Penn Line MARC Train at Odenton Station. Passengers not carried locally between points served by Bus. Will not operate on holidays.

d Train will stop to discharge passengers only. Passengers must notify conductor upon boarding.

f Flag stop at this station: trains will pick up passengers standing on platform, and visible to engineer. Trains will discharge passengers at this station if passengers have notified conductor upon boarding.

L Train may leave 5 minutes early.

Q Trains operating with a "Quiet Car". No cell phones, electronic devices that make noise, or loud conversations. Quiet Car is adjacent to locomotive. "Quiet Car is a registered service mark of Amtrak®."

r Train stops at this station only to receive passengers.

S ONLY trains designated with an S at the top of the column will operate on Columbus Day, Veteran's Dat (observed) and the Friday after Thanksgiving. In addition on days of heavy snowfall or other severe weather, MARC will operate this special schedule. There is no MARC Train service on Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, Christmas Day, and New Year's Day. For Amtrak service on weekends and holidays call 1-800-USA-RAIL.

On these days only, train 509 will stop at Odenton at 6:50, train 513 at Odenton at 7:40, train 423 at Halethorpe at 11:02 and Seabrook at 11:24, train 437 at West Baltimore at 4:55, Halethorpe at 5:00 train 441 at West Baltimore at 6:30 and Seabrook at 6:55, train 534 at New Carrollton at 5:29 and Odenton at 5:37, train 852 at Riverdale at 6:01, College Park at 6:04, Greenbelt at 6:07 and Jessup at 6:35. Under severe weather conditions Camden Line trains will make all stops.

X Amtrak Train 151-Travel is restricted to Monthly/Weekly ticket holders boarding at PERRYVILLE, ABERDEEN, and EDGEWOOD STATIONS ONLY. Boarding is NOT permitted at Baltimore, BWI, and New Carrollton, discharge only at those locations. Arrival times in Baltimore at 7:24 AM, BWI at 7:48 AM, New Carrollton at 8:02 AM, and Washington at 8:15 AM. MARC tickets are NOT valid on Amtrak trains for travel entirely between Baltimore and Washington. MARC one-way and 10 trip tickets are NEVER valid on Amtrak trains. For more information go to www.mtamaryland.com<http://www.mtamaryland.com> and click on "MARC Train," then "Amtrak Cross Honoring Policies."

Y Amtrak Train 181-Travel is restricted to Monthly/Weekly ticket holders boarding at ABERDEEN STATION ONLY. Boarding is NOT permitted at Baltimore, BWI, and New Carrollton, discharge only at those locations. Arrival times in Baltimore at 8:58 AM, BWI at 9:11 AM, New Carrollton at 9:26 AM, and Washington at 9:43 AM. MARC tickets are NOT valid on Amtrak trains for travel entirely between Baltimore and Washington. MARC one-way and 10 trip tickets are NEVER valid on Amtrak trains. For more information go to www.mtamaryland.com<http://www.mtamaryland.com/>and click on "MARC Train," then "Amtrak Cross Honoring Policies."

Z Amtrak Trains 148 & 188-Travel is restricted to Monthly/Weekly ticket holders whose destination is ABERDEEN STATION ONLY. Train will NOT discharge any MARC ticket holders at Baltimore, BWI, and New Carrollton, boarding only at those locations on route to Aberdeen. MARC tickets are NOT valid on Amtrak trains for travel entirely between Washington & Baltimore. MARC one-way and 10 trip tickets are NEVER valid on Amtrak trains. For more information go to www.mtamaryland.com<http://www.mtamaryland.com/> and click on "MARC Train," then "Amtrak Cross Honoring Policies."

Southbound trains leave Aberdeen at 4:55 a.m., 5:48 a.m., 6:38 a.m., 9:08 a.m., and 3:08 p.m. for all riders, with additional runs at 6:56 a.m., 8:37 a.m., and 5:15 p.m. for weekly and monthly ticket holders. Southbound trains depart from the Edgewood Station 10 minutes after departing the Aberdeen Station.

Northbound service to Aberdeen is available at 8:33 a.m., 1:58 p.m., 5:45 p.m., 6:49 p.m., 7:36 p.m., 10:08 p.m., for all riders, and at 4:09 p.m., and 8:17 p.m. for weekly and monthly

ticket holders. Regular runs arrive at the Edgewood Station approximately 10 minutes earlier than Aberdeen; although the two additional runs available only to those with weekly or monthly passes do not serve Edgewood.

On January 12, 2009, MTA reduced MARC service on the Penn Line. These changes do not affect the Aberdeen area as the service reduction is only for trains that run from Baltimore Penn Station to Washington, D.C.

Ridership

MARC ridership is at an all-time high and demand is expected to grow. The Penn Line carried 19,000 people per day in FY 2007.[14] The state Consolidated Transportation Program (CTP) lists ridership at Edgewater Station as 294 boardings per day in FY 2007.[15] More recent ridership information (June 2008) shows boardings of 215 passengers at the Aberdeen Station and 329 passengers at the Edgewood Station.[16]

The increased ridership has put many of the parking lots at or near capacity, including Perryville, Aberdeen, and Edgewood Stations. All parking is free at the stations. Aberdeen Station has 188 parking spaces, Edgewood has 295 parking spaces and Perryville has 135 spaces.[17] The Edgewood Station is not wheelchair accessible, but is slated to be ADA accessible by FY 2009.[18]

Connectivity

A MARC train rider going south in the peak commute direction can access MTA bus and rail services, WMATA service, and other local bus operators in the Washington, D.C. metropolitan area.

Looking at the Aberdeen and Edgewood MARC/Amtrak Stations as destinations, commuters have limited options to arrive at these stations when coming from the Baltimore or D.C. metropolitan regions. Commuters to these stations who come from Cecil County have service only from the MARC Perryville Station. Commuters from Delaware and New Jersey have a limited number of Amtrak runs.

---

[14] MARC Growth and Investment Plan. Existing System Description, page 6.

[15] 2008-2013 Consolidated Transportation Program. Maryland Transit Administration, line 7, page MTA-7.

[16] Amtrak No. 151 also honors MARC tickets at Perryville, Aberdeen and Edgewood, carrying about 125 additional MARC customers each day.

[17] MARC Train Parking Information. www.mtamaryland.com/services/marc/serviceInformation/ParkingSheet2007.

[18] MARC Growth and Investment Plan, page 9. Also in the CTP.

3.5 Carpools and Vanpools

Harford County's Commuter Assistance Program, a division of the Department of Community Services offers a lot of help to residents wishing to carpool or vanpool to work. The program keeps a database that allows commuters' needs to be matched with other commuters. They will help start a carpool or vanpool or help connect people with people already in the program. Staff also provides information about transit alternatives and services.

The vanpool program partners with a company that covers 100 percent of vehicle maintenance and insurance and offers a lease incentive of $400 per van, per month.[19] Commuters can choose to use their own vehicle or a leased vehicle.

The Commuter Assistance Program also offers Guaranteed Ride Home (GRH) service for people who carpool, vanpool, bike, walk, or take transit to work at least twice a week. The GRH program allows a commuter to get a free ride home up to four times per year for emergencies, or when you cannot get home on time. Commuters must register to become part of this program.

3.6 Taxi and Intercity Bus

There are 19 taxi and sedan companies listed in the Harford County area. No intercity buses serve Harford County; the closest Greyhound Station is in Baltimore.

3.7 Pedestrian/Bicycle

Harford County has a Bike Mentor Program that involves one-on-one help for people who are considering biking to work and need advice on what route to take, and tips on biking.[20] A mentor also will accompany a person a few times.

A 20-year bicycle and pedestrian master plan was completed by MDOT in 2002. Although specific information about the ease and safety of biking and walking near APG were not explored, District 4, which is comprised of Baltimore, Harford, and Cecil Counties, had at least 40.6 percent of the roads receive at least a grade of C on a scale of A through F for

---

[19] Harford County Commuter Assistance Program brochure.

[20] Harford County Government, Department of Community Services, Commuter Assistance. www.harfordcountymd.gov/commuter/BikeMentorl.html.

biking conditions.[21] It is not possible to know from this report how the Aberdeen and Edgewater areas compare to the three-county average.

One of the challenges in terms of accessing APG via bike or walking will be whether the post will allow people to walk or bike through any or all of the gates; according to some sources, this may not be allowed.

3.8 Park-and-Ride Lots

The park-and-ride lots in Harford and Cecil County are generally used by workers commuting into Baltimore. Park-and-ride lots are used when parking and congestion are a problem at the destination or when located at commuter rail stations.

Parking and congestion are not a problem within Harford or Cecil Counties and it is unlikely that workers at APG will park outside the gate and take a shuttle onto the post unless the shuttle presents some advantage.

There are 15 park-and-ride lots in Harford County and 1 in Cecil. The Harford County lots are listed below.

HEAT Center	Hickory Bypass[a]	Havre de Grace
Cheyenne[a]	Edgewood MARC Station	Havre de Grace Juniata and Otsego[a]
Aberdeen Train Station	MVA Bel Air[a]	Abingdon
Bynum Pond	Pylesville	Marywood[a]
Fallston[a]	Route 152 Mountain Road	Riverside

[a] Lots served by MTA commuter bus.

MTA commuter bus Route 420 also stops at Belcamp Park-and-Ride, which is not listed as a lot according to Harford County. The location of this stop and park-and-ride lot are in between I-95 and Philadelphia Road just south of Aberdeen in Belcamp, which is in between APG main campus and the Edgewood area.

MARC Station parking is addressed in the MARC service description. In addition to the parking lots at the Aberdeen and Edgewood Stations, the Perryville MARC Station in Cecil County has a park-and-ride.

[21] *Twenty-Year Bicycle and Pedestrian Access Master Plan*. Maryland Department of Transportation. October 2002, pages 6 to 7.

3.9 APG Sponsored Services

APG has a new vanpool program operated through VPSI as well as a guaranteed ride home program. The Army has established a policy which permits agency heads to reimburse Federal employees, including members of a uniformed service, for certain commuting expenses. The program allows Federal employees monthly compensation of up to $115 to ride transit or participate in a vanpool program.

4.0 Transit Improvements Already Planned

4.1 Harford TDP Fixed Route Service Alternatives

Harford County's TDP calls for increased and new service on Routes 1, 2, and 6 for better connectivity between the routes, as well as new circulator service in Aberdeen. In two years, the plan calls for expanding hours to 5:00 a.m. until 8:00 p.m. The system has received funding for FY 2009 to expand evening hours. The plan also calls for decreasing headways to no more than an hour and expansion vehicles to support the increased services.

Broader goals in the plan are to be able to meet future demand at the APG post and the Aberdeen MARC Station.

4.2 MARC Growth and Investment Plan (MGIP)

Short-term goals on the Penn Line include increased service for the evening peak, late evening, and new service on weekends. The MGIP has a number of programmed improvements for the Penn Line that include:

- Improvements to the Edgewood Station ($3 million) 2011
- Improved track capacity ($30 million) 2011
- Midlife overhauls of coaches ($25 million) 2012
- Midlife overhaul of new locomotives ($61 million) 2012

It is important to note that these programmed improvements are required to **maintain the existing** level of service on MARC and are not intended to meet future growth of expansions.

The MGIP also has planned immediate improvements that are intended for a nine-month timeframe. These include:

- Initiating parking expansion at the Aberdeen Station;
- Adding one evening peak train;

- Adding one late evening train;
- Initiating weekend service; and
- Purchasing additional capacity on Amtrak off-peak trains for MARC passengers.

It is important to note that the funding for these improvements has not been confirmed.

In the short term (perhaps as early as 2010), the Penn Line could offer:

- Increased frequency to Aberdeen;
- Additional peak and reverse-peak service; and
- Late evening and weekend service.

In the medium term (perhaps as early as 2015), the Penn Line could offer:

- Connectivity with the MTA Red Line;
- Expansion of peak service and introduction of limited off-peak service at Aberdeen;
- Aberdeen Station improvements; and
- MARC peak service extended to Elkton and Newark.

In the long term (perhaps as early as 2020), the Penn Line could offer:

- Extension of core Penn Line services to Aberdeen with 20- to 30-minute peak head-ways and hourly off-peak service; and
- Station parking expansion at Edgewood Station.

Eventually the Penn Line is planned to have full four main tracks that would enable "transit-like" service to Aberdeen with connections to the MTA green line.

4.3 MTA Commuter Bus Improvements

A BRAC Transit Plan update was presented to MTA in March of 2008 that proposed four new commuter buses that would all terminate or originate at the APG. The proposed routes are as follows:

- **Route A – Shrewsbury, Pennsylvania to APG.** This route would operate six trips per day and cover 48 miles one way. A stop in northern Harford County also would be served.
- **Route B – Lutherville Light-Rail Stop to APG.** This route would run from Baltimore County to the APG six trips per day at 33 miles per one-way trip. Two park-and-ride lots in Baltimore County would be served along the way.

- **Route C – Churchman's Crossing, Delaware to APG.** This route also would operate six trips per day. This 38-mile route would run through New Castle County and Cecil County, as well. There would be at least two stops in Cecil County.

- **Route D – Baltimore City to APG.** This route would serve the Baltimore Transit Plaza along with the White Marsh Park-and-Ride lot in Baltimore County.

Currently, only the proposed Route D from Baltimore City to APG is being actively considered. Implementation of this route could be accomplished as a reverse of the Commuter Bus 420, making use of deadhead miles and hours, but needs to be more direct, probably running along I-95 rather than U.S. 40.

4.4 Multimodal Transportation Center

The Aberdeen MARC station and local bus service could be components of a multimodal transportation center in the Aberdeen area. A study looking at the need for and location of such a center, in conjunction with the Aberdeen station improvements is being conducted.

4.5 Other Possible BRAC Improvements

Maryland Consolidated Transportation Program (CTP)

The 2007 to 2012 CTP identified 54 BRAC-related projects that have since been refined to include projects that are truly only BRAC-related for the 2008 to 2013 CTP. Current projects that have construction funding programmed in the current CTP that relate to transit include:

- MARC Improvements:
  - The Edgewood MARC Station will be making ADA improvements and for a station building to replace the existing station trailer. The parking expansion is listed as complete.
  - Penn Line Improvements includes funding for infrastructure improvements.
- Harford Transit and Cecil Transit – $6.8M added to support BRAC-related Locally Operated Transit Systems (LOTS) services statewide.

Statewide Transportation Improvement Program (STIP)

The 2007 STIP had the same projects listed in the CTP with the addition of a Job Access and Reverse Commute Program. The status is ongoing and funds are distributed to counties and agencies around the State.

State BRAC Action Plan:

- Evaluate additional transit service to APG through Harford and Cecil Transit systems;
- Edgewood MARC Station;
- Aberdeen MARC Station improvement study; and
- Conduct BRAC commuter bus study.

Local BRAC Plans

In addition, each of the jurisdictions has developed its BRAC plan, which includes transportation improvements. Transit-related improvements from the local BRAC plans are:

Harford County BRAC Plan:

- Identify satellite parking for shuttles at Aberdeen train station;
- MARC Edgewood Station construction;
- Study Multimodal Transportation Center;
- Coordinate with City of Aberdeen on shuttles to meet on post transportation needs;
- Support extension of MARC train levels; and
- Support extension of Purple Line as identified in the Baltimore Region Rail System Plan (BRRP).

Cecil County BRAC Plan:

- MARC extension to Elkton and Wilmington, Delaware; and
- Link DART Route 65 to APG (currently Elkton-Newark, Delaware).

Baltimore County BRAC Plan:

- Assess feasibility of expanding and/or relocating the Middle River MARC Station to capitalize on the direct rail connection to APG.

Baltimore City BRAC Plan:

- Advocate expansion of MARC, including a new MARC Station in East Baltimore;
- Actively support implementation of BRRP and its Red and Green Line segments;
- Protect right-of-way (ROW) along existing and proposed rail lines; and
- Promote Commuter Choice Program to encourage transit use.

5.0 Challenges

The biggest challenge is to vision the Aberdeen area, particularly the Aberdeen and Edgewood MARC Stations, as destinations rather than origins. Much of the transit services provided by MTA, MARC, and the LOTS has focused on commuters reaching the stations on route to jobs south, in Baltimore.

In addition, there are a number of challenges relating to the BRAC plans and post changes themselves.

5.1 The Nature of EULs

Although EUL projects are not technically BRAC-related because it involves private developers, these developers are building on Federal lands that impact the community on the post. The EUL program does not require developers to mitigate impacts of large commercial projects, which could have large transportation impacts on the community.[22]

Only two EUL buildings currently are being built, with an additional building on the horizon in Aberdeen, and one coming in Edgewood. The developer is only building buildings as they are purchased, so it is hard to predict what will be built further down the road.[23]

What is known is that although the buildings are spread out throughout the post, new housing that is part of a privatization of military housing is being built near the MD 22 gate. The main construction project with 13 buildings for the jobs being transferred from Fort Monmouth will be closer to the MD 715 gate. Between 5,000 and 7,000 people are expected to use these facilities.[24] If housing and employment on post are clustered, shuttle service between the destinations could be feasible but it is not clear at this point.

Additionally, Aberdeen's main area and the Edgewood area are not geographically connected. It is necessary to leave the post in order to enter the other area of the post.

---

[22] MDOT-BRAC Facts and Frequently Asked Questions. www.e-mdot.com/Planning/brac/Frequently Asked-Questions.

[23] Telephone conversation with Syretta Gross, August 8-12, 2008.

[24] Telephone conversation with Syretta Gross, August 8-12, 2008.

5.2 Getting Transit onto Post

There are issues of both who comes on post and where vehicles from outside can access APG.

The Aberdeen MARC Station is outside the post, and although it is relatively close, a person might have to walk a considerable distance to get to their destination once inside the gates. If buses are allowed to transport passengers from the MARC Station to the gates, security issues concerning transit vehicles carrying passengers or drivers without security clearances will need to be addressed.

Entry to the Aberdeen post is accessed at gates on MD 715, MD 22, and on Aberdeen Boulevard. After BRAC is complete, there is a possibility that the Aberdeen Boulevard gate will close.[25] There has been no indication that gates will be changed in Edgewood.

There is some precedent for whether transit services are allowed on post. Appendix B presents a brief overview of some experiences at bases. It is interesting to note that Fort Belvoir recently negotiated with Fairfax Connector/WMATA to allow Metrobus/Fairfax connector routes to serve four stops on Fort Belvoir. Appendix C includes DOD regulations regarding provision of shuttle bus and mass transit services to, from, and on bases.

5.3 Other Challenges

Other issues may impact the ability to provide some transit services, namely:

- Trying to serve mostly choice transit riders – BRAC-related households will have average income of $109,000 and automobile availability;
- On-post destinations are spread out;
- Lack of parking constraints on post/congestion issues;
- Challenges serving on-post destinations;
- Transit vehicle access onto post versus internal shuttles;
- ADA complementary paratransit;
- Difficulty providing service across state lines/cost-sharing with other states;

[25] Telephone conversation with Syretta Gross, August 8-12, 2008.

- Toll payment at MdTA facilities;
- Building on existing commuter bus and MARC for new commuter bus services – reverse commute needs as deadhead;
- Ridesharing versus fixed route services; and
- Highway improvements needed to accommodate Mitchell property transit oriented development (TOD).

6.0 Transit Markets and Opportunities

6.1 Transit Markets

Given the length of time people are willing to travel, and the projections for where they will live, a number of potential transit corridors to the Aberdeen area were identified:

- I-95 – U.S. 40 Corridor:
  - From the south including Baltimore City, Baltimore County and southern Harford County; and
  - From the north including, to some extent, PA and DE, but primarily from Cecil County;
- U.S. 1/MD 161 Corridor from northern Cecil County;
- MD 22 Corridor from Baltimore County to Aberdeen via Bel Air;
- MD 22/MD 136 Corridor from northern Harford County to Aberdeen; and
- MD 24 Corridor from Bel Air to Edgewood.

Some of these commute corridors are served by existing transit services operated by Harford Transit. The TDP calls for improved services on a number of routes that serve the Aberdeen and Edgewood areas including expanding the service hours into the evenings (Phase 1) and reducing the headways on routes to 60 minutes (Phase 2). Making these improvements is a high priority and relatively inexpensive.

The alternatives below are intended to fill gaps in existing services. When designing alternatives for commuters, it is important to keep in mind that most of the new jobs at APG will be filled by people with a choice of auto or transit, so called "choice riders." Attracting this group of people to transit could help alleviate projected increases in traffic, as morning commuters approach the Aberdeen area at I-95/Exit 85 and various points along U.S. 40 and MD 7, 22, 24, 755, and 543. However, in order to entice this group onto transit, the services need to be convenient, frequent, and provide some benefit over auto travel (e.g., the ability for buses to move through congested gate areas faster than cars). Services need to be relatively direct, with limited stops and frequent service. Thus, the alternatives aimed at serving additional BRAC-induced demand are planned for a minimum of 30 minute service frequencies and relatively high speed/limited stops.

6.2 Transit Opportunities

Potential transit corridors to/from the post must have sufficient population density and trips to the post. Areas in the County with high density are not necessarily the areas with highest number of trips to/from APG. Within the 2015 timeframe, the corridors with high potential as transit markets include:

To Aberdeen Area:

- Edgewood-Aberdeen – along U.S. 40/MD 7. This currently is served by Harford Transit's Route 6/6A but need more frequent service and more direct connection to APG. The TDP plans for a more direct routing and better connections in Aberdeen.
- Havre de Grace-Aberdeen – along U.S. 40. This currently is served by Harford Transit's Route 1. Again, it would need increased frequency to attract choice riders; also direct connection to APG. The TDP plans for more direct routing and better connections in Aberdeen.
- Within Aberdeen – This is served by Harford Transit's Route 4. Need higher frequency and direct access to APG.
- From Cecil County – If 20 percent of the current employees at APG live in Cecil County, this trend will probably continue for new hires. There needs to be another connection (in addition to MARC), from southern Cecil County/Perryville to Aberdeen. The TDP includes the extension of the Harford Transit route beyond Havre de Grace to connect with Cecil Transit in Perryville.

To Edgewood Area:

- Within Edgewood – This is served by Harford Transit's Route 5. Need higher frequency and stop at the MARC Station and Edgewood APG.
- Along Willoughby Beach Road – Edgewood APG– Served by Harford Transit. Need more frequency.
- Bel Air to Edgewood APG – Currently served by Harford Transit's Route 2/2A. Need more frequency and stop at Edgewood APG.

The biggest opportunity is that transit is a flexible medium. As long as vehicles are available and funds have been allocated in advance,[26] new routes can be identified and implemented as needed. One option is to create a statewide contingency fleet of BRAC vehicles for use when needed.

---

[26] MTA grantees prepare budgets and grant applications for operating and capital funds in October and November for services operated in the next fiscal year (beginning on July 1 of the next year). Lead time on vehicle purchases can require an additional 12 to 18 months.

7.0 Planning Assumptions

The following assumptions have been made to support the transit needs assessment:

- EULs will be inside the gate;
- COPT will be outside the gate;
- APG is willing to run a modified shuttle linking the Aberdeen and Edgewood MARC Stations to inside the gates for personnel only;
- There will be no parking constraints on the post;
- There will be no pedestrian or bicycle traffic allowed through the gate;
- A bus stop at the gate where riders would be dropped off and then could walk onto the post is not desired;
- It is unclear where the jobs will be on post. Jobs may move from Aberdeen area to Edgewood area and vice versa; and
- If a true fixed route is established by Harford Transit, ADA complementary paratransit must be provided.

When Will the Transfer of Jobs Occur and When Will Unfilled Job Openings Become Available?

Jobs have begun moving to APG incrementally with 340 anticipated to be on the ground in summer 2008 and another 600 to follow in 2009. The majority of the jobs will be available beginning in 2010, primarily in the engineering and science, logistics, support and maintenance, and business administration sectors. Average salary is $87,000, and many of the jobs will require a security clearance. Approximately 30 percent of current personnel intend to transfer with the jobs. Recruitment efforts at regional colleges and universities, job fairs, and other workforce initiatives will be used to fill vacancies.

Estimated Number of Positions:

- 8,200 new, direct positions on Post (civilian DOD and embedded contractors);
- 7,500 to 10,000 indirect jobs (contractor tail and spin-off located off Post);

- 28,000 direct, indirect, and induced new positions to the region; and
- 60,000 new residents statewide.

Types of Jobs: (Partial list of Federal positions transferring to APG)

- Electronics Engineers Logistics Managers General Engineers;
- Computer Engineers Contracting Officers Security Specialists;
- Management and Program Analysts Secretaries Equipment Specialists;
- Inventory Managers Supply Managers Safety Technicians;
- Budget Clerks Budget Analysts Information Technology Managers; and
- Clerical Technical Writers Telecommunication Technicians/Managers.

From APG-BRAC Environmental Impact Statement (EIS)

APG is situated on more than 72,000 acres (about 39,000 acres of land area and 33,000 acres of water) primarily within Harford County, Maryland. The facility is located in the northeast portion of the State on the northwestern shore of Chesapeake Bay. Harford County is located in the north central portion of Maryland at the confluence of the Susquehanna River and Chesapeake Bay and is bounded by Baltimore County on the west, the Commonwealth of Pennsylvania on the north, the Susquehanna River on the east, and Chesapeake Bay on the south.

The majority of the facility is located on two peninsulas bordered and separated by the Bush and Gunpowder Rivers and encompasses the majority of Harford County's Chesapeake Bay waterfront. Smaller portions of the facility are on the west bank of the Gunpowder River. Northern Harford County is more rural in character than Southern Harford County. The Town of Bel Air and greater surrounding area, located about seven miles north of the APG's Southern Peninsula, is the largest urban center in the County with a population of 72,000. Other urban centers in southern Harford County include Aberdeen, Havre de Grace, Edgewood, and Joppatowne.

Aberdeen Proving Ground is a U.S. Army Installation Management Command installation operated by the U.S. Army Garrison Aberdeen Proving Ground (USAGAPG) that hosts units and activities of 9 major Army Commands, supporting 66 tenants, 20 satellites, and 17 private organizations, making USAGAPG one of the largest landlords in the Army.

APG tenants employ numerous military and civilian scientists, research engineers, technicians, trainers, and administrators. In addition to the APG workforce and those residing on APG, the installation provides support and services to authorized personnel in the surrounding areas.

The BRAC Commission made the following recommendations concerning the realignment of activities to APG.

From Fort Monmouth, New Jersey:

- Relocate the procurement management and related support functions for Depot-Level Repairables to APG, and designate them as Inventory Control Point functions, detachment Final EIS for BRAC Actions 3 Executive Summary at Aberdeen Proving Ground, Maryland of Defense Supply Center, Columbus, Ohio, and relocate the remaining integrated material management, user, and related support functions to APG (BRAC Recommendation 5).

- Relocate the Information Systems, Sensors, Electronic Warfare, and Electronics Research and Development and Acquisition to APG (BRAC Recommendation 5).

From Fort Belvoir, Virginia:

- Relocate and consolidate Sensors, Electronics, and Electronic Warfare research, development, and acquisition (RDA) activities to APG, except the Night Vision Lab and the Project Manager Night Vision/Reconnaissance, Surveillance and Target Acquisition (PM NV/RSTA) (BRAC Recommendation 5).

- Relocate and consolidate Information Systems RDA (except for the Program Executive Office, Enterprise Information Systems) to APG (BRAC Recommendation 5).

- Relocate the Chemical Biological Defense (CBD) Research component of the Defense Threat Reduction Agency (DTRA) to the Edgewood Chemical Biological Center (ECBC), APG (BRAC Recommendation 174).

From Fort Knox, Kentucky:

- Realign the Army Research Institute (ARI) by relocating Human Systems Research to APG (BRAC Recommendation 5).

From Redstone Arsenal, Alabama:

- Relocate and consolidate Information Systems Development and Acquisition to APG (BRAC Recommendation 5).

From Park Center Four, Alexandria, Virginia:

- Relocate and consolidate Army Test and Evaluation Command (ATEC) with its sub-components to APG (BRAC Recommendation 136).

From Brooks City Base, San Antonio, Texas:

- Relocate the Non-Medical CBD Development and Acquisition to ECBC, APG (BRAC Recommendation 170).

From Falls Church, Virginia, Skyline 2 and 6:

- Relocate the Joint Program Executive Office for CBD (JPEO-CBD) to ECBC, APG (BRAC Recommendation 5).

From Fort Huachuca, Arizona:

- Relocate the procurement management and related support functions for Depot-Level Repairables to APG, and designate them as Inventory Control Point functions, detachment of Defense Supply Center, Columbus, Ohio. Relocate the remaining integrated materiel management, user, and related support functions to APG (BRAC Recommendation 5).

From Langley, Virginia and Glenn, Ohio:

- Realign the Army Research Laboratory (ARL) Langley, Virginia, and Glenn, Ohio, by relocating the Vehicle Technology Directorates (VTD) to APG (BRAC Recommendation 187).

From Silver Spring, Maryland:

- Realign Walter Reed Army Medical Center, Washington, D.C. by relocating the Medical Chemical Defense Research of the Walter Reed Institute of Research (Forest Glen Annex) to APG (BRAC Recommendation 169).

The BRAC Commission recommended relocation of three organizations from APG. This EIS addressed the impacts associated with the departure of these organizations from APG, but did not address the potential impacts of their future realignment at their new locations. Impacts of those actions are included in separate EIS documents prepared for BRAC realignment actions at Fort Sam Houston, Texas; Fort Lee, Virginia; and Fort Dix, New Jersey. These realignment activities include:

From Aberdeen Proving Ground, Maryland:

- Realign APG by relocating the Army Environmental Command (AEC) to Fort Sam Houston.

- Realign APG by relocating the Ordnance Center and School to Fort Lee.

- Realign APG by relocating all Headquarters and Support Activities Joint Cross Service Group mobilization functions to Fort Dix, New Jersey, designating it as Joint Pre-Deployment/Mobilization Site Dix/McGuire/Lakehurst.

8.0 Potential Improvement Strategies

8.1 Ridesharing Program

Given the length of time people are willing to travel, and the projections for where they will live, a number of potential transit corridors to the Aberdeen area were identified:

The analysis captured within the existing BRAC reports and surveys has shed some pertinent insight in terms of the housing and commuting preferences for the current and future APG employees. Predominantly, these individuals have a choice between driving their personal automobile or taking transit. Based on their history of travel as a single-occupancy vehicle (SOV) commuter, it would be prudent to offer a comprehensive ridesharing program alternative. Given the survey responses from Ft. Monmouth and the current level of HOV travel to APG, it appears that ridesharing programs would be attractive to commuters in the area. There are already two strong ridesharing programs available in the area – one offered by Harford County and another sponsored by APG. These will be continued in the future and could be strengthened to support new employees and staff as they move to the area.

Why should an SOV commuter rideshare? Ridesharing offers many valuable incentives that are often overlooked:

- Reduction in traffic congestion;
- Less stressful commute (if you are not the driver);
- Improved air quality for the region;
- Lower overall commute cost – save on the cost of gas, tolls, and parking;
- Reduction of wear and tear on a personal vehicle;
- Potentially a discounted rate on automobile insurance;
- Use commute time for other tasks – option to work, read the paper or even sleep/ relax; and
- Receive tax benefits as well, if the employer participates in the program, like APG does.

Carpools

A carpool is made up of two or more people sharing the ride to work. Carpools are as flexible as the riders need it to be – shared ride every day, once a week, or other arrangement. One person is the volunteer driver of the car and an agreement is made between the driver and the other rider(s) to share the cost of the monthly carpool fare, or even switch drivers periodically.

According to the American Automobile Association (AAA), the average cost of owning and operating a new vehicle in 2008 is 54.1 cents a mile, or $8,115 per year based on 15,000 miles of driving. A quick comparison of carpooling versus driving alone reveals the following savings (Table 8.1):

Table 8.1 Carpooling Versus Driving Alone

Yearly Expense Based on 22.5 Working Days per Month

Round-Trip Miles Per Day	Cost to Drive Alone	Cost If Two People Carpool	Cost If Three People Carpool
10	$1,461	$730	$487
20	$2,921	$1,461	$974
30	$4,382	$2,191	$1,461
40	$5,843	$2,921	$1,948
50	$7,304	$3,652	$2,435
100	$14,607	$7,304	$4,869

Vanpools

A vanpool is a group of 6 to 15 people who commute to and from work together in a van. Vanpools work best for those who live at least 20 miles away from their workplace and have a consistent work schedule. Vehicles may be provided by individuals, individuals in cooperation with various public and private support programs, through a program operated by or on behalf of an element of government, or a program operated by or on behalf of an employer. Each vanpool typically has a primary driver and one or more alternate drivers. Similar to the carpool, the vanpool participants share the cost of the van and all other operating expenses. Riders usually meet at designated pick-up locations (e.g., park-and-ride lots). Because the riders share the cost, vanpooling is typically less expensive than driving alone, and depending upon the number of passengers, less expensive than carpooling.

Harford County's Commuter Assistance Program

Harford County's Commuter Assistance Program, a division of the Department of Community Services, provides carpool and/or vanpool matching to work. As described previously in the report, they will help with the formation of a carpool or vanpool or help connect people with people already in the program. Staff also provide information about transit alternatives and services.

Specifically, the vanpool program partners with a company that covers 100 percent of vehicle maintenance and insurance and offers a lease incentive of $400 per van, per month.[27] Commuters can choose to use their own vehicle or a leased vehicle.

A critical component of the Commuter Assistance Program is the Guaranteed Ride Home (GRH) service for people who carpool, vanpool, bike, walk, or take transit to work at least twice a week. The GRH program allows a commuter to get a free ride home up to four times per year for emergencies, or when you cannot get home on time. Commuters must register to become part of this program.

APG Sponsored Services

APG also offers commuter service through their own vanpool program operated through VPSI (a private provider of commuter vanpool transportation services as well as a guaranteed ride home program. The Army has established a policy which permits agency heads to reimburse Federal employees, including members of a uniformed service, for certain commuting expenses. The program allows Federal employees monthly compensation of up to $115 to ride transit or participate in a vanpool program.

[27] Harford County Commuter Assistance Program brochure.

8.2 Transit Improvements Already Planned

Harford County TDP

As introduced earlier in the report, the TDP calls for increased hours and better connectivity between the existing routes, as well as new circulator services in Aberdeen, Bel Air, and Edgewood.

Phase 1 of the TDP proposes:

- New route alignments to allow for more direct routes combined with local circulator service in Bel Air, Edgewood, and Aberdeen.
- Expansion of County service routes span to allow service from 5:00 a.m. to 8:00 p.m. to accommodate commuters.
- Expansion of local circulator routes span to allow service from 6:00 a.m. to 8:00 p.m.

Phase 2 of the TDP proposes:

- Reducing all County service routes headways from 1 hour and 20 minutes to 1 hour for enhanced connectivity.

These planned improvements, which are presented in Table 8.2, would provide better service coverage through direct links and time transfers to an Aberdeen multimodal transit center – currently at the Aberdeen MARC Station (which would serve as the timed transfer point for the Harford Transit fixed routes).

Table 8.2 Harford TDP Operating Service
Transit Improvements Already Planned

Description of Service	Service Span	Frequency	Vehicles Required	Proposed Change	Route Service Hours
Phase 1					
County Service					
Route 1 – Havre de Grace – Aberdeen – Bel Air	5:00 a.m. to 8:00 p.m.	Peak/Base – 80 minutes	2	Expand service hours	30
Route 2 – Bel Air – Edgewood	5:00 a.m. to 8:00 p.m.	Peak/Base – 80 minutes	2	Expand service hours	30
Route 6 – Joppatowne – Edgewood – Aberdeen	5:00 a.m. to 8:00 p.m.	Peak/Base – 80 minutes	2	Expand service hours	30
Local Circulators					
Route 3 – Bel Air Town-Go-Round	6:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	1	Modify routes and expand service hours	14
Route 4 – Aberdeen Doodlebug	6:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	1	Modify routes and expand service hours	14
Route 5 – Edgewood Circular	6:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	1	Modify routes and expand service hours	14
Phase 2					
Route 1 – Havre de Grace – Aberdeen – Bel Air	5:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	3	Reduce headways to 60 minutes	45
Route 2 – Bel Air – Edgewood	5:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	3	Reduce headways to 60 minutes	45
Route 6 – Joppatowne – Edgewood – Aberdeen	5:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	3	Reduce headways to 60 minutes	45

8.3 Aberdeen BRAC Transit Improvements Alternatives

The purpose of this section is to present a range of alternatives for improving public transit services to APG. Transit trends, demographics, BRAC projections, and future growth were evaluated with the existing services in order to develop meaningful alternatives. Various scenarios were formulated and evaluated for potential inclusion in the recommended plan. The implementation of service improvements in future years will be dependent on the availability of the necessary funds.

Service options have been examined in terms of how well they serve the identified markets, the degree to which they address adopted local and State goals for transit, the service type, likely impacts on ridership, capital and operating requirements, and other particular needs or requirements that arose during interviews with APG and the Aberdeen Advisory Committee.

The service alternatives presented below are conceptual in nature, and are subject to modification, as necessary. Not all of the options are appropriate for implementation in the short-term; some could be phased in over time based upon actual demand.

MTA Commuter Bus Improvements

Based on the BRAC Transit Plan update that was presented to MTA in March of 2008, one of the proposed routes is recommended as an alternative within this report. In the BRAC Transit Plan it is referred to as Route D: Baltimore City to APG. This route would serve the Baltimore Transit Plaza along with the White Marsh Park and Ride Lot in Baltimore County. In essence, this is the reverse run of MTA's Commuter Bus Route 420. Based on this data, four morning and four evening runs would be offered during the peak hours, one run about every 20 minutes.

Commuter/Shuttle Bus Alternatives

The proposed commuter/shuttle bus alternatives are combined and presented by county of origin. They are intended to serve as a guide for service development and capital programming based on future development in the region. As discussed previously, regional and local transit is generally already provided in a high level of coverage in the urban areas of Harford County, which includes the Aberdeen MARC Station. However, there are several potential areas for change in the service design, routes, and schedules that will help expand the service area.

All of these proposed alternatives assume service terminating at the Aberdeen MARC Station, though some routes do make an intermediary stop at the Edgewood MARC Station. Currently, this plan assumes that the connections between the MARC stations and the posts (Aberdeen and Edgewood) will be provided by APG through an internal shuttle bus. Both the MTA Commuter Bus Plan alternative and the alternatives devised

for this study by county, along with speculative shuttle routes from Aberdeen APG and Edgewood APG to their respective MARC stations are displayed in Figure 8.1 and presented in Table 8.3 following the specific route descriptions.

Additionally, each route is built around the same service characteristics. The service span for each route would allot five morning and five evening trips weekdays from 6:00 a.m. to 8:00 a.m. and from 4:00 p.m. to 6:00 p.m. The frequency for each route would be at a peak level – every 30 minutes.

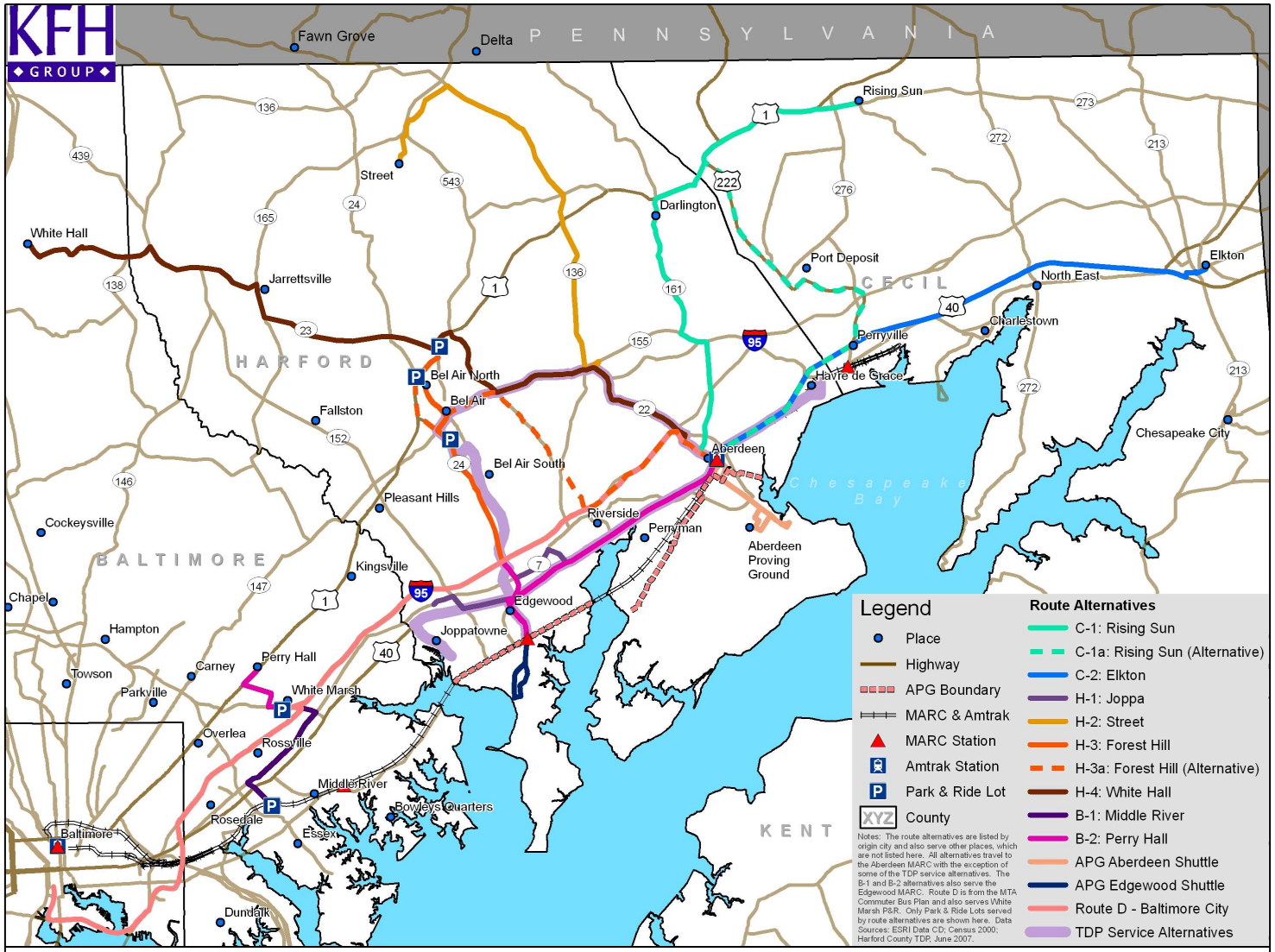
Alternatives from Cecil County

An overarching theme that has been a component in all BRAC related discussions is where people will live who decide to relocate. Based on its proximity to Harford County and an abundance of housing availability, Cecil County is an understandable choice for many transplants. Two transit routes presented themselves as potentially viable options after reviewing the variables necessary for a successful route.

Route C-1 would originate from Rising Sun and would travel southwest along U.S. 1 into Harford County to Darlington and then south to the Aberdeen MARC Station. This route was developed after analyzing the allocation of BRAC housing demand to housing supply which was discussed earlier in this report. In Cecil County the primary allocation of households are around Rising Sun (north-central part of the County). This route also provides new coverage to the northeastern part of Harford County that typically would not warrant service. An alternative alignment, Route C-1a was recommended by the Aberdeen Advisory Committee. This alternative would travel from Rising Sun down MD 222 along in western Cecil County to Perryville before traveling to the Aberdeen MARC Station.

Route C-2 would originate from Elkton and travel along the U.S. 40 Corridor to the Aberdeen MARC Station making stops at North East, Perryville, and Havre de Grace. This route is supported with a solid population density and a modest number of allocated households around Elkton and Perryville.

Figure 8.1 Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives



Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives

Table 8.3 Aberdeen BRAC Operating Service Transit Improvements Alternatives

Description of Service	Service Span	Frequency	Vehicles Required	Proposed Change	Route Service Hours
MTA Commuter Bus Plan					
Route D – Baltimore City (Hopkins Place and Baltimore Street) – White Marsh P&R – Aberdeen	4 morning and 4 evening trips	Peak – 20 minutes	4	Reverse run Route 420 Commuter Bus	12
Alternatives from Cecil County					
C-1 – Rising Sun – Darlington – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10
C-2 – Elkton – North East – Perryville – Havre de Grace – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10
Alternatives from Harford County					
H-1 – Joppa – Edgewood MARC – Abingdon, Belcamp – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10
H-2 – Street – Pylesville, Whiteford – Churchville – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	15
H-3 – Forest Hill (Marywood P&R) – Bel Air (Hickory Bypass P&R and MVA P&R) – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10
H-4 – White Hall – Jarrettsville – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	15
Alternatives from Baltimore County					
B-1 – Middle River (Mace Mini P&R – Rossville Boulevard and Mace Avenue) – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	15
B-2 – Perry Hall – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	15
Aberdeen Proving Ground Shuttles to MARC Stations					
APG Aberdeen Shuttle	6:00 a.m. to 7:00 p.m.	Peak/Base – 30 minutes	1	Must meet commuter bus and trains	13
APG Edgewood Shuttle	6:00 a.m. to 7:00 p.m.	Peak/Base – 30 minutes	1	Must meet commuter bus and trains	13

Alternatives from Harford County

A major focus of the transit route alternatives in Harford County was based on proximity to work and a shorter commute, and a housing market that mirrors BRAC-related households average income. Therefore, four routes were identified to capture potential travel patterns within Harford County.

Route H-1 traverses along the U.S. 40 Corridor from Joppa to the Aberdeen MARC Station with stops at the Edgewood MARC Station, Abingdon, and Belcamp. This corridor has a strong population density, as well as a heavy concentration of the allocated BRAC households. Additionally, this route would support travel to both Edgewood and Aberdeen based on the BMC travel patterns model which predicted attractions to APG from the various TAZs in the region; beginning in 2000 and then in 2015 and 2035.

Route H-2 targets service from the northern part of Harford County where service currently does not exist. The route originates in Street and travels a short distance north to Pylesville, then along MD 165 to Whiteford, and then south on MD 136 to Churchville before terminating at the Aberdeen MARC Station. This route was devised to address the heavily forecasted travel attraction trips to Aberdeen, as well as the predicted BRAC households in northern Harford County.

Route H-3 concentrates service in the Bel Air region, which has the highest population totals in the County. To capitalize on existing infrastructure, the route begins in north Bel Air around Forest Hill at the Marywood Park and Ride Lot. Next it travels down U.S. 1 to the Hickory Bypass Park and Ride Lot and into Bel Air to the MVA Park and Ride Lot on MD 24 before traveling on to the Aberdeen MARC Station via either MD 24 or MD 543. This route is supported by the three key components that this report has concentrated on in terms of supporting transit – population density, surrounded by projected BRAC households, and attraction trips to APG.

Route H-4 creates a transit route option for the western portion of Harford County. This route concept would start in the White Hall area along the Harford/Baltimore County border (right now it is sketched to begin in Baltimore County), travel to Jarrettsville, and then continue to the Aberdeen MARC Station. The importance of this route is to provide a "bridge" service in this area and to address the anticipated allocation of BRAC households for both Jarrettsville and White Hall.

Alternatives from Baltimore County

Reports to date point to some migration of APG employees to southeast Baltimore County. This attraction is based on the proximity to the City of Baltimore (for cultural activities, opportunities for spouses, and communities that have households mirroring the BRAC households). Two routes were developed, both taking advantage of available infrastructure, as well as the convenient access to the I-95 Corridor, plus providing links to both the Edgewood MARC Station and the Aberdeen MARC Station.

Route B-1 would start in the Rosedale area at the Mace Mini Park and Ride Lot and would make a second stop in Baltimore County at the White Marsh Park and Ride Lot before heading to the Edgewood MARC Station and then the Aberdeen MARC Station. The development of this route was aided by the strong population density and modest estimated BRAC households.

Route B-2 is very similar in design but would begin in Perry Hall and then travel to the White Marsh Park and Ride Lot prior to traveling to the Edgewood MARC Station and the Aberdeen MARC Station. Again, the strong population density and moderate anticipated BRAC households help shape the design of this route.

It should be noted that both routes were consciously constructed to stop at the White Marsh Park and Ride Lot to make service from Baltimore County more attractive. Based on the longer distance to APG, a higher frequency or more trips might be required to capture a greater number of commuters from this area.

Aberdeen Proving Ground Shuttles to the MARC Stations

The last component of the bus network is shuttle bus connectivity to APG in Aberdeen and Edgewood. The service that was designed is conceptual in nature, but is useful in capturing the role of the two shuttle services. These route parameters will also assist when providing cost estimates for the shuttle service, regardless of the actual provider (service run by APG or contract with the County or private provider).

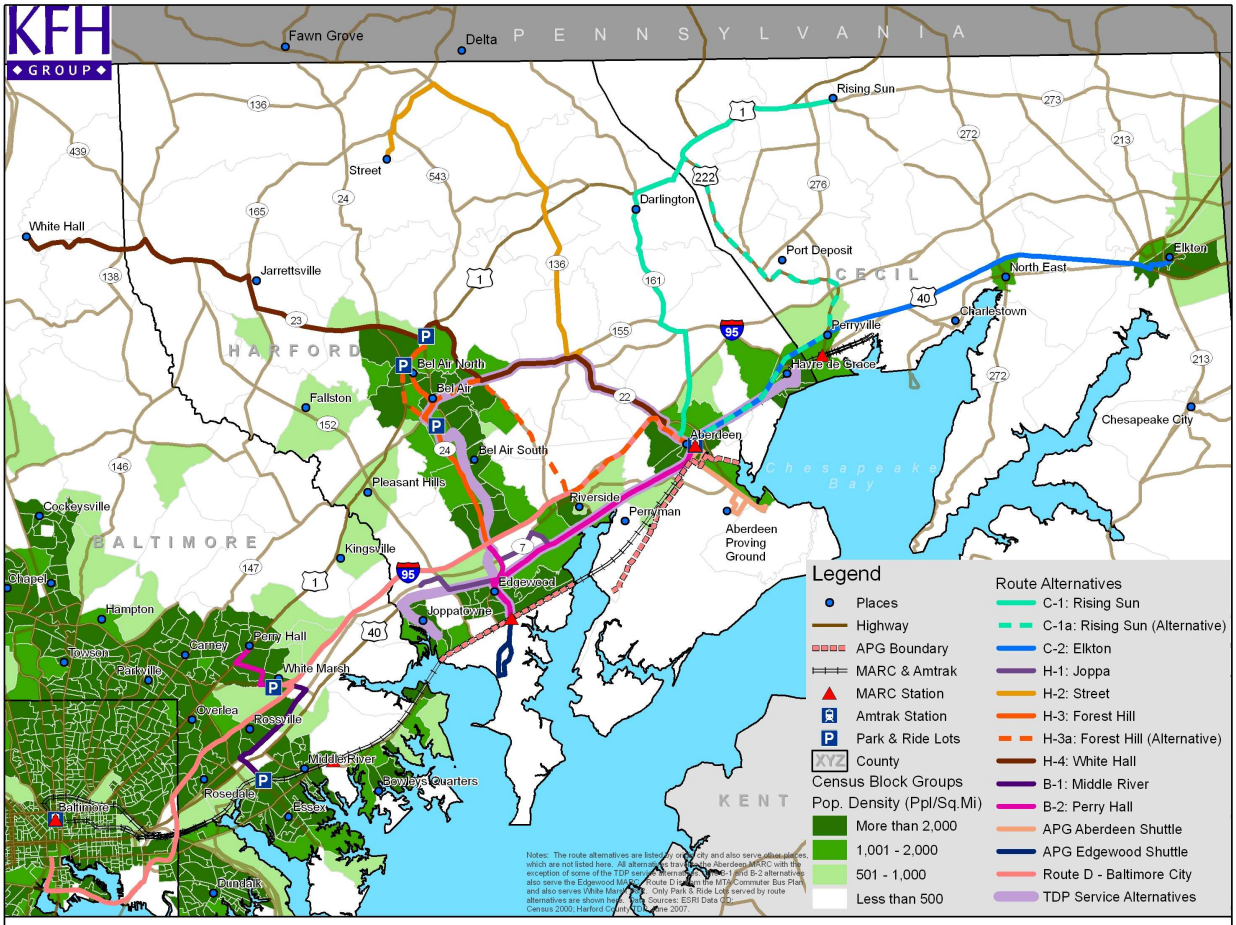
Both the APG Aberdeen Shuttle and the APG Edgewood Shuttle are designed to provide service from 6:00 a.m. to 7:00 p.m., with a 30 minute frequency. The service parameters were constructed to both meet the commuters at the MARC stations, as well as serve as an internal shuttle for employees without access to a vehicle, including carpool/vanpool participants. Depending upon the design, this service could help offset parking demand by providing a convenient and viable alternative to driving.

Genesis of the Route Concepts

As alluded to throughout this report and targeted within the route descriptions, three key themes were the impetus behind the route designs – 1) population density, 2) allocation of BRAC households, and 3) attraction trips to APG. The purpose of this section is to provide a visual presentation as to how each route would address future dispersion of BRAC employees based on these themes. Since the justification for each route included discussion of these topics, only an introduction to the maps is provided.

The first map in this series, Figure 8.2, displays the APG BRAC transit improvements and the Harford County TDP proposed route modifications overlaid on the population density for the region.

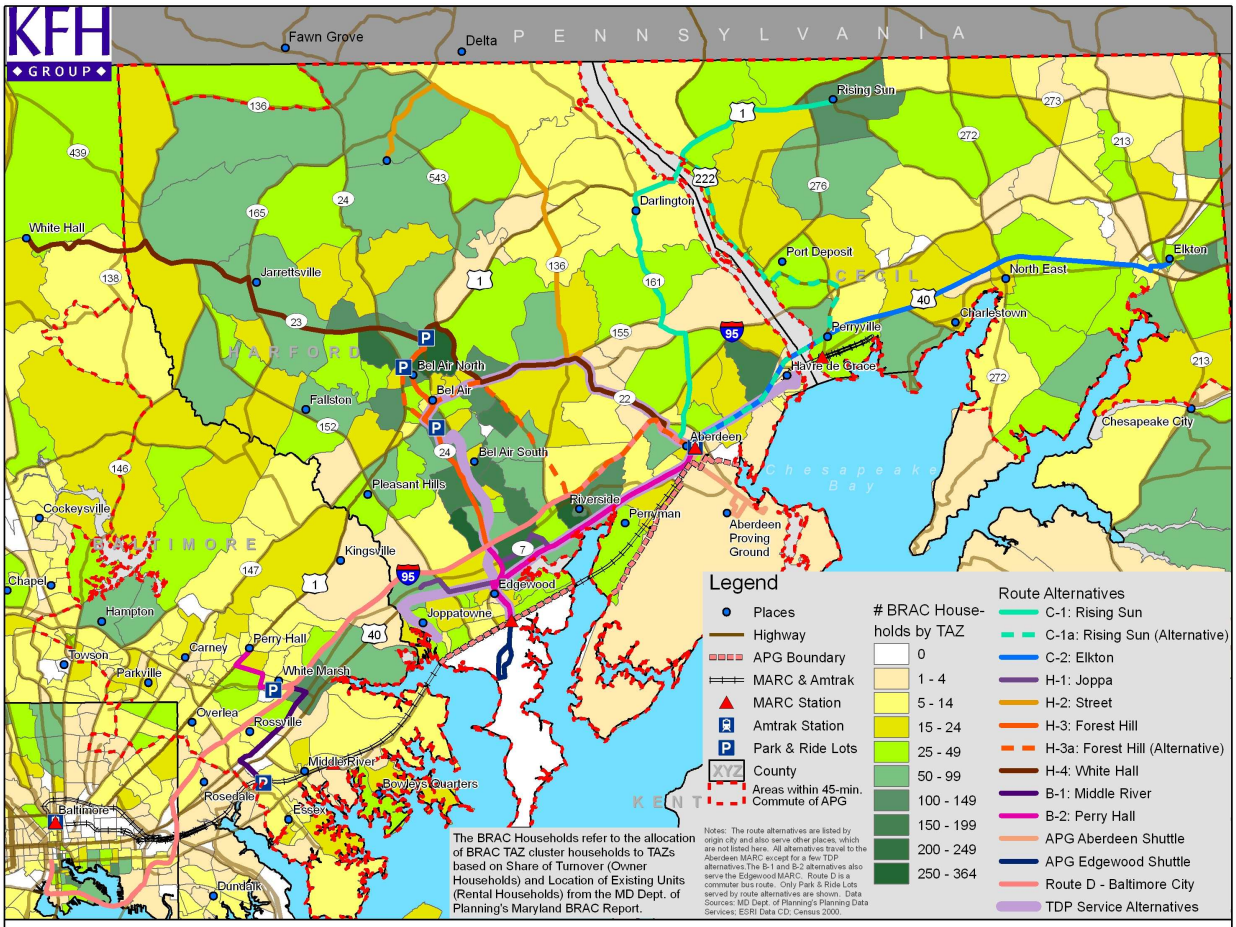
Figure 8.2 Aberdeen Transit Improvements and Regional Population Density



Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Population Density

The next map, Figure 8.3, illustrates how the APG BRAC transit route alternatives and the Harford County TDP proposed route modifications would link the anticipated allocation of BRAC households to both the Aberdeen and Edgewood MARC Stations.

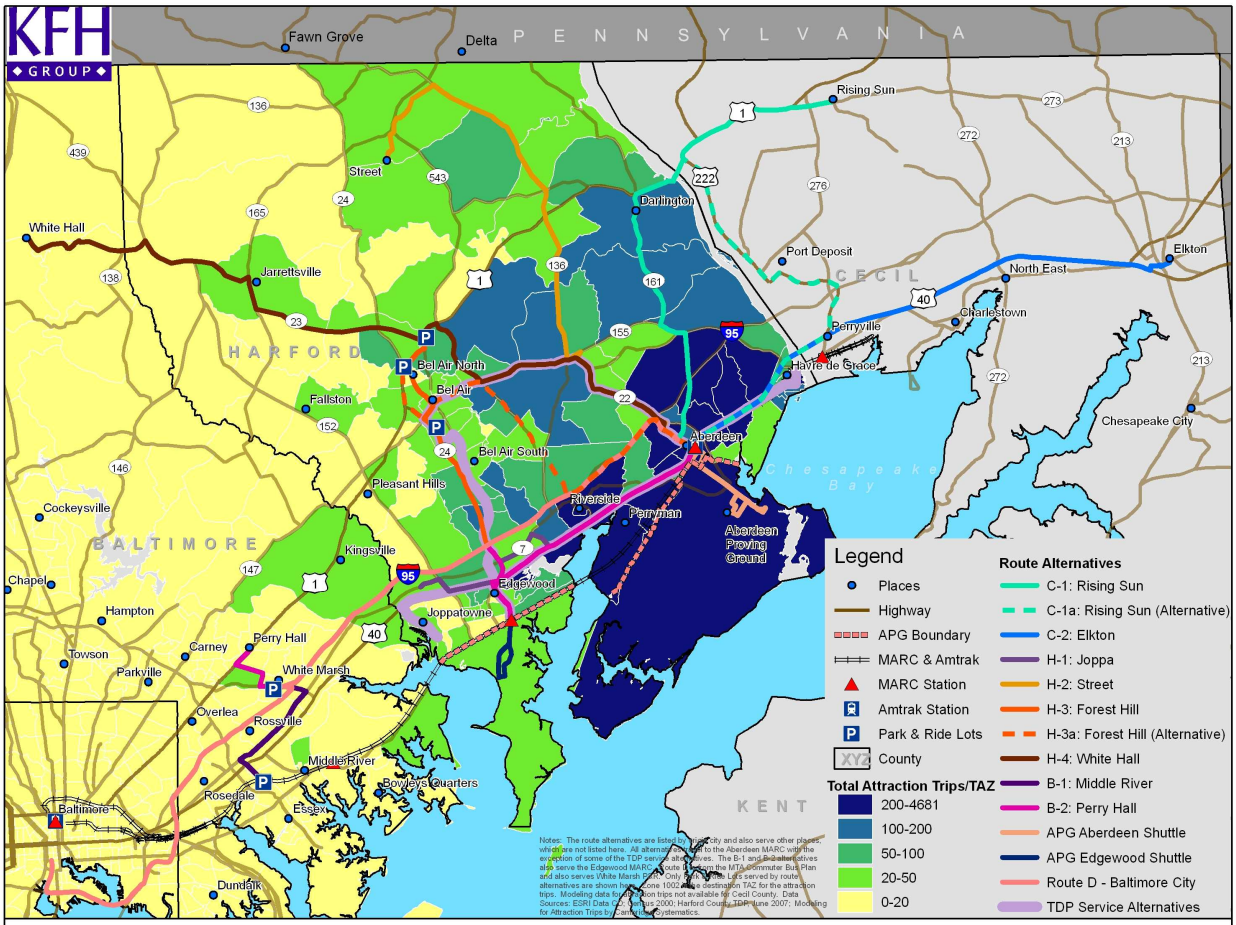
Figure 8.3 Aberdeen BRAC Transit Improvements and BRAC Households by TAZ



Aberdeen BRAC Transit Improvements and TDP Service Alternatives Overlaid on BRAC Households by TAZ

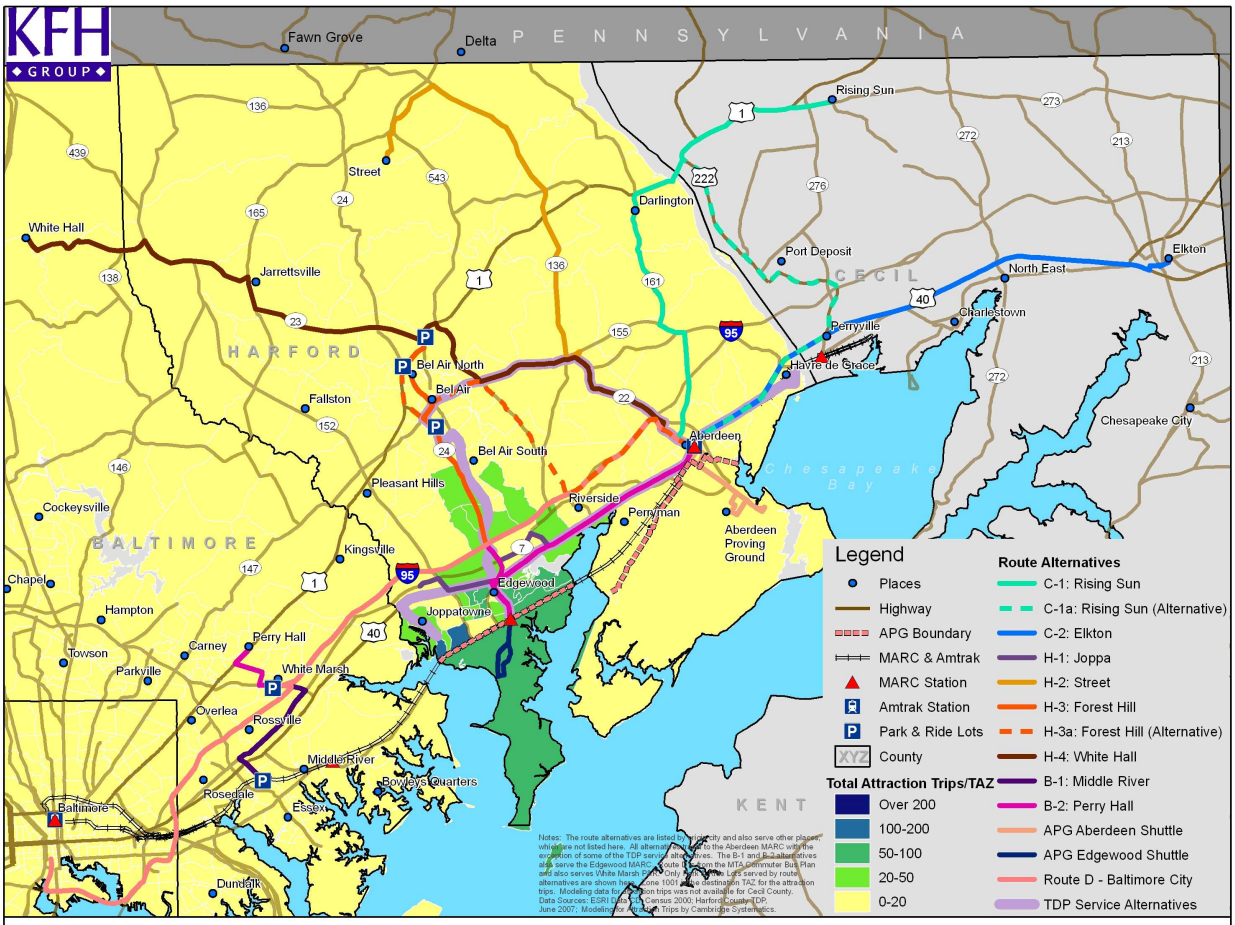
Next is a series of maps that overlay the APG BRAC transit route alternatives and the Harford County TDP proposed route modifications with the total attraction trips to APG Aberdeen and APG Edgewood beginning in 2000 and then in 2015 and 2035.

Figure 8.4 Aberdeen BRAC Transit Improvements and Total Attraction Trips to APG in 2000



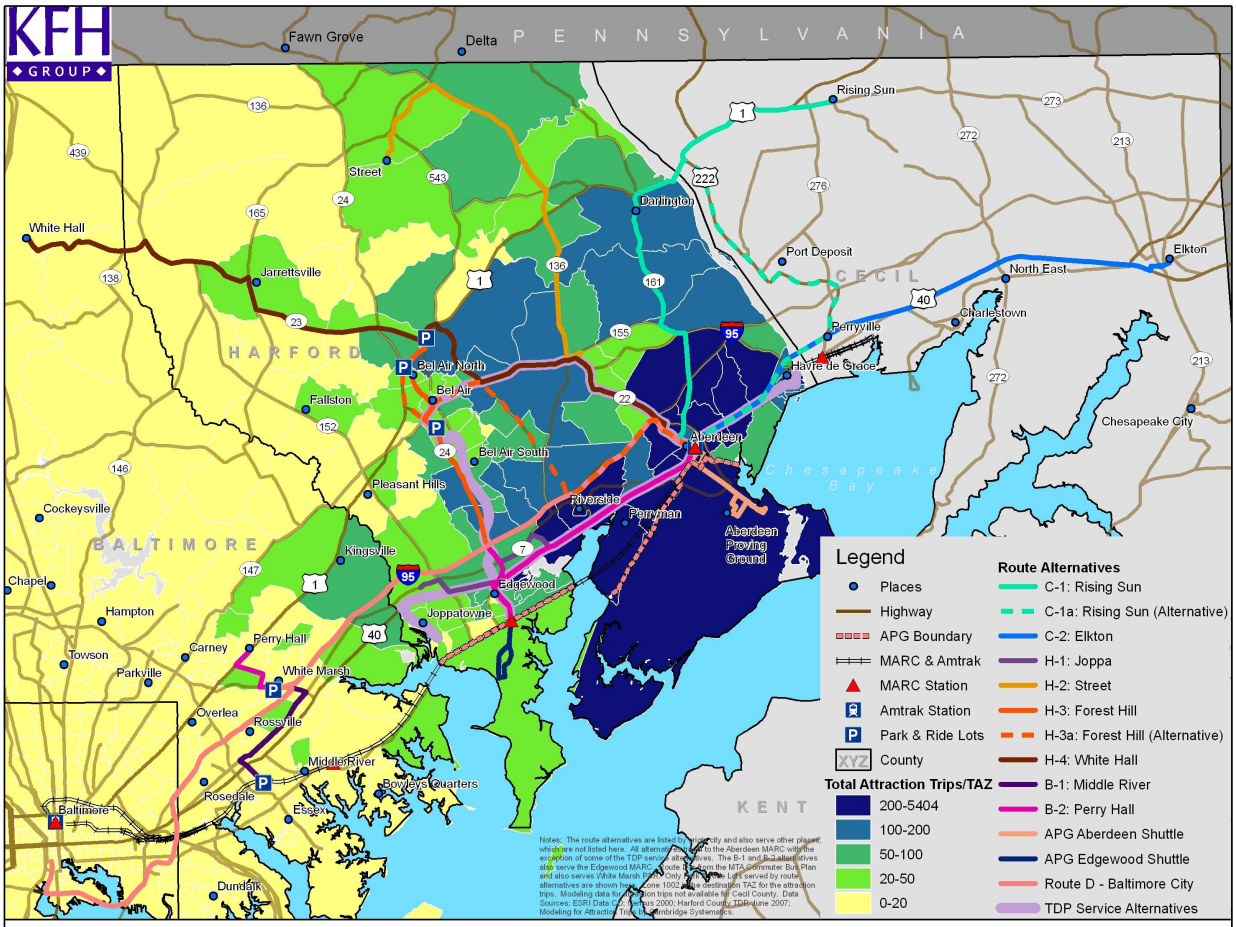
Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Total Attraction Trips to APG in 2000

Figure 8.5 Aberdeen BRAC Transit Improvements and Total Attraction Trips to Edgewood in 2000



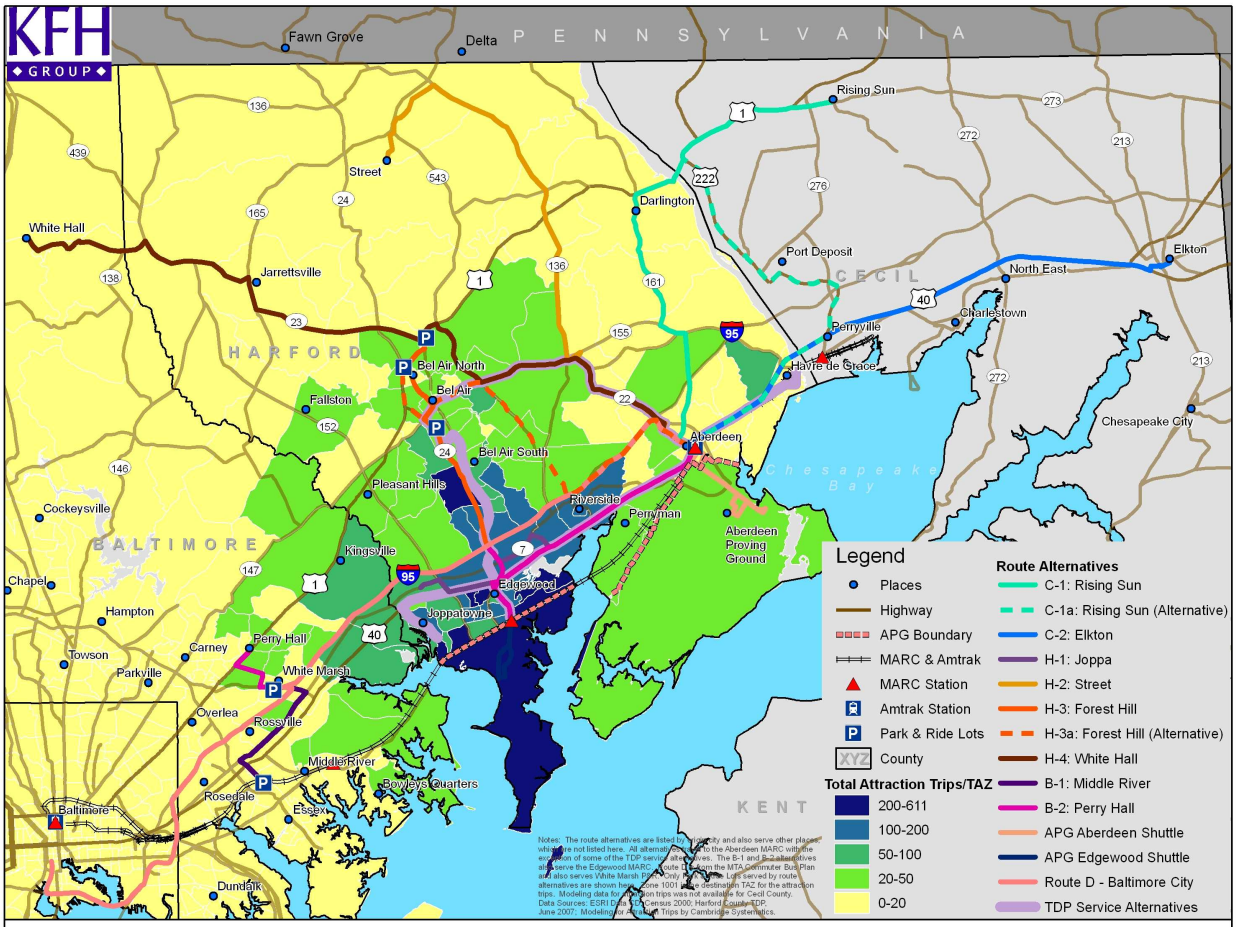
Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Total Attraction Trips to Edgewood in 2000

Figure 8.6 Aberdeen BRAC Transit Improvements and Total Attraction Trips to APG in 2015



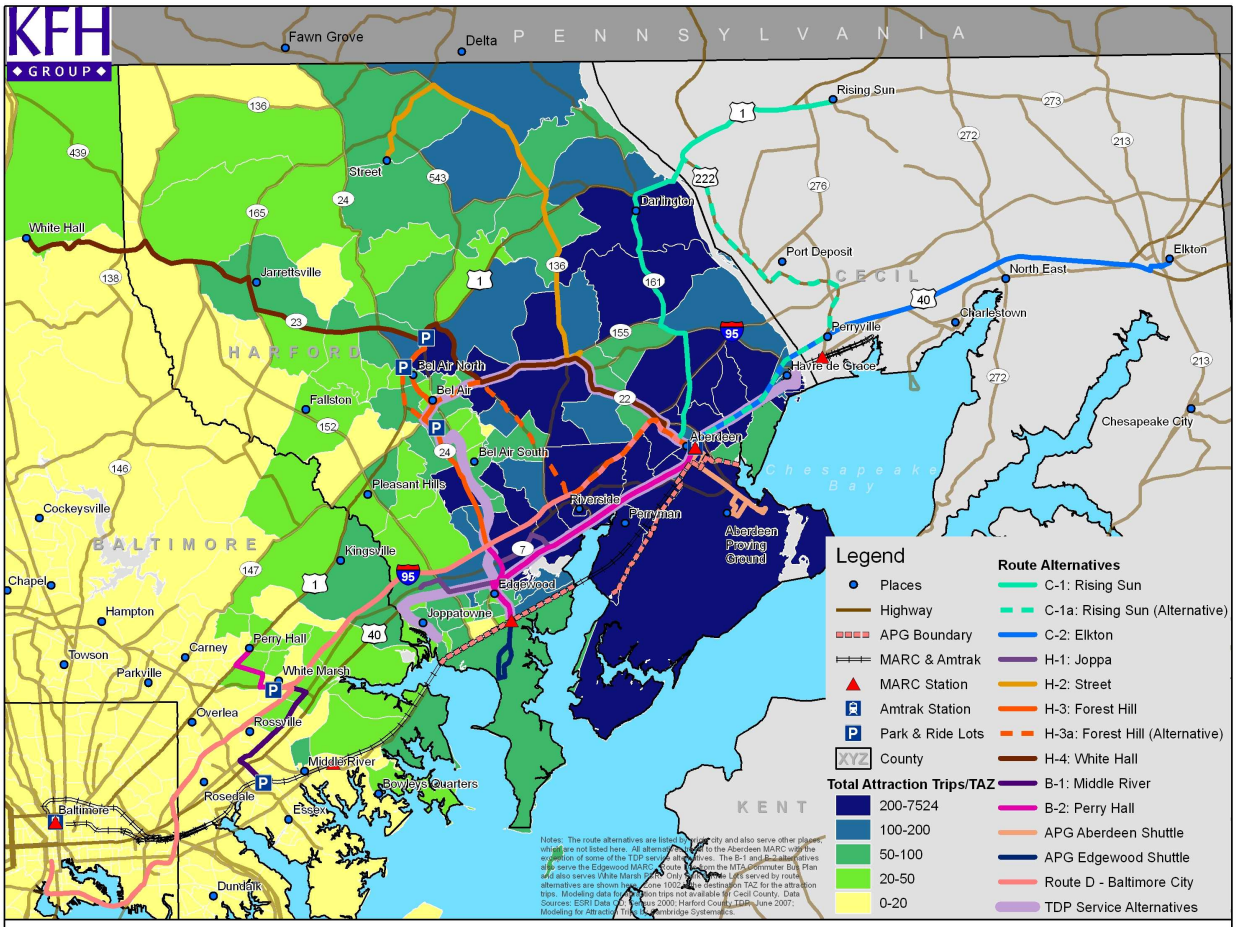
Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Total Attraction Trips to APG in 2015

Figure 8.7 Aberdeen BRAC Transit Improvements and Total Attraction Trips to Edgewood in 2015



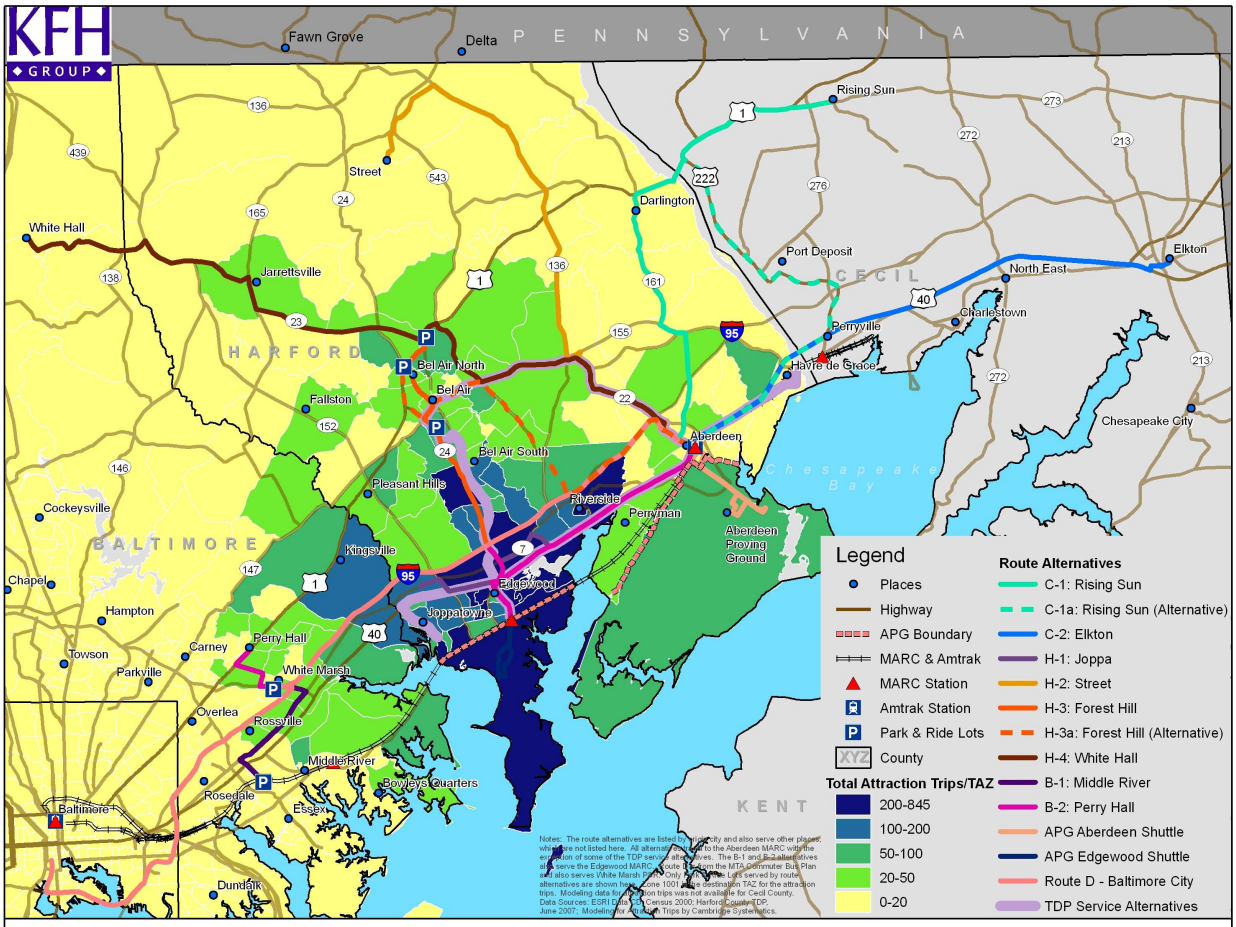
Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Total Attraction Trips to Edgewood in 2015

Figure 8.8 Aberdeen BRAC Transit Improvements and Total Attraction Trips to APG in 2035



Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Total Attraction Trips to APG in 2035

Figure 8.9 Aberdeen BRAC Transit Improvements and Total Attraction Trips to Edgewood in 2035



Aberdeen BRAC Transit Improvements and Harford County TDP Service Alternatives Overlaid on Total Attraction Trips to Edgewood in 2035

Enhanced MARC Service Alternatives

Finally, MARC service to both Aberdeen and Edgewood was analyzed in terms of frequency. Although service is available to both stations via northbound and southbound travel in the mornings and evenings, it is very limited (especially the reverse commute – northbound in the a.m. and southbound in the p.m.).

In an effort to make this a more appealing option for APG employees, the service enhancements in Table 8.4 were devised. The objective was to create a frequency of about 30 minutes during the peak hours of operation. The augmented schedule was built off of existing train runs where possible, though due to storage and track constraints this schedule may not prove feasible.

Table 8.4 MARC Service Enhancements
Additional Southbound and Northbound Trains

A.M. Service

Penn Line Southbound – Three Additional Trains

Station	Approximate Time: Train 1	Train 2	Train 3[a]
Perryville	7:25 a.m.	8:00 a.m.	8:20 a.m.
Aberdeen	7:33 a.m.	8:08 a.m.	8:28 a.m.
Edgewood	7:43 a.m.	8:18 a.m.	8:38 a.m.

Penn Line Northbound – Three Additional Trains

Station	Approximate Time: Train 1	Train 2[b]	Train 3[c]
Edgewood	6:40 a.m.	7:10 a.m.	8:00 a.m.
Aberdeen	6:48 a.m.	7:18 a.m.	8:08 a.m.
Perryville	7:01 a.m.	7:31 a.m.	8:21 a.m.

P.M. Service

Penn Line Southbound – Three Additional Trains

Station	Approximate Time: Train 1[d]	Train 2[e]	Train 3[f]
Perryville	4:05 p.m.	4:35 p.m.	5:40 p.m.
Aberdeen	4:13 p.m.	4:43 p.m.	5:48 p.m.
Edgewood	4:21 p.m.	4:51 p.m.	5:56 p.m.

Penn Line Northbound – Three Additional Trains

Station	Approximate Time: Train 1	Train 2[g]	Train 3[h]
Edgewood	4:00 p.m.	4:48 p.m.	5:25 p.m.
Aberdeen	4:08 p.m.	4:56 p.m.	5:33 p.m.
Perryville	4:21 p.m.	5:09 p.m.	5:46 p.m.

[a]Begin Train 419 in Perryville instead of Baltimore/Penn Station (if feasible).
[b]Extend Train 401 north to Perryville (if feasible).
[c]Extend Train 503 north to Perryville (if feasible).
[d]Begin Train 437 in Perryville instead of Baltimore/Penn Station (if feasible).
[e]Begin Train 439 in Perryville instead of Baltimore/Penn Station (if feasible).
[f]Begin Train 441 in Perryville instead of Baltimore/Penn Station (if feasible).
[g]Extend Train 426 north to Perryville (if feasible).
[h]Extend Train 428 north to Perryville (if feasible).

9.0 Impact of Service Improvements on Aberdeen Station

As described within this report, the initial analysis was geared at first determining the amount of service that would be necessary to meet the demands of travel (both existing and projected) to APG. In doing so, the Aberdeen MARC Station became the focal point for all service. If all of the service strategies are implemented, what impact will this have on the Aberdeen MARC Station?

9.1 Number of Buses to/from Aberdeen Station

Station improvements are contingent upon a number of factors, but in terms of transit operations, it is directly impacted by service levels. This section will provide the breadth of service under the full strategy implementation assumption. In doing so, it will present both daily usage and a snapshot at the peak period during the day.

9.2 Buses at One Time (Need for Bus Bays)

Based on the design of each route, it is anticipated that only one vehicle per route would access the Aberdeen MARC Station at any given time. This would equate to a maximum of 14 vehicles converging at the station concurrently. In reality this number would be lower due to challenges in scheduling. However, with a goal of providing seamless transportation within the region, a full build-out of 14 vehicle bays should be considered.

Table 9.1 Total Potential Number of Vehicles Accessing the Aberdeen MARC Station Daily
Via Auto/Park, Walk, Shuttle, MARC

Description of Service	Service Span	Total Daily Vehicles
Existing Service		
Harford Transit (Includes TDP Planned Improvements)		
County Service		
Route 1 – Havre de Grace – Aberdeen – Bel Air	5:00 a.m. to 8:00 p.m.	45
Route 6 – Joppatowne – Edgewood – Aberdeen	5:00 a.m. to 8:00 p.m.	45
Local Circulators		
Route 4 – Aberdeen Doodlebug	6:00 a.m. to 8:00 p.m.	14
MTA Commuter Bus		
Route 420 – Havre de Grace – Downtown Baltimore	4 morning and 4 evening trips	8
Aberdeen BRAC Transit Improvements Alternatives		
MTA Commuter Bus Plan		
Route D – Baltimore City (Hopkins Place and Baltimore Street) – White Marsh P&R – Aberdeen	4 morning and 4 evening trips	8
Alternatives from Cecil County		
C-1 – Rising Sun – Darlington – Aberdeen MARC	5 morning and 5 evening trips	10
C-2 – Elkton – North East – Perryville – Havre de Grace – Aberdeen MARC	5 morning and 5 evening trips	10
Alternatives from Harford County		
H-1 – Joppa – Edgewood MARC – Abingdon, Belcamp – Aberdeen MARC	5 morning and 5 evening trips	10
H-2 – Street – Pylesville, Whiteford – Churchville – Aberdeen MARC	5 morning and 5 evening trips	10
H-3 – Forest Hill (Marywood P&R) – Bel Air (Hickory Bypass P&R and MVA P&R) – Aberdeen MARC	5 morning and 5 evening trips	10
H-4 – White Hall – Jarrettsville – Aberdeen MARC	5 morning and 5 evening trips	10
Alternatives from Baltimore County		
B-1 – Middle River (Mace Mini P&R – Rossville Boulevard and Mace Avenue) – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC	5 morning and 5 evening trips	10
B-2 – Perry Hall – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC	5 morning and 5 evening trips	10
Aberdeen Proving Ground Shuttle to MARC Station		
APG Aberdeen Shuttle	6:00 a.m. to 7:00 p.m.	26
All Service		
Total		**226**

10.0 Cost Estimation and Funding Analysis

10.1 Preliminary Operating Costs Estimates

The Operating Cost of Service table (Table 10.1) presents summary statistics for all the service alternatives described within this report. As shown, the annual operating cost for all additional services combined is $3,451,925, which includes the APG shuttles.

Estimated operating costs are based on the number of service hours/miles required to operate the route. The service hours required were estimated by taking the round-trip mileage for the proposed service, assuming an average travel speed for the bus, applying the desired headway, and determining how many buses would be needed to serve the route on the desired schedule. The number of buses times the span of service, provides the hours of service.

At this point, it has been assumed that most of the local bus service would be operated by Harford Transit, with the exception of the two routes from Baltimore County (B-1 and B-2) and the reverse commute bus service on MTA 420, which would be operated under an MTA Bus contract. MTA Commuter Bus contracts are given on a per-mile basis, thus only the route mileage was needed for their projected costs (though this cost may actually be lower since it is the reverse run of an existing service). Operating costs are not provided for the MARC service enhancements although estimates for various MARC service improvements are included in the MGIP.

It should be noted that a preliminary cost estimate is provided for the APG shuttles, however, it is anticipated that the revenue source for these services will be APG.

Table 10.1 Operating Cost of Service
Aberdeen BRAC Transit Improvements Alternatives

Description of Service	Service Span	Frequency	Vehicles Required	Proposed Change	Route Service Hours[a]	Cost per Hour[b]	Total Annual Cost
Harford Transit TDP Route Modifications (Incremental Costs)							
Phase 1							
County Service							
Route 1 – Havre de Grace – Aberdeen – Bel Air	5:00 a.m. to 8:00 p.m.	Peak/Base – 80 minutes	2	Expand service hours	4	$50	$50,800
Route 6 – Joppatowne – Edgewood – Aberdeen	5:00 a.m. to 8:00 p.m.	Peak/Base – 80 minutes	2	Expand service hours	4	$50	$50,800
Local Circulators							
Route 4 – Aberdeen Doodlebug	6:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	1	Modify routes and expand service hours	0	$50	$0
Phase 2							
Route 1 – Havre de Grace – Aberdeen – Bel Air	5:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	3	Reduce headways to 60 minutes	15	$50	$63,500
Route 6 – Joppatowne – Edgewood – Aberdeen	5:00 a.m. to 8:00 p.m.	Peak/Base – 60 minutes	3	Reduce headways to 60 minutes	15	$50	$63,500
MTA Commuter Bus Plan							
Route D – Baltimore City (Hopkins Place and Baltimore Street) – White Marsh P&R – Aberdeen	4 morning and 4 evening trips	Peak – 20 minutes	4	Reverse run Route 420 Commuter Bus	38	See below	$665,602
Alternatives from Cecil County							
C-1 – Rising Sun – Darlington – Aberdeen MARC[c]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10	$50	$127,000
C-2 – Elkton – North East – Perryville – Havre de Grace – Aberdeen MARC[c]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10	$50	$127,000

Table 10.1 Operating Cost of Service (continued)
Aberdeen BRAC Transit Improvements Alternatives

Description of Service	Service Span	Frequency	Vehicles Required	Proposed Change	Route Service Hours[a]	Cost per Hour[b]	Total Annual Cost
Alternatives from Harford County							
H-1 – Joppa – Edgewood MARC – Abingdon, Belcamp – Aberdeen MARC[c]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10	$50	$127,000
H-2 – Street – Pylesville, Whiteford – Churchville – Aberdeen MARC[c]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	15	$50	$190,500
H-3 – Forest Hill (Marywood P&R) – Bel Air (Hickory Bypass P&R and MVA P&R) – Aberdeen MARC[c]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	10	$50	$127,000
H-4 – White Hall – Jarrettsville – Aberdeen MARC[c]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	15	$50	$190,500
Alternatives from Baltimore County							
B-1 – Middle River (Mace Mini P&R – Rossville Boulevard and Mace Avenue) – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC[d]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	31.3	See below	$691,349
B-2 – Perry Hall – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC[d]	5 morning and 5 evening trips	Peak – 30 minutes	5	6:00-8:00 a.m. and 4:00-6:00 p.m.	29.3	See below	$647,174
Aberdeen Proving Ground Shuttles to MARC Stations							
APG Aberdeen Shuttle[e]	6:00 a.m. to 7:00 p.m.	Peak/Base – 30 minutes	1	Must meet commuter bus and trains	13	$50	$165,100
APG Edgewood Shuttle[e]	6:00 a.m. to 7:00 p.m.	Peak/Base – 30 minutes	1	Must meet commuter bus and trains	13	$50	$165,100

[a]MTA Commuter Bus contracts are given on a per-mile basis.
[b]Contract cost for MTA bus Route 420 is $8.33 for a Dillon bus and $6.80 for an MTA bus.
[c]Service provided by Harford Transit (does not factor in deadhead costs).
[d]Service provided by MTA Commuter Bus.
[e]Service provided and funded by Aberdeen Proving Ground.

10.2 Preliminary Capital Costs Estimates

Along with the service options listed above, there are capital needs for vehicles to serve these if they are operated as expansions to existing service. However, the plan needs to acknowledge other capital needs as well, including passenger facilities and eventually the replacement of existing vehicles within the Harford Transit fleet. This section addresses these needs. No capital costs are estimated at this time for the enhanced MARC services or for improvements to the Aberdeen or Edgewood MARC stations as these are included in separate studies or planning efforts.

Vehicles

The expansion vehicle cost will depend on the alternatives chosen for inclusion in the plan, and the phasing of the implementation. The associated capital costs for each service alternative is presented in Table 10.2. As shown, if all services were implemented including the APG shuttles, the cost of new vehicles would be $13,950,000 (nonhybrids) to $18,750,000 (hybrid vehicles).

The number of vehicles required per alternative was calculated by determining the total run time for each route against the suggested frequency of service. An important detail that bears highlighting are the alternatives out of Baltimore. No capital costs are associated with these alternatives since they rely upon contract vehicles, thus their relative higher operating costs.

The MTA has a policy that all new transit vehicles will be hybrids (with higher fuel economy); issued by Governor Martin O'Malley, in July 2008. Specifically, he has directed the MTA to purchase only hybrid-electric powered buses in the future as the agency replaces older diesel powered models that are retired from service. Since it is unclear if this mandate will apply to Harford County operated service, for analysis purposes both hybrid and nonhybrid costs were calculated.

Additionally, spare vehicles were factored into the costs based on recommended FTA/MTA guidelines. Typically transit systems include enough spare (backup) vehicles to provide coverage for preventive maintenance, repairs, breakdowns, and accidents. The number of spares needed will vary according to the alternatives that are implemented, as well as a number of additional factors such as the size and make-up of the fleet, the age and condition of the vehicles, the capacity and quality of the maintenance program, and the transit system's ability to obtain unscheduled repairs when needed. Generally, the number of spare vehicles in fleets of ten or more vehicles should not exceed 20 percent of the total number of vehicles needed in maximum service.

Table 10.2 Vehicle Capital Cost Estimates
Aberdeen BRAC Transit Improvements Alternatives

Description of Service	Number of Vehicles Required	Proposed Vehicle	Estimated Total Unit Cost		Total Cost	
			Hybrid	Nonhybrid	Hybrid Vehicle(s)	Nonhybrid Vehicle(s)
Harford Transit TDP Route Modifications (Additional Vehicles)						
Phase 2						
Route 1 – Havre de Grace – Aberdeen – Bel Air[a]	1	30-Foot Heavy Duty Bus	$530,000	$370,000	$530,000	$370,000
Route 6 – Joppatowne – Edgewood – Aberdeen[a]	1	30-Foot Heavy Duty Bus	$530,000	$370,000	$530,000	$370,000
MTA Commuter Bus Plan						
Route D – Baltimore City (Hopkins Place and Baltimore Street) – White Marsh P&R – Aberdeen	N/A[b]					
Alternatives from Cecil County						
C-1 – Rising Sun – Darlington – Aberdeen MARC	4	30-Foot Heavy Duty Bus	$530,000	$370,000	$2,120,000	$1,480,000
C-2 – Elkton – North East – Perryville – Havre de Grace – Aberdeen MARC	4	40-Foot Heavy Duty Bus	$550,000	$470,000	$2,200,000	$1,880,000
Alternatives from Harford County						
H-1 – Joppa – Edgewood MARC – Abingdon, Belcamp – Aberdeen MARC	4	30-Foot Heavy Duty Bus	$530,000	$370,000	$2,120,000	$1,480,000
H-2 – Street – Pylesville, Whiteford – Churchville – Aberdeen MARC	5	30-Foot Heavy Duty Bus	$530,000	$370,000	$2,650,000	$1,850,000
H-3 – Forest Hill (Marywood P&R) – Bel Air (Hickory Bypass P&R and MVA P&R) – Aberdeen MARC	4	40-Foot Heavy Duty Bus	$550,000	$470,000	$2,200,000	$1,880,000
H-4 – White Hall – Jarrettsville – Aberdeen MARC	5	30-Foot Heavy Duty Bus	$530,000	$370,000	$2,650,000	$1,850,000

Table 10.2 Vehicle Capital Cost Estimates (continued)
Aberdeen BRAC Transit Improvements Alternatives

Description of Service	Number of Vehicles Required	Proposed Vehicle	Estimated Total Unit Cost		Total Cost	
			Hybrid	Nonhybrid	Hybrid Vehicle(s)	Nonhybrid Vehicle(s)
Alternatives from Baltimore County						
B-1 – Middle River (Mace Mini P&R – Rossville Boulevard and Mace Avenue) – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC	N/A[b]					
B-2 – Perry Hall – White Marsh P&R (Honeygo Boulevard and White Marsh Boulevard) – Edgewood MARC – Aberdeen MARC	N/A[b]					
Spare Vehicles – Based on Full Implementation[c]						
30-Foot Heavy Duty Bus	3	30-Foot Heavy Duty Bus	$530,000	$370,000	$1,590,000	$1,110,000
40-Foot Heavy Duty Bus	2	40-Foot Heavy Duty Bus	$550,000	$470,000	$1,100,000	$940,000
Aberdeen Proving Ground Shuttles to MARC Stations						
APG Aberdeen Shuttle[d]	1	30-Foot Heavy Duty Bus	$530,000	$370,000	$530,000	$370,000
APG Edgewood Shuttle[d]	1	30-Foot Heavy Duty Bus	$530,000	$370,000	$530,000	$370,000

[a]Additional number of vehicles required to expand Harford Transit's service.

[b]MTA Commuter Bus contract – vehicle provided by the contractor.

[c]FTA/MTA recommends spare (backup) vehicles to provide coverage for preventive maintenance, repairs, breakdowns, and accidents.

[d]Vehicles funded by Aberdeen Proving Ground.

Passenger Facilities

Passenger facilities used by Harford Transit riders and administered by the County include the transfer points and the bus stops located along routes throughout the community. This report highlights the major passenger facility needs as:

- Improvements to Aberdeen MARC Station – addressed within the Aberdeen Station Improvement Study;
- Improvements to Edgewood MARC Station – addressed within the Edgewood Station Improvement Study; and
- Bus shelters along the proposed routes at key locations.

No capital costs have been estimated for the MARC station improvements since these costs are the subject of other planning efforts. However, it is noted that if all the bus service improvements included in this plan were implemented, the Aberdeen station will require:

- Bays for 14 vehicles to use the station at one time (particularly if Harford Transit assumes a timed transfer at the station);
- Pedestrian and bicycle safety design features to mitigate bus-pedestrian-bike collisions; and
- Adequate pedestrian circulation to allow riders to transfer among vehicles especially to/from APG shuttles.

Based on projected shelter needs of 10-20 shelters at $20,000 each, the total cost to address this existing list would be $200,000-$400,000. As an alternative, the County could explore contracting with a shelter advertising firm, which would eliminate this cost to the County and could potentially even generate some revenue.

10.3 Revenue Sources

Before moving forward with the implementation of services, a dedicated funding source and the appropriate capital purchases are required. Potential funding sources for these services are presented below.

Federal Funds

Federal Transit Administration Funds

Historically, the primary funding source for Harford County's public transportation program has been Federal funds administered by the FTA. In particular, Section 5307 urbanized area formula grants have been utilized for both operating and capital expenses. Section 5307 funding is available to public transportation programs that operate in the small urban areas of the state and are allocated by the FTA based upon population and population density. The Section 5307 program requires a local match that is 25 percent of the net operating expenses and ten percent for capital expenses. This funding source should be explored for implementing the TDP recommendations – Routes 1, 2, and 6 within Harford County's annual application to the MTA.

Federal Stimulus Bill

Gov. Martin O'Malley outlined the first wave of transportation projects arising from Federal economic recovery money in February 2009. Funds will provide "urgently needed" jobs for highway resurfacing, bridge improvements and other programs statewide. Maryland will receive $610 million for transportation projects as part of the economic stimulus bill signed by President Barack Obama. The first phase includes $365 million in highway and transit projects. Gov. O'Malley emphasized that the work will be spread throughout the state. Among the project highlights in the first phase:

- $65 million for 100 hybrid buses and equipment; and
- $10 million for MARC Station and parking upgrades.

Capital for proposed Aberdeen alternatives should be underscored as important regional projects to Gov. O'Malley and Secretary of Transportation John Porcari.

BRAC Funding

Federal funding for BRAC expansion must continue to flow into Maryland to handle the thousands of incoming jobs. The consequences of limited or inadequate funding are congested roads. BRAC funds are critical to both operating improved and new bus service (keeping people off the roads) in conjunction with improved access to APG.

State Funds

Another MTA managed program is the MTA Commuter Bus operation. Revenue supporting this program is primarily through the Transportation Trust Fund. Sources of funds include motor fuel taxes, motor vehicle excise (titling) taxes, motor vehicle fees (registrations, licenses and other fees), and Federal-aid. In addition, the Trust Fund also includes corporate income taxes, operating revenues (e.g., transit fares, port fees, airport fees), and bond proceeds. Funding support for the reverse commute on MTA Commuter Bus Route 420 and the two proposed alternatives out of Baltimore County (originating in Middle River and Perry Hall) should be pursued through this MTA program. Unfortunately, revenue streams such as the gas tax, which fund commuter bus services, have seen significant declines.

11.0 Prioritization of Needs

The list of potential projects are prioritized into high and medium based on benefits of the improvements, implementation time, available financial resources, challenges to implementation, and input from stakeholders.

As described above, the new routes were coded into the network and transit trips projected. This included the routes in the TDP, new proposed local bus routes and the reverse commuter bus route from Baltimore City. The model helped explore the predicted total number of transit trips attracted to and produced from the two TAZs representing the APG. Based on this analysis, the alternatives were assessed based on predicted volume of trips to/from the post. While the model is not an effective tool for predicting ridership independently, it does assist with the comparison of alternatives.

11.1 Priority Matrix

Table 11.1 provides a framework for prioritizing the various alternatives in terms of their ability to serve the target markets, ease of implementation and relative cost.

Table 11.1 Alternative Priority Matrix

Alternative	Abililty to Serve Markets				Relative Cost	Ease of Implementation
	Population Density	Service to BRAC Households	Attraction of Transit Trips to APG	Projected Ridership		
Route D	●	○	○	●	◐	●
C-1	○	●	◐	◐	●	◐
C-2	●	◐	◐	●	●	◐
H-1	●	●	●	◐	●	◐
H-2	○	◐	◐	◐	●	◐
H-3	●	●	●	●	●	◐
H-4	○	◐	◐	◐	●	◐
B-1	●	○	○	●	◐	◐
B-2	●	○	◐	●	◐	◐

Good ●
Average ◐
Poor ○

11.2 Preliminary Priorities

Following, are a list of potential priorities for service improvements. Again, the creation of a new TOD in the area could affect the prioritization of services.

High Priority

- **Implement TDP Recommendations, Particularly for Routes 1, 2 and 6** – the incremental costs of these improvements are relatively low, and services would benefit both APG and the remainder of the community.
- **Continue and Expand Support for Ridesharing Programs** – The County and APG ridersharing programs are an effective mechanism for encouraging and increasing HOV commute patterns and should continue to be supported.
- **Reverse Commute on MTA Commuter Bus Route 420** – This service is relatively easy to implement. While the cost of the service would be high under the current contract arrangements with the private operator, it could be lower if MTA were to negotiate an incremental cost with the contractor.

- **Post Shuttles – Aberdeen and Edgewood** – These shuttles are essential to any transit that serves the post since they connect local bus, commuter bus and MARC stations to jobs on the post.
- **Local Bus Improvements** – The following routes are anticipated to have relatively high ridership, particularly for the hours of service required.

  Harford County
  - H-3 – Forest Hill

  Cecil County
  - C-2 – Elkton

  Baltimore County
  - B-1 – Middle River
  - B-2 – Perry Hall

Moderate Priority

- **Local Bus Improvements** – The following routes would be a lower priority since they are anticipated to have lower ridership, albeit within the acceptable range, given the hours of service required.

  Harford County
  - H-1 – Joppa
  - H-2 – Street
  - H-4 – White Hall

  Cecil County
  - C-1 – Rising Sun

The **MARC train enhancements** that were proposed are still under review. The MGIP short term improvements that are currently funded are only to maintain existing level of service. The implementation timeline for proposed MGIP service expansions is uncertain but still planned. Further, increasing MARC service is relatively difficult to achieve and the cost of this improvement would be substantial. One suggestion would be to run the MTA 420 as a reverse commute and see how much ridership is attracted. Then, if warranted, consider additional MARC services in future years.

Appendix A

Maps of Development Areas from APG-BRAC EIS

Figure A.1 Aberdeen Proving Ground
Harford County, Maryland

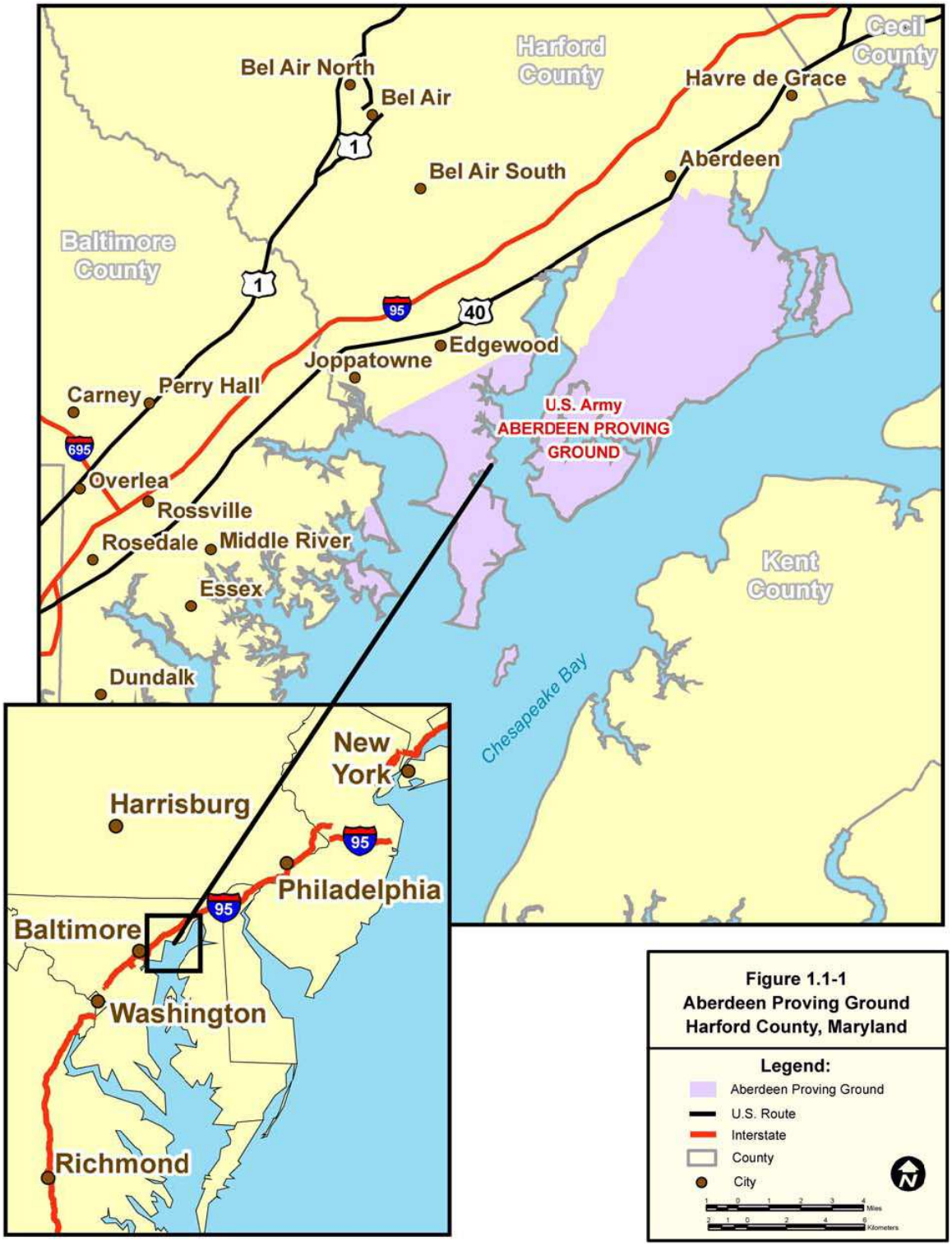


Figure A.2 Aberdeen Proving Ground
Proposed Action Development Areas

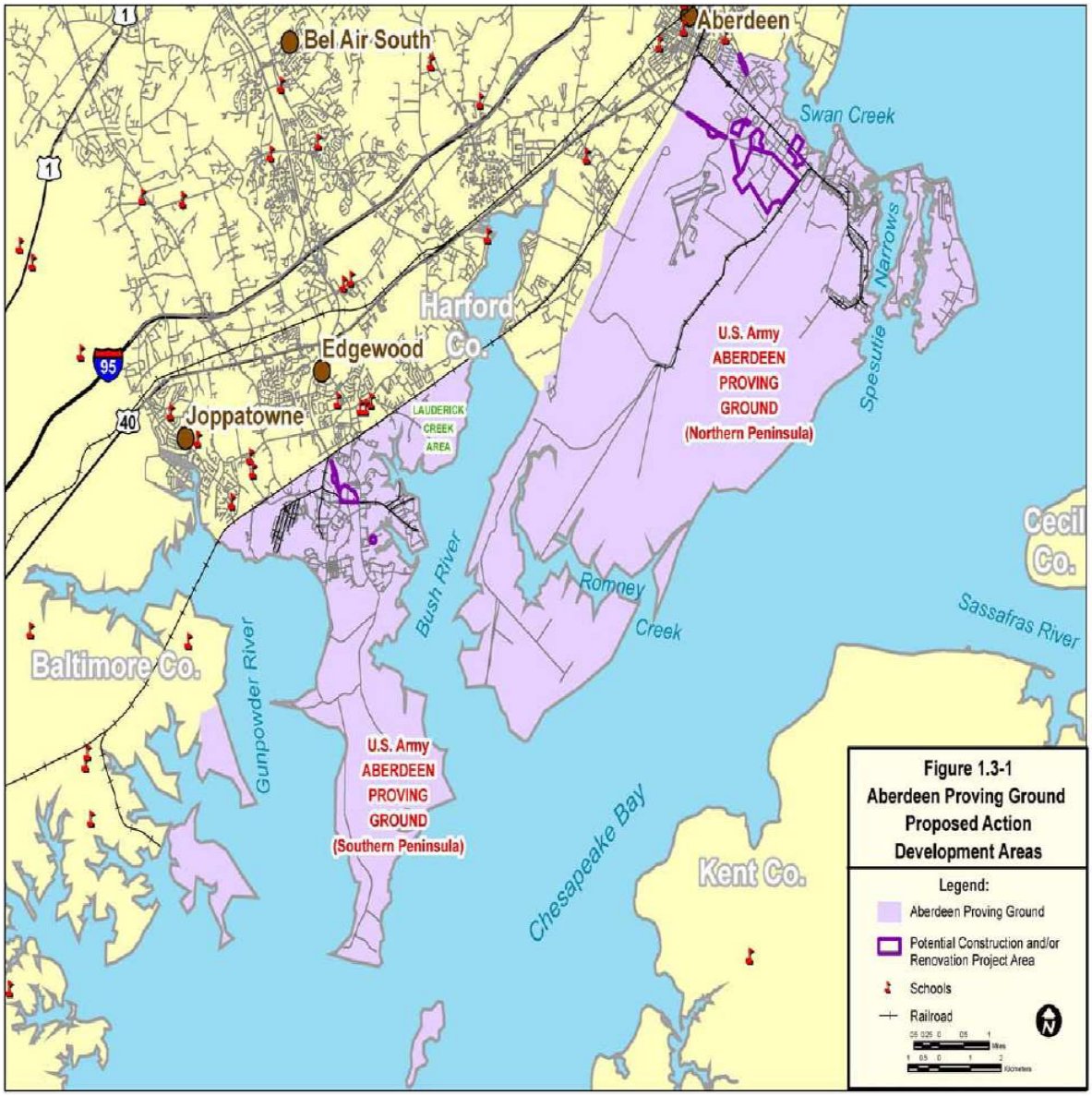


Figure A.3 Aberdeen Proving Ground

Proposed Action Development Areas on the Northern Peninsula

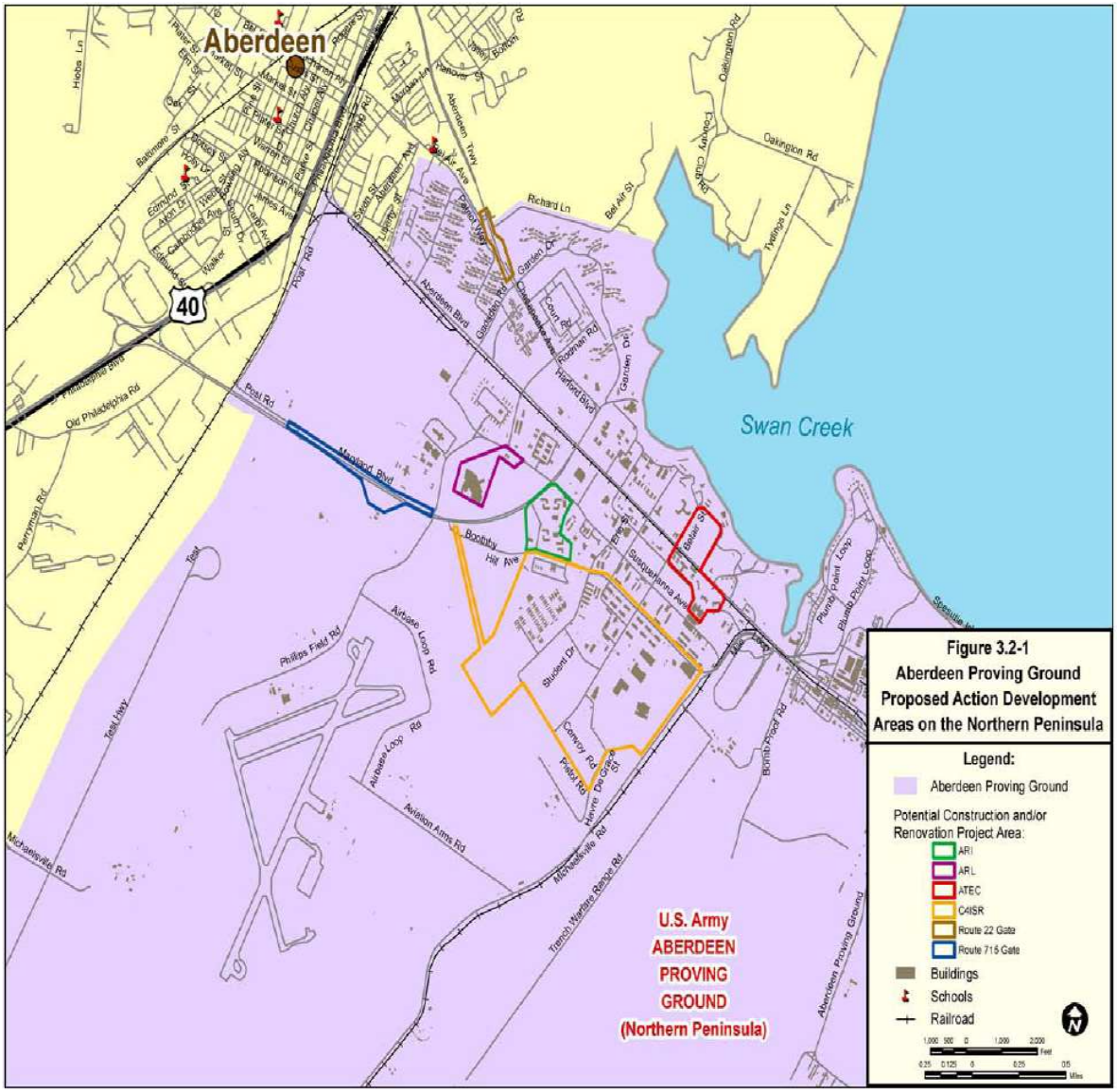


Figure A.4 Aberdeen Proving Ground

Proposed Action Development Areas on the Southern Peninsula

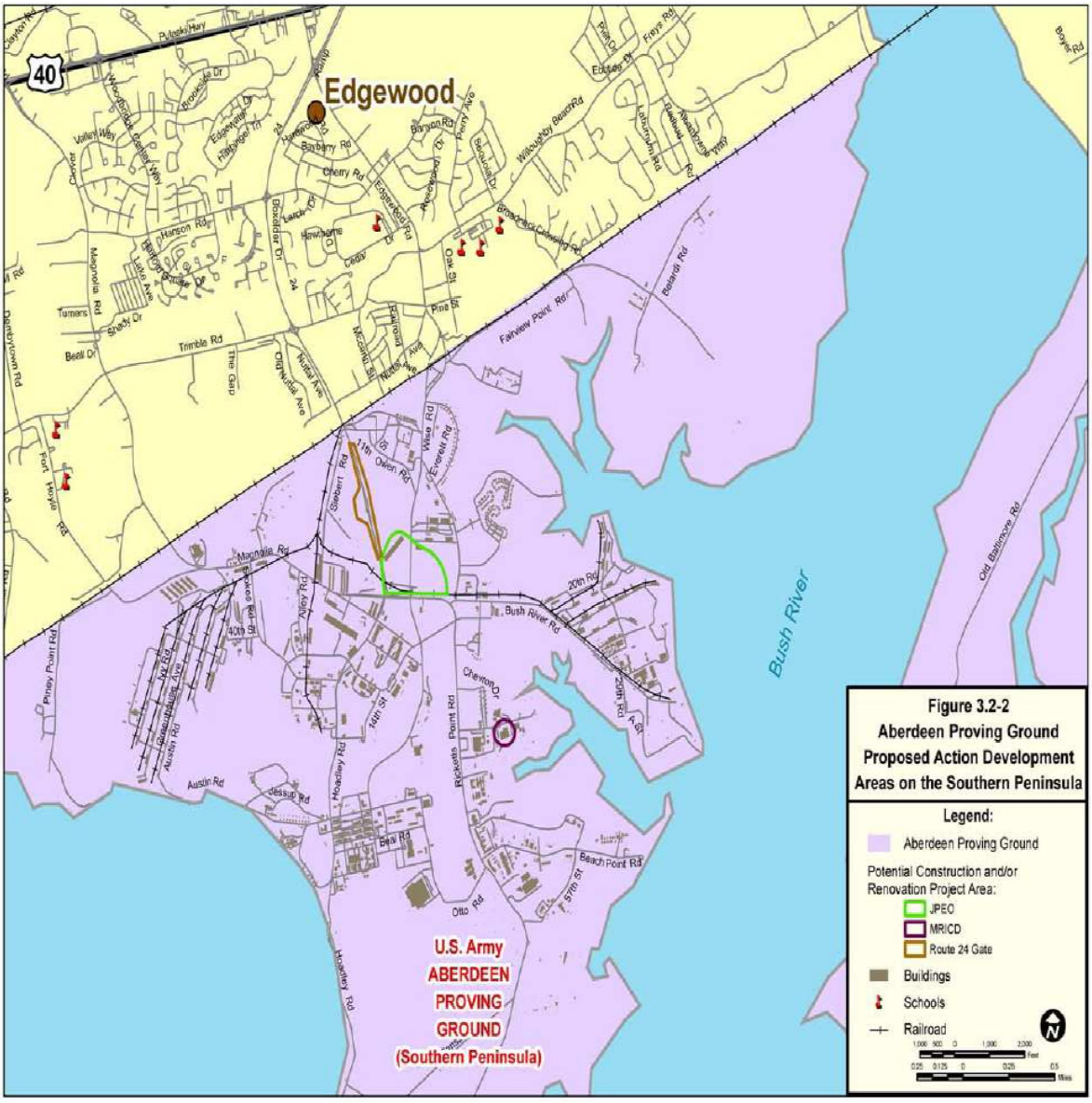
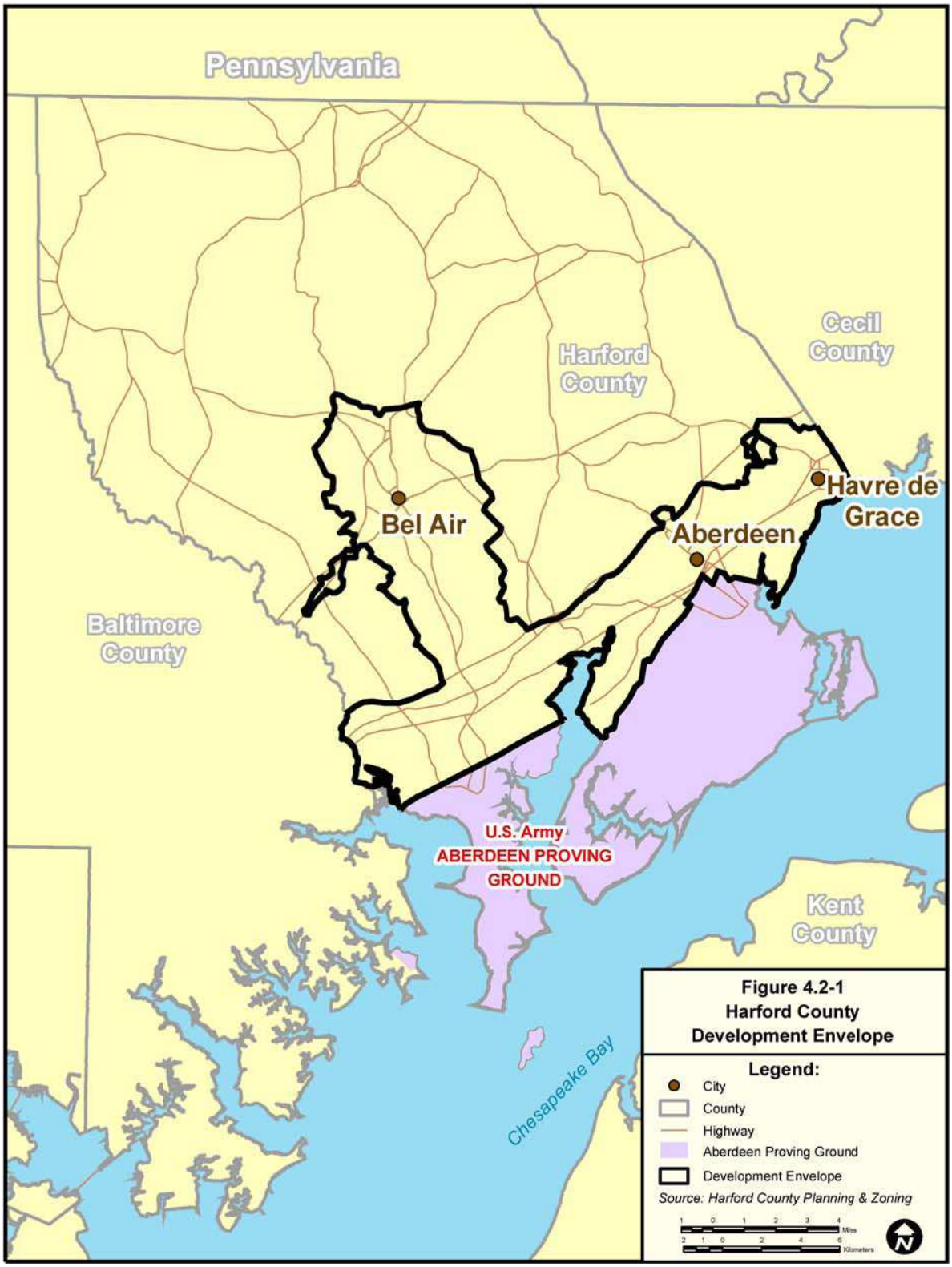


Figure A.5 Harford County
Development Envelope



Appendix B

Summary of Experiences at Other Bases

Fort Lewis, Washington

Pierce Transit provides service from Lakewood to Fort Lewis via Madigan Hospital along Route 207 (Route 206 travels between Lakewood and Madigan Hospital and Route 207 between Madigan Hospital and Fort Lewis). Route 7 service is provided only on weekdays from around 6:00 a.m. to 7:00 p.m. The weekday shuttle bus between Madigan Hospital and Fort Lewis Bus Depot requires a transfer for passengers taking Route 206. The timetable also includes the following note: "**Important Note**: Passengers wishing to enter Fort Lewis MUST have a Department of Defense ID Card." Serves Fort Lewis Bus Depot/Madigan Hospital.

Pierce Transit has a long tradition of providing service to the post, though it has been a struggle. At the gate, security checks the military IDs of the passengers and the driver's Pierce Transit ID (list of personnel is kept at the gate). There are no through routed buses, all terminate at Fort Lewis. Any individual without proper ID is asked to exit the vehicle. After 9/11, they had a military person on-board, though this has been scaled down and is only required during security alert warnings.

It is interesting to note that the Fort Lewis route is the system's least productive route but is continued for goodwill and community support. Also, to address the ADA complementary paratransit requirement and meet the security restrictions, a separate zone was developed in their scheduling software for ADA service to the post.

Contact: George Patton, (253) 581-8080.

Fort Benning, Georgia

Fort Benning is located in Columbus, Georgia where transit service is provided by METRA. Specifically, METRA's Route 4 provides service from downtown Columbus (the transfer center) to Fort Benning (transfer center on the base). Service is provided hourly from 5:00 a.m. to 8:00 p.m.

This route is open to everyone; however, Fort Benning security checks all passengers at the gate. This security seems to be more lenient than other basis since a picture ID is all that is required – i.e., driver's license or a picture ID issued by METRA.

Fort Benning provides an internal shuttle bus for transportation on the base. One glaring issue concerning the shuttle bus is that it is not ADA accessible.

Contact: Saundra Hunter, Transportation Director, (706) 653-4410.

Kirtland Air Force Base, New Mexico

ABQ RIDE, Albuquerque, New Mexico, provides service along three routes to Kirtland Air Force Base – Route 3-157, Route 222, and Route 317.

Route 3-157 provides service from Uptown to Kirtland AFB weekdays from 5:30 a.m. to 5:40 p.m.

Route 222 provides service from southwest Albuquerque via the Rail Runner Station and airport to Kirtland AFB. Service is provided weekdays on two morning and two afternoon trips towards Kirtland AFB and two morning and three afternoon trips towards the airport and train station (commuter route).

Route 317 provides service from downtown (Alavarado Transportation Center) to Kirtland AFB. Service is provided weekdays on two morning and one afternoon trip towards Kirtland AFB and one morning and two afternoon trips towards downtown (commuter route).

Timetable notes "People without proper military clearance and identification may not be allowed to enter Kirtland Air Force Base."

All three routes serving Kirtland AFB terminate at the base. At the security gate, military security checks each passenger for a military ID and asks them to exit the bus if they do not have sufficient identification.

Complementary paratransit service is provided on the base where they allow other passengers (if aboard) to continue in past the security gate.

Contact: Andrew DeGarmo, (505) 243-7433.

Puget Sound Naval Shipyard, Bremerton, Washington

Kitsap Transit public fixed-route, fixed-schedule buses provide service to the gate, and passengers can go through the gate and catch internal shuttles. However, Kitsap Transit has an extensive network of worker-driver buses. Kitsap Transit's Worker/Driver buses are driven by **PSNS employees** and can enter PSNS. The Worker Driver's are full-time PSNS employees and part-time Kitsap Transit employees.

Kitsap Transit hires and trains the Worker Drivers to operate 35- and 40-foot transit buses. They operate 28 routes throughout Kitsap County carrying PSNS employees to and from work.

The Worker Drivers go through Badge Inspection Training (deputization) and are responsible for inspecting all badges as passengers board the bus. They also receive security inspection training from PSNS security and are responsible for doing security/IED inspections on the buses daily.

The badge inspection training (deputization) the drivers receive enables them to do all badge inspections for their passengers. This keeps PSNS security from having to inspect the badges of over 1,000 riders a day that enter PSNS.

This program works because PSNS employees operate the buses that enter PSNS. Security policies at PSNS will not allow routed operators to enter PSNS. Even if routed operators could gain access to PSNS, it would be an administrative burden for routed operations to get and maintain the proper security requirements for all the routed drivers that would operate buses into PSNS.

Appendix C

DOD Regulations on Shuttles and Mass Transit

DOD Regulations on Shuttle Bus Service and Mass Transit Services

A. Generally. (10 U.S.C. §2632, DOD 4500.36-R, CHAP. 5)

1. Primarily Three Types of Service: Group Transportation, Shuttle Bus Service, and Mass Transit.

2. Generally, a reasonable fare must be charged. 10 U.S.C. §2632(a)(3).

   a. Fares must be accounted for and deposited as miscellaneous receipts. DoD 4500.36-R, ¶¶5-2d; 5-4e.

   b. The fare system will be structured to recover all costs of providing the group transportation service, including capital investment, salaries, operations, and maintenance.

      1) If the transportation vehicle is used for both operational (mission) and fare-based transportation, only the costs directly related to the fare-based transportation must be recovered. DoD 4500.36-R, ¶¶5-2e; 5-4d.

      2) Since these vehicles are acquired in direct support of the defense mission, acquisition costs will not be recovered through the fare system.

   c. Exceptions to the requirement of a fare.

      1) Shuttle bus or mass transit transportation that is incident to the performance of duty. 10 U.S.C. §2632 (b)(3).

      2) Mass transit services where the Secretary determines that the area of the installation is not adequately served by "regularly scheduled and timely commercial municipal services."

         a) The Secretary of the Army has authorized MACOM commanders to establish such fare-free bus service if certain specific, objective criteria are met. AR 58-1, ¶5-4g. This authority may not be further delegated. AR 58-1, ¶5-4i.

            i. The sending location does not have adequate medical, dental, commissary, or Post Exchange facilities and/or, the rider's place of work is located on the receiving installation and/or the use of privately owned vehicles is restricted in the area served.

            ii. The receiving installation is more than one mile from the sending installation.

iii. Fare charged per DOD Regulation 4500.36R EXCEEDS $1.00 per passenger per round trip.

3) Mass transit services overseas where the Secretary determines that the area is "inadequately served by public transit." DoD 4500.36-R, ¶5-4d.

3. The Service Secretary must determine that the service is needed for the effective conduct of affairs within that service. 10 U.S.C. §2632(a)(1).

4. Transportation services provided must be reviewed locally on an annual basis.

B. Shuttle Bus Service – 10 U.S.C. §2632(a)(2)(A)

1. Uses and Limits.

a. The capability to transport groups of individuals on official business between offices on installations **or** between nearby installations is a recognized requirement and is essential to mission support.

1) Shuttle busses may only operate in duty areas for the Army. AR 58-1, ¶5-1b.

b. Shuttle bus service may be provided on or between installations for the transportation of:

1) Military personnel and DoD employees between offices and work areas of the installation(s) or activity during designated hours when justified by the ridership.

2) Enlisted personnel between troop billets and work areas.

3) DoD contractor personnel conducting official defense business.

4) Employees of non-DoD Federal Agencies on official business. Such transportation will only be provided over routes established for primary support of the defense mission.

c. In isolated sites with limited support facilities where DoD personnel and dependents need additional life support (medical, commissary, and religious) which directly affects health, morale, and welfare of the family, shuttle bus service may be provided.

d. *Space-available transportation* on existing, scheduled shuttle buses may be provided to the following categories of passengers:

1) Off-duty military personnel or DoD civilian employees.

2) Reserve and National Guard members.

3) Dependents of active duty personnel.

4) Retirees.

5) Visitors to the base (intrainstallation only).

6) In overseas areas volunteers of Type 2 – Affiliated Private Organization.

2. Approval. The following instructions apply in establishing and maintaining shuttle bus routes:

a. Established routes and schedules must be based on a validated need to transport authorized passengers.

b. Shuttle bus routes (see 5-6.b.(2), above) will not be used to provide domicile-to-duty travel, except when supporting enlisted personnel between troop billets and work areas.

c. The conveyance used must be no larger than the most economical available to accommodate "duty" passengers.

d. Surveys must be conducted at least annually to ensure that need for the service remains valid.

C. Mass Transit Services – 10 U.S.C. §2632(a)(2)(C)

1. Uses and Limits

a. Designed to fulfill requirements beyond the scope of shuttle bus service.

b. May be used to provide other "nonduty" types of transportation within a military installation or between subinstallations on a fare basis.

1) The mass transportation may be used to provide domicile–to-duty transportation on military installations or between subinstallations in reasonable proximity.

2) The service also may be used to provide transportation:

a) To and from places of duty and employment on a military installation.

b) To and from a military installation in a remote area determined by the Secretary of the Military Department not to be adequately served by regularly scheduled commercial mass transit.

c) Between places of employment for persons attached to, and employed in, a private plant that is manufacturing material for the Department, ***but only during war*** *or national emergency declared by Congress*.

c. May be provided to military personnel, DoD civilians, contractors, and their dependents.

2. Approval. To authorize the establishment of such systems, the Secretary must determine that:

   a. There exists a potential for saving energy and for reducing air pollution;

   b. A reasonable, but unsuccessful, effort has been made to induce operators of private companies to provide the necessary transportation; and

   c. The services to be furnished will make proper use of and provide the most efficient transportation.

3. *Army-specific Guidance*. AR 58-1, ¶5-4a. – e.

   a. The Secretary of the Army has determined that the effective conduct of the affairs of the Army **may** warrant mass transportation support for military personnel, DOD civilians, contractors, and their dependents, who are assigned, employed, or residing at **isolated installations *if***:

      1) There is no regularly scheduled mass transportation twice a day, five times a week between the sending or receiving installations that picks up and drops off passengers within one-half-mile of the installations, provides pick-up from the sending installation not later than 0800 hours and provides last departure from the receiving location not later than 1900 and is licensed and operates in accordance with reasonable maintenance and safety standards.

      2) Other mass transportation providers are unable or have declined to provide adequate transportation facilities or service after a reasonable effort has been made to induce them to do so.

      3) The service will save unproductive person-hours.

      4) The service will enhance the rider's quality of life.

   b. MACOM commanders may implement mass transportation service if the objective criteria in the AR are met.

   c. Vehicles used will hold 12 or more riders and operate at 50 percent of capacity on a monthly basis. For example, service scheduled for three times a week using a 16 pax bus would require a minimum monthly ridership of 96 (8x3x4) passengers to justify use.

   d. Annual cost of the bus service provided as calculated in Chapter 12 will not exceed $100,000. For USAREUR based units, the ceiling is waived. For EUSA, the ceiling is $250,000.

   e. The service to be furnished will pick up and drop off at centralized collection points and otherwise make proper use of transportation facilities to supply the most efficient transportation to eligible passengers.