CAMBRIDGE SYSTEMATICS

Aberdeen Station Area Transit Needs Assessment and Market Analysis

Task 2 – Market Analysis

final

report

prepared for

Maryland Department of Transportation

prepared by

Cambridge Systematics, Inc.

with

Bay Area Economics

March 2009

www.camsys.com

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1.0 Project Background and Market Area Identification

1.0 Project Background

The Maryland Department of Transportation (MDOT) has commissioned a study of transit needs and market conditions in the area surrounding the Aberdeen Station. This technical memorandum covers Subtask 2.1 of the market analysis portion of this assignment (Task 2). Task 2 evaluates real estate development opportunities connected with existing and potential transit improvements related to 1) the Aberdeen train station, and 2) the anticipated increase in area jobs and households related to the growth of Aberdeen Proving Ground (APG) as a result of Base Realignment and Closure (BRAC) activities.

The 2005 round of realignment and closure recommendations (BRAC 2005), proposed by the BRAC Commission and approved by President Bush, includes substantial realignment activity affecting APG. APG will receive personnel from several other bases, most significantly the Communications and Electronics Command (CECOM) administration and the Command, Control, Communication, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) Team from Fort Monmouth, New Jersey, designated for closure under BRAC 2005. APG will also lose military organizations that will relocate to other bases.

Realignment activities at APG will create significant economic benefits for the region and the State of Maryland, but will also significantly impact the service and infrastructure needs of affected communities. The region surrounding APG has mobilized in response to the planned influx of employees and households. The Chesapeake Science and Security Corridor (CSSC) is an organization with representation from eight counties in Maryland, Pennsylvania and Delaware, as well as the City of Baltimore, as the geographic areas that will experience the impact of APG relocations. CSSC serves a coordinating function for BRAC implementation activities across the region, aiming to understand and address BRAC impacts to ensure a high quality of life for both existing and relocating residents to the area. Harford County, as well as other surrounding counties, have developed action plans to respond to expected BRAC impacts.

Subsequent to the release of BRAC 2005 decisions, several studies evaluated the potential impacts of personnel movement to APG. These studies include:

- BRAC Activities affecting Aberdeen Proving Ground, Andrews Air Force Base, Bethesda Naval Hospital, and Fort Meade and in the State of Maryland, prepared by

Science Applications International Corporation (SAIC) for the Maryland Department of Business and Economic Development Office of Military and Federal Affairs, March 2006

- BRAC Activities #3 Report, prepared by RESI, Towson University, December 2006
- Aberdeen Proving Ground BRAC Impacts on Seven Jurisdictions, prepared by Sage Policy Group for the Chesapeake Science and Security Corridor, September 2007

Aberdeen Proving Ground

Aberdeen Proving Ground (APG, or the Garrison), established in 1917, is the oldest active proving ground in the United States. As a proving ground, it provides testing, research and development of ordnance for the U.S. Army, and it serves as the Army's leading facility for this purpose.

Existing Conditions at APG

APG occupies nearly 73,000 acres, divided nearly evenly between the Aberdeen and Edgewood cantonment areas. A significant portion of the site is restricted testing range and technical areas, with administrative functions and the majority of staff working in a much smaller portion of the site. The administrative areas are located on the road network currently accessible through three security gates. The Aberdeen cantonment currently is served by the two security gates: one on MD Route 715 and the other on MD Route 22. Visitors, guests, and deliveries access the base through the MD Route 715 gate, and both gates provide access to authorized staff. An additional gate is in place for the Aberdeen cantonment, located on APG Road, but is not currently open and staffed. One security gate serves the Edgewood cantonment, accessed by MD Route 755 which turns into Wise Road on base. By automobile, the two cantonment areas can only be accessed through an off-base drive of over 10 miles.

The Garrison is bounded by the City of Aberdeen and unincorporated areas of Harford County (including the Village of Edgewood), generally to the west. To the east, north and south is the Chesapeake Bay. The Gunpowder River inlet forms the southern boundary of the Edgewood area and the Susquehanna River is directly north and east of the Aberdeen area.

There are currently about 70 organizations operating on the Garrison, with a total of about 15,000 personnel currently working there. In addition to the buildings where these employees work, there are currently about 1,000 housing units on base for military personnel, as well as a limited amount of retail open during the work day to provide food service and convenience items for workers. A Post Exchange (PX) that provides goods at a discounted rate and commissary are available for active and retired military households only. A golf course on base is open for public use just outside MD Route 715 gate. All of these functions except the golf course are currently behind the security perimeter of the property and are accessed only through security checkpoints.

Incoming and Outgoing Organizations at APG Resulting From BRAC

BRAC activity will result in a significant net increase of workers at APG. Realignment will cause the movement of about 8,200 staff positions to APG, according to Garrison staff involved in preparations for incoming personnel. These positions consist mostly of civilian defense personnel as well as contractors hired to work on-site (embedded contractors), but will also include some military personnel. Table 1.1 below provides a breakout of the organizations that are transferring operations to APG. In addition to C4ISR staff relocating from Fort Monmouth in New Jersey, C4ISR staff will arrive from Fort Belvoir, VA and Redstone Arsenal, AL, for a total gain of approximately 7,000 C4ISR positions at APG. These new positions will be located in the Aberdeen cantonment.

Organizations will also leave APG as a result of BRAC. The largest organization to move will be the U.S. Army Ordnance Center and Schools, which is relocating to Fort Lee, VA. This organization currently consists of just over 200 civilian positions, and about 600 military positions. This relocation will also include the loss of over 2,000 military students and interns who currently live in barracks and have little direct impact on local economic activity.

Current counts of relocating staff differ slightly from previously reported estimates. Shortly after the BRAC 2005 recommendations were approved, SAIC's report for the Maryland Department of Business and Economic Development summarized the anticipated employment changes at APG and other Maryland bases. SAIC reported a higher number of incoming positions, mostly from C4ISR groups, but reported very few of the transferred positions would be military personnel: only 385 out of the total 10,426 positions they reported as incoming were military. SAIC reported that about 71 percent of incoming positions would be civilians employed by the Department of Defense (DOD), and another quarter would be civilian contractors working side by side with DOD personnel.

The Sage Policy Group report (the Sage Report) presents a low case, mid case, and high case scenario for the number of employees that will be relocating to APG. The low case scenario, 8,200, was given by the former Garrison commander of Aberdeen Proving Ground. The Sage Report uses SAIC's 9,154 estimate as the high case scenario. For the mid-case, Sage uses the midpoint of these two numbers.

Relocation will be complete by September 15, 2011. About 2,000 workers, mostly associated with C4ISR, will arrive before many of their colleagues, and will temporarily be housed in existing administrative space at the Edgewood cantonment until new buildings at Aberdeen are ready for occupancy. These early transfers include over 300 workers who have already relocated or will be in the area by the end of 2008, and an estimated 900 positions that will relocate in 2009. According to APG staff, the precise number of civilian employees who decide to relocate with their position will be unknown until all such employees are required to make a final decision in 2010. Naturally, employees will make relocation decisions based on personal, household and economic circumstances. The Sage Report estimates that approximately 30 percent of workers will relocate with their positions. This estimate was gathered from SAIC's 2006 report, which included a survey

of Fort Monmouth employees. An October 2008 article from the Baltimore Business Journal predicts a higher percentage of workers relocating from Fort Monmouth to APG, due in most part to the downturn in the economy. Characteristics of current employees and the likelihood that employees will follow their positions to APG will be further explored in a subsequent technical memorandum.

Table 1.1 Incoming and Outgoing Organizations at APG

Organization	Divisions	Number of Positions Moving	Outward/ Inward Bound	Location Prior to BRAC	Location After BRAC
Team C4ISR	CECOM-LCMC CERDEC PEO IEW&S PEO C3T	7,000	Inward	Fort Monmouth, NJ Fort Belvoir, VA Redstone Arsenal, AL	Aberdeen Proving Ground, MD
Chem/Bio R&D Organizations	Medical Chemical Defense Research Defense Threat Reduction Agency Joint Program Executive Office Non-Medical Chem/Bio Defense Research	400	Inward	Walter Reed Research Institute, MD Fort Belvoir, VA Brooks City Air Force Base, TX	Aberdeen Proving Ground, MD
Army Test and Evaluation Command		600	Inward	Alexandria, VA	Aberdeen Proving Ground, MD
Army Research Institute		30	Inward	Fort Knox, KY	Aberdeen Proving Ground, MD
US Army Research Laboratory	Vehicle Technology Directorate	70	Inward	Langley, VA Glenn, OH	Aberdeen Proving Ground, MD
	Total Estimated Incoming	***8,100***			
US Army Ordnance Center & Schools		800 (a)	Outward	Aberdeen Proving Ground, MD	Fort Lee, VA
US Army Environmental Command		400	Outward	Aberdeen Proving Ground, MD	Fort Sam Houston, TX
Pre-Deployment/Mobilization Mission		0	Outward	Aberdeen Proving Ground, MD	Fort Dix, NJ
	Total Estimated Outgoing	***400***			

Notes:
(a) Does not include a prior estimate of a loss of 2,000 military students.

Source: Aberdeen Proving Ground Staff, 2008; Sage Policy Group, 2007; SAIC, 2006; BAE, 2008.

In addition to military, civilian and embedded contractors whose positions will move to APG, the relocation of organizations to APG will also cause additional positive employment impacts on the surrounding area. One such impact is associated with the potential creation or relocation of private sector positions at firms with military contracts. The study by RESI of Towson University estimated the potential growth of this employment base, described as the "contractor tail," to be 8,000 local positions. Additional indirect and induced employment impacts in the area will result from the increase in economic activity associated with APG relocations. Market assessment assumptions pertaining to the estimated increase of direct base employment, contractor tail employment, and indirect impacts will be described and further evaluated in a subsequent technical memorandum.

Planned Expansion at APG

All relocating direct positions will be accommodated on base, many in new buildings planned or under construction. In response to realignment activities, APG is planning the following improvements to the Edgewood and Aberdeen cantonments:

- **Demolition of barracks** no longer needed in connection with the Ordnance School.
- **Reduction in the number of on-base housing units** to 320, due to the decrease in military personnel on the base. These remaining units, to be managed by a private company, will be undergoing renovation. On-base housing is only offered to military personnel.
- **Construction of new administrative space**. Four buildings will house C4ISR functions, with one currently under construction; one building will be constructed for the Army Research Institute (ARI), as well as one building for the Army Test and Evaluation Command (ATEC). Office space is currently under construction and will be completed by the end of 2010 for move-in between January and September 2011. Buildings no longer required due to realignment activities will be demolished.
- **Relocation of the MD Route 715 Gate** approximately 3,000 feet East of its current location.

Enhanced Use Leasing Opportunities

The Army engaged Opus East, LLC (Opus) in an Enhanced Use Leasing (EUL) agreement that grants Opus a 50-year lease of APG property for construction and operation of nonresidential real estate. Opus signed a master agreement in 2006, giving the company the right to develop the property in exchange for lease payments that the Garrison will utilize to improve infrastructure and facilities throughout the base. Under the terms of the lease, Opus can build up to two million square feet of office, R&D, hotel and conference facilities on 200 acres of land. According to Garrison staff, Opus also has the option to expand the area developable under an EUL on land adjacent to the Ruggles Golf Course across MD Route 715. Opus is authorized to construct up to 180,000 square feet of space each year for the next five years. Approval for each new building is granted by the Garrison. As of June 2009, St. John Properties, Inc. took over this development.

Opus has prepared a master plan of the EUL site, named the Government and Technology Enterprise (GATE). The master plan, depicted in Figure 1.1, envisions 20 buildings in 10 land bays. Bay F is the first bay to be leased and developed. Currently under construction is a 60,000-square feet, single story research and development (R&D) facility, leased to military contractor CACI and occupied in 2008. The second building planned for construction is an 80,000–square feet, three story speculative office building. The buildings will be designed to provide enhanced security to businesses operating within them: GATE is currently accessed only through APG security checkpoints, and buildings will meet Department of Defense (DOD) antiterrorism standards and are marketed to tenants requiring security and ready access to APG facilities and staff. The location of

GATE at APG's boundary allows St. John Properties, Inc. flexibility in moving the fence of the base's secured area so that buildings can be located inside or outside the fence.

Figure 1.1 GATE Site Plan

The Aberdeen Station

The Aberdeen Station is one of 13 stations on the MARC Penn Line extending from Union Station in Washington DC, through Baltimore Penn Station, and terminating at the Perryville Station. Eight northbound and eight southbound trains serve MARC commuters at the station on weekdays, including Amtrak trains that accept commuter passes. MARC runs on Amtrak's northeast corridor line running between Boston and Washington DC. Amtrak provides service to the Aberdeen Station, making 11 daily southbound stops and 10 daily northbound stops at the station and directly connecting it with all other destinations on the northeast corridor. The station is adjacent to and accessed from U.S. Route 40, an auto-oriented commercial strip traversing generally in a north-south orientation parallel to the rail line as it passes through Aberdeen. Businesses adjacent to the station include a memorial headstone business, a used car business, a gas

station and a temporary employment agency. Excluding the parking areas surrounding the station, the land within close proximity of the station has been developed.

Parking is available in a surface lot between U.S. Route 40 and the rail line on the east side of the station and tracks. The Maryland Transit Administration (MTA) is commencing construction of additional surface parking east of the northbound rail line, which will add approximately 95 net new parking spaces to the station area. New parking will be provided in on-street and in two new surface lots. North of East Bel Air Avenue, Taft Street will be reconstructed and surface parking will be created on both sides of this road, where currently there is an unpaved overflow lot. APG Road will also be reconstructed to accommodate 93 head-in parking spaces where there is now parallel parking on unpaved shoulders of the roadway. When complete, the station will have approximately 293 spaces, a net gain of about 95 spaces.

The City of Aberdeen

Rail lines bisect the City of Aberdeen from north to south, creating an eastern section that abuts APG and a western section that includes the City's central business district. Aberdeen's 2008 population is estimated to be about 14,000 residents in about 5,800 households, reflecting a 0.2 percent and 0.6 percent annualized growth rate since the 2000 Census.[1] An inventory of land prepared for the City's revised comprehensive plan identified a total land area of 4,096 acres, or 6.4 square miles. The City's central business district is centered on Bel Air Avenue, the City's main street, near its intersection with U.S. Route 40 near the station. U.S. Route 40, MD Route 22, and Beards Hill Road form the City's primary retail corridors. The City's housing stock is predominantly single family detached units, representing about 57 percent of housing units; 13 percent of units are townhouses or in buildings with four units or less.[2] Residential development historically centered around the City's core at the central business district but in recent decades development has extended to the north and northwest of this area. The City's location and features are depicted in Figure 1.2.

The City is currently updating its comprehensive plan. The draft plan identifies 688 acres of developable land in the City, zoned for commercial, industrial, residential and mixed use.

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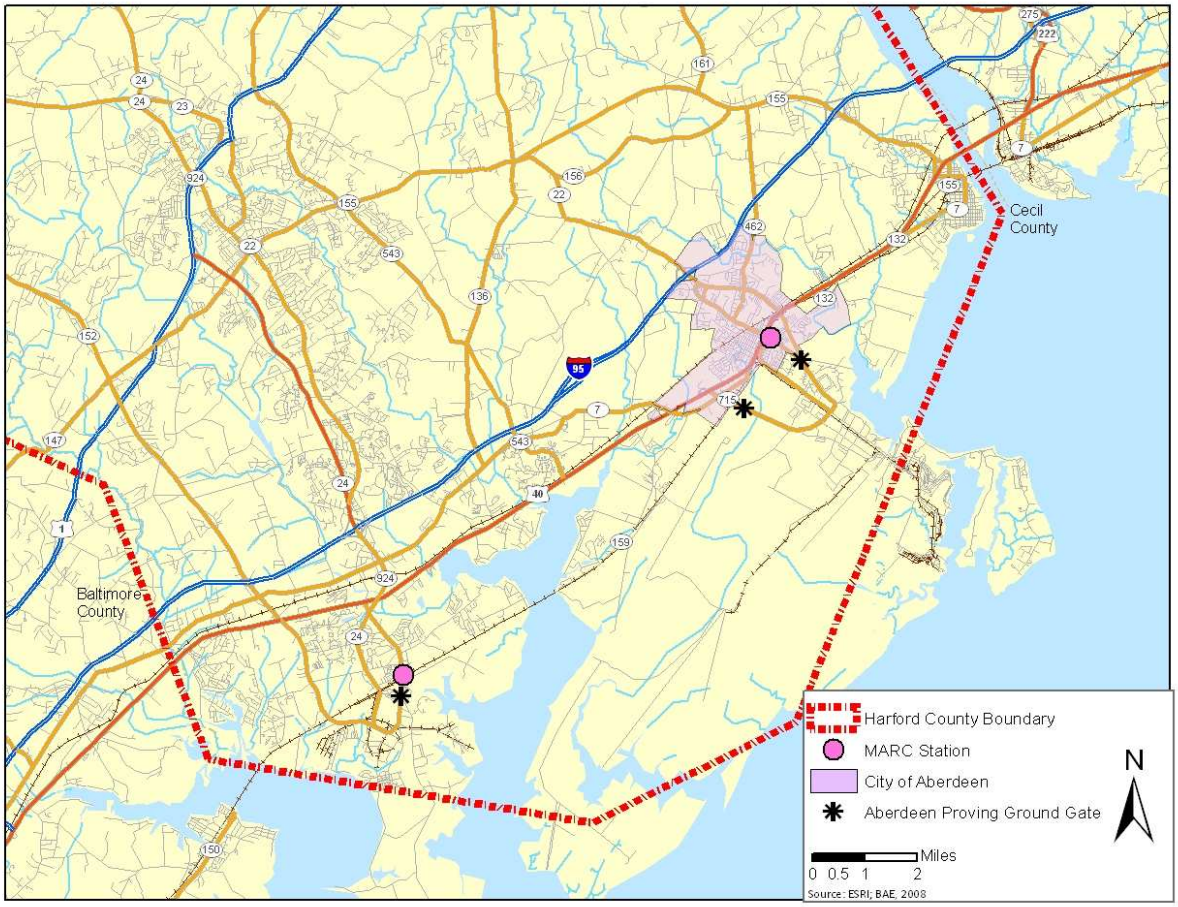
[1] Population data is estimated for 2008 by Claritas, a private data vendor, based on 2000 U.S. Census data.

[2] Housing data is estimated for 2008 by Claritas, a private data vendor, based on 2000 U.S. Census data.

Figure 1.2 The City of Aberdeen and Harford County



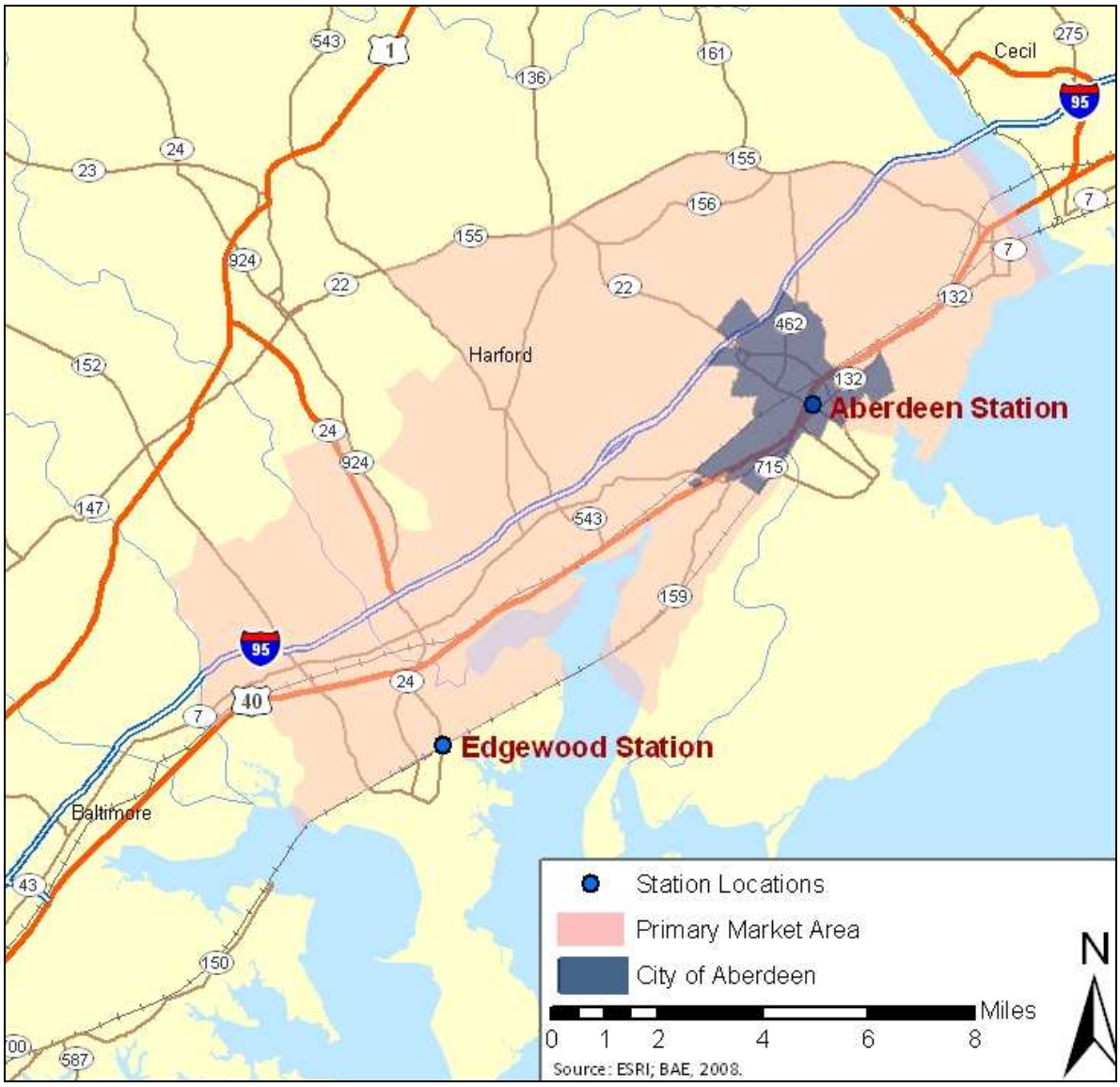
1.2 Market Area Definition

Market studies typically define a study area, a geographic area in which the analysis of real estate supply and demand is most focused. The present study is unique in that real estate demand is primarily influenced not by a local population of households and businesses, but from a group of employees and households presently located outside the region. It is this population that will potentially be relocating and making housing decisions, and will be employed by the organizations whose influx to the area will spur the relocation and creation of businesses that will require office and retail space. The market analysis will therefore focus on this primary driver of demand in the area.

The market area depicted in Figure 1.3 identifies the receiving area for the incoming population that is of most interest to this analysis. The study area extends from the Harford County Line at the Susquehanna River, south past Edgewood, along the

Interstate 95/U.S. Route 40 corridor. Incoming households and businesses will have many relocation choices. Many will choose to be situated further from APG, outside of the study area for a variety of reasons. The defined market area will be the primary focus of the real estate supply analysis, as it represents the environment in which new real estate products will compete against other options, both existing and planned, for those businesses and households that choose to be closest to APG.

Figure 1.3 Primary Market Area



1.3 Market Analysis Objectives

The market analysis segment of this assignment seeks to understand the real estate context in which new development that would be conducive to efficient transit service could potentially exist. Of primary interest to this market assessment is the potential for new development that is higher density and mixed use – real estate products that differ from the predominant development patterns in the area. This analysis will consist of the following:

1. **Real estate demand analysis.** Technical Memorandum 2.2 will assess the demand for real estate in the area. This demand will be driven by BRAC activity as well as baseline demand generated from the local area. Specifically, this analysis will seek to identify the likely occupants of "smart growth"-oriented development, or transit oriented development (TOD), given information available about the number and characteristics of relocating employees and their households, as well as understand the number and requirements of businesses that possibly will relocate, expand or be created as an impact of BRAC.

2. **Real estate supply analysis.** Technical Memorandum 2.3 will characterize the existing and planned supply of real estate in the study area, including an inventory of planned office, retail, hotel and various types of residential space. The findings from this technical memorandum will provide an understanding of the real estate environment in which any new development will compete. The report will include an analysis of the market acceptance of two recent transit oriented developments in the region.

3. **Assessment of market potential.** Technical Memorandum 2.4 will synthesize the findings of the two previous reports to draw some conclusions about the potential for development related to the Aberdeen Station and BRAC activity. The objective will be to understand a) the extent to which transit-oriented real estate can meet identified demand and compete effectively against existing and planned offerings in the market area, b) appropriate pricing for these products given the existing real estate context, and c) conditions that would need to be present in order for this type of development to occur. These conclusions will inform, and will be informed by, the findings of the transit needs analysis undertaken concurrent with the market analysis.

4. **Financial analysis**. Based on these studies, Technical Memorandum 2.5 will define assumptions for two development programs with a mix of uses, and preliminarily assess the comparative financial viability of these hypothetical developments.

2.0 Real Estate Demand Analysis

2.1 Introduction

Technical Memorandum 2.2 assesses the demand for real estate in the area. This demand will be heavily influenced by BRAC activity at Aberdeen Proving Ground (APG), but will also reflect baseline demand generated from the local area. Specifically, this analysis seeks to identify the likely occupants of Smart Growth-oriented development, given information available about the number and characteristics of relocating employees and their households, as well as to understand the number and requirements of businesses that may relocate, expand, or be created as an impact of BRAC.

2.2 Summary of Findings

- Even prior to BRAC activity, Harford County employment had been growing at a healthy rate. Harford County experienced an average annual growth rate of three percent between 2000 and 2007, with the highest rates of growth occurring between 2003 and 2005.

- In terms of employment, Harford County's economic performance in the past seven years has outpaced economic growth statewide and nationally. APG and its contractor tail are already a large presence in the Harford County economy and allow the area's employment to fluctuate somewhat independently from statewide and national economic trends.

- Baseline growth trends, not reflecting the impact of BRAC, predict a net increase of 10,000 jobs in Harford County between 2005 and 2015. Baseline population growth, excluding BRAC impacts, is expected to add 15,700 households to the county and 11,000 households to the defined market area, in the same time period.

- A previous analysis by the Sage Policy Group calculated total BRAC-related growth to be at least 21,820 jobs; 16,253 of those positions are predicted to locate within Harford County by 2017. These positions include direct job transfers from other bases to APG, as well as contractor tail employment, employment created through new business expenditures (indirect job impacts), and new household purchases (induced job impacts) in the area.

- BRAC-related employment is expected to create demand for about 1.6 million square feet of office space and 400,000 square feet of retail space throughout Harford County, based on the low case estimate of the Sage Report. Demand from larger contractor-tail employers will likely be met by development currently under construction or impending construction. However, smaller office users, as well as retailers, will demand space throughout the county.

- Previous analysis by the Sage Policy Group also predicts that BRAC will add nearly 6,000 new households, at minimum, to Harford County. If the market area captured 40 percent to 60 percent of these new households in the county, new BRAC-related demand would consist of about 2,400 to 3,600 households within the defined market area. These capture rate estimates are based on assumptions about commute time preferences, anecdotal information about the housing choices of APG early transfer employees, and surveys completed by current Fort Monmouth employees.

- The housing and commercial space demand estimates described above only include BRAC-related demand. While our analysis focuses on BRAC-related growth, there is also expected to be a baseline of robust household and employment growth in Harford County based on pre-BRAC trends.

- Available information about some of the employees with transferring positions may suggest some trends about housing preferences. Information specific to Fort Monmouth transfers (which make up the bulk of direct positions relocating from other bases to APG), suggests that among civilian government jobs, the biggest cluster of positions are held by mid-career to preretirement employees who are well-educated and are in the higher tiers of the Federal government's pay schedule. However, it is important to note that there are Fort Monmouth positions at all pay ranges and with a range of educational and experience requirements that will be transferring to APG. In addition, other types of employment generated by BRAC will include a wide range of salaries and educational requirements.

- Survey data of Fort Monmouth employees who may or definitely will relocate suggest that 80 percent or more intend to purchase a home. However, rental demand may be higher during the initial years that BRAC impact is felt, as employees transition to the new location and households respond to real estate market conditions that may make it difficult to sell their current homes. Seventy percent of survey respondents report that they currently own their home, and the bulk of them self-reported housing values in excess of $300,000.

- While survey data found relatively weak interest in commuting alternatives to single occupancy vehicles, preferences may be influenced by the assumption that viable transit options are very limited, as they are near Fort Monmouth. About ten percent of recent survey respondents indicated a preference for carpool or vanpool service over driving their own automobile. One percent indicated a preference for a commuter bus, while eight percent responded that they would be most likely to use MARC/commuter rail with a shuttle to APG.

- A mixed use, transit-oriented setting will be appealing to a limited portion of the new demand for office space, and is not likely to attract large contractor tail tenants who are targeted by new office developments under construction in very close proximity to APG or inside its gates. However, a mixed use, transit oriented setting could tap into demand generated by the indirect and induced impacts of APG's expansion in Harford County, as well as the County's baseline employment growth trend.

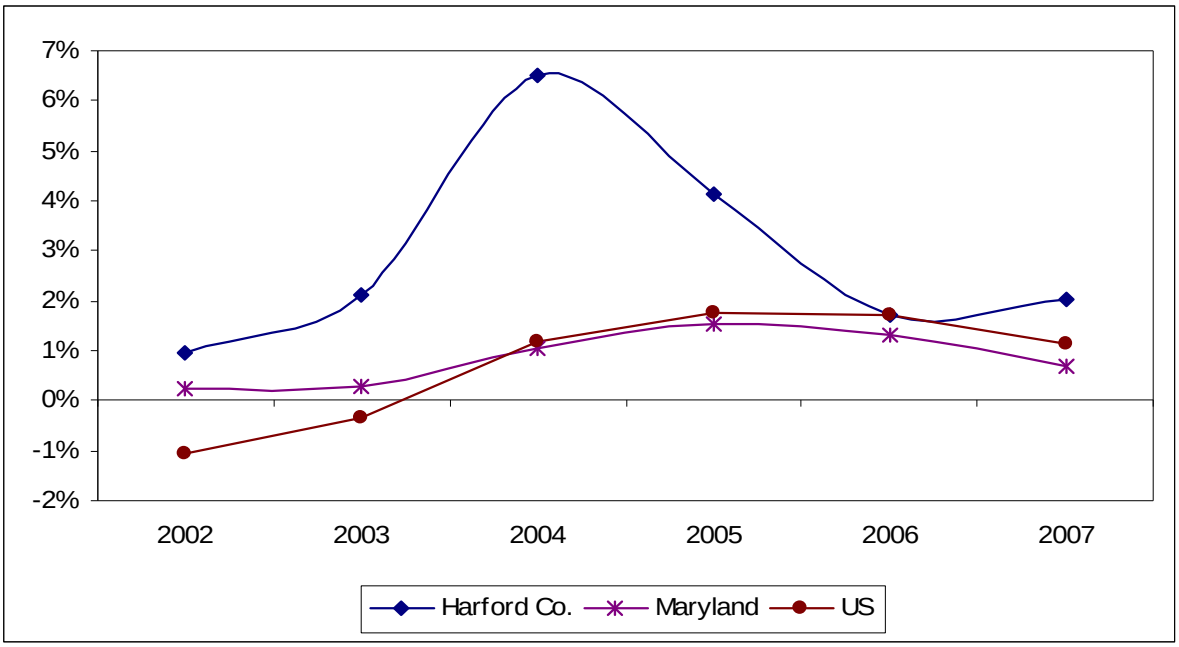
2.3 Baseline Economic and Demographic Analysis

In order to better understand the impact of BRAC-related growth at Aberdeen Proving Ground (APG) and resulting demand for new real estate development, we start our analysis with a thorough assessment of baseline economic and demographic data. Demand resulting from BRAC activity will not only comprise a significant portion of the area's demand, but will also add to baseline demand resulting from growth trends in the area not related to BRAC. The baseline assessment provides a snapshot of current and recent historical conditions and recent historical trends, as well as growth projections that do not incorporate BRAC-related growth. Analysis of BRAC-related demand will be presented in the subsequent section.

Local Economic Conditions

Employment trends and data show that APG and its contractor tail are already a large presence in the Harford County economy and allow the area's employment to fluctuate somewhat independently from regional and national economic trends. From 2001 to 2007, Harford County averaged three percent annual growth in employment versus and average of just 0.7 percent for the state of Maryland, as well as for the U.S. over the same period. Figure 2.1 shows historical annual growth rates for Harford County, Maryland, and the U.S. from 2002 to 2007. The impact of BRAC may be present in 2007 or even 2006 employment statistics, as individuals were sent from relocating facilities to prepare for the incoming positions to APG, but Figure 2.1 indicates that the local area showed very strong relative employment growth from 2003 to 2005. Table 2.1 shows the Harford County employment statistics from 2001 to 2007 on which the growth rates are calculated. It is important to note that this data is derived from the Quarterly Census of Employment and Wages (QCEW) program of the U.S. Department of Labor, Bureau of Labor Statistics (BLS). This data source will not include all jobs at APG, as it does not include military and some public sector employees, and self-employed persons not covered by unemployment service. Therefore, the BLS employment statistics presented suggest that the County's robust employment growth trends do not depend solely on direct employment by the Department of Defense, but are supported also by contractor tail jobs and indirect employment associated with the provision of goods and services to APG-related businesses and households.

Figure 2.1 Historical Annual Employment Growth



Source: U.S. Department of Labor, Bureau of Labor Statistics, 2008; BAE, 2008.

Note: Reflects jobs covered by unemployment insurance. Does not reflect Department of Defense, some public administration, and at-home businesses or sole proprietorships that are not required to report unemployment.

Table 2.1 Covered Employment, Harford County
2001 to 2007

2001	2002	2003	2004	2005	2006	2007
70,442	71,128	72,627	77,338	80,527	81,916	83,589

Note: reflects jobs covered by unemployment insurance. Does not reflect Department of Defense, some public administration, and at-home businesses or sole proprietorships that are not required to report unemployment.

Source: U.S. Department of Labor, Bureau of Labor Statistics, 2008; BAE, 2008.

A closer look at Harford County's largest employers illuminates the dominance of APG and contractor-tail employment in the local economy. Table 2.2 lists Harford County's largest employers, and shows just how large APG's economic presence is in the region in terms of jobs. The list, provided by Harford County, identifies over 18,000 jobs currently located at APG.

Table 2.2 Largest Employers in Harford County, MD, 2008

Employer	Employees	Employer	Employees
Aberdeen Proving Ground	**18,279**	WAVE (Worthington Armstrong Ventures)	224
Harford County Public Schools	5,298	Cytec Engineered Materials, Inc.	220
Upper Chesapeake Health Systems	2,464	Alcore, Inc.	210
Harford County Government	1,744	Nutramax Laboratories, Inc.	210
Rite Aid Mid-Atlantic Customer	1,270	The ARC Northern Chesapeake Region	203
Harford Community College	1,219	The Arena Club	200
Science Applications Intl. Corp.	**740**	Homestead Publishing	199
Jacobs Technology, Inc.	**656**	PNC Bank	199
Saks Fifth Avenue	495	Independent Can	198
Sephora USA, LLC	492	Bottcher America	193
Frito-Lay, Inc	490	Case Mason Filing	193
Blue Dot of Maryland	400	SafeNet	193
Constar	384	**SURVICE Engineering**	**189**
Log. Sec. Corporation	360	McCormick & Company, Inc.	188
EAI Corporation	354	Dynamic Science	180
C&S Wholesale Grocers	300	Morris & Richie Associates, Inc.	170
Dixie Construction Company, Inc.	300	J.M. Huber Engineered Materials	166
Battelle BEST Center	**297**	**Smiths Detection, Inc.**	**160**
Custom Direct, LLC	273	Clorox Products Manufacturing Company	155
APG Federal Credit Union	**242**	**Booz Allen Hamilton**	**150**
Science & Technology Corporation	**240**	Harford Systems, Inc.	150

Source: Harford County Office of Economic Development, 2008; BAE, 2008.

Note: Bold firm names have a relationship with Aberdeen Proving Ground.

This list includes only firms with 150 or more employees in the County. Including the additional contracting firms with fewer employees would add substantially to the total number of existing contractor tail jobs. Since this list was updated within the last six months, it may reflect some early BRAC-related employment, as some job transfers have started taking place, and defense contractors have begun sending "advance teams" down. Harford County companies contracting with APG specialize in technology sectors such as engineering and architectural services, computer systems design, and communications equipment manufacturing. They occupy office and flex space in and around the Higher Education and Conference Center (HEAT) Center in Aberdeen, other locations near downtown Aberdeen and the Water's Edge Corporate Campus in Belcamp.

Baseline employment projections for the area, found in Table 2.3, show modest to robust rates of projected growth absent the influence of BRAC-related growth. The table provides employment projections through 2030 for Harford, Baltimore and Cecil Counties, and Baltimore City, developed by the two Metropolitan Planning Organizations (MPO) covering the area, the Baltimore Metropolitan Council (BMC) and Wilmington Area Planning Council (WILMAPCO). Although there is a later round of projections available from BMC, the Round 6B projections used for this study do not reflect increased growth rates based on BRAC, helping to better identify baseline "pre-BRAC" growth assumptions. Harford County is expected to add 15,000 jobs between 2000 and 2010, a 1.5 percent annual growth rate, and an additional 8,000 jobs between 2010 and 2020, representing a more modest growth rate under one percent. The County's job base is projected to increase by 10,000 in the 10-year interval between 2005 and 2015, incorporating the time period in which the bulk of BRAC impacts will be experienced. Cecil County employment projections, developed in 2007 by WILMAPCO, forecast a much higher growth rate than the other four jurisdictions.[3] The 2000 and 2005 statistics for Harford County may represent a more complete count of the county's recent total employment than provided by the BLS data presented previously.

Table 2.3 Employment Projections

Jurisdiction	2000	2005	2010	Average Annual Growth Rate, 2000-2010
Baltimore County	452,500	469,100	493,300	0.9%
Harford County	96,000	105,100	111,100	1.5%
Baltimore City	460,600	467,300	479,000	0.4%
Cecil County	31988	38,066	45,300	3.5%
Total	**1,041,088**	**1,079,566**	**1,128,700**	

Jurisdiction	2015	2020	Average Annual Growth Rate, 2010-2020	2025	2030	Average Annual Growth Rate, 2020-2030
Baltimore County	502,300	506,200	0.3%	509,000	511,800	0.1%
Harford County	115,500	119,900	0.8%	124,500	124,500	0.4%
Baltimore City	489,000	497,200	0.4%	505,000	505,000	0.2%
Cecil County	50,859	57,100	2.3%	58,921	60,800	0.6%
Total	**1,157,659**	**1,180,400**		**1,197,421**	**1,202,100**	

Source: Baltimore Metropolitan Council, 2007; WILMAPCO, 2007; BAE, 2008.

[3] WILMAPCO projections are only presented in ten-year increments, so employment and population data used in this study were interpolated for the years that were not made available (2005, 2015, and 2025).

Population and Household Trends

Table 2.4 summarizes population and household trends for the Market Area (defined in Technical Memorandum 2.1), the City of Aberdeen, Harford County, and a 3-Jurisdiction Area that includes Harford, Cecil, and Baltimore Counties. The 3-Jurisdiction Area is anticipated to absorb the majority of BRAC-related household and employment growth. From 2000 to 2008, the defined market area experienced an average annual growth rate of 2.1 percent, outpacing all of the other geographies except Cecil County at 2.4 percent. The City of Aberdeen, which has the potential to be poised to absorb much of the BRAC-related growth given its proximity to APG, experienced the slowest growth over the eight year period, at 0.6 percent per year. Aberdeen's growth rate is more in line with the State of Maryland as a whole (one percent) and the Baltimore metropolitan area (0.8 percent).

Along with this slow growth, Aberdeen's median household income of $49,000 is lower than all of the other areas. The other geographic areas have median incomes ranging from over $60,000 up to $72,000. Aberdeen's slower growth and concentration of lower incomes compared to the surrounding areas suggest that new demand for more expensive, newly constructed homes in the area, particularly for higher-income households, is being accommodated outside the City limits where large tracts of land are available. Sixteen percent of available land remains to be developed in Aberdeen. Environmental and infrastructure constraints may also be limiting Aberdeen's ability to capture the area's increasing household demand within its boundaries.

Consistent with national trends, the market area and the other geographic areas presented show an aging population and decreasing household size. The trend towards smaller households accounts for a portion of household growth, as the number of households increase at a slightly higher rate than the growth in population. A more detailed breakdown of the population by age group, found in Appendix A, reflects national trends towards population growth in 45+ age ranges as Baby Boomers aged, as well as the 18 to 24 age range as the Echo Boomer generation aged as well.

Long-term growth is expected for the market area, as indicated in Table 4.5. These projections are from the same Series 6B developed by the BMC as the employment projections presented previously. The projections updated in 2007 from WILMAPCO were used for Cecil County.

Table 2.4 Population and Household Trends

	Market Area (a)			City of Aberdeen			Harford County		
	2000	2008	Annual Average Change 2000-2008	2000	2008	Annual Average Change 2000-2008	2000	2008	Annual Average Change 2000-2008
Population	96,370	111,178	1.8%	13,842	14,072	0.2%	218,590	246,089	1.5%
Households	36,540	43,073	2.1%	5,475	5,752	0.6%	79,667	92,145	1.8%
Avg. Household Size	2.62	2.57		2.51	2.43		2.72	2.65	
HH Median Income	$51,601	$64,815	2.9%	$40,836	$48,973	2.3%	$57,983	$72,605	2.9%
Median Age	34.7	36.4		36.7	38.0		36.2	37.6	
Household Tenure									
Renter	28.5%	26.8%		41.0%	40.6%		22.0%	21.1%	
Owner	71.5%	73.2%		59.0%	59.4%		78.0%	78.9%	

	Cecil County			Baltimore County			3-Jurisdiction Area (b)		
	2000	2008	Annual Average Change 2000-2008	2000	2008	Annual Average Change 2000-2008	2000	2008	Annual Average Change 2000-2008
Population	85,951	102,571	2.2%	754,292	793,618	0.6%	1,058,833	1,142,278	1.0%
Households	31,223	37,701	2.4%	299,877	319,402	0.8%	410,767	449,248	1.1%
Avg. Household Size	2.71	2.68		2.46	2.43		2.53	2.49	
HH Median Income	$50,716	$60,469	2.2%	$50,954	$62,381	2.6%	$52,419	$64,318	2.6%
Median Age	35.5	36.3		37.7	39.1		37.2	38.5	
Household Tenure									
Renter	25.0%	25.2%		32.4%	31.9%		29.9%	29.1%	
Owner	75.0%	74.8%		67.6%	68.1%		70.1%	70.9%	

Notes:
(a) Represents census tracts 301102, 301104, 301201, 301202, 301203, 301301, 301302, 301402, 301601, 301602, 301701, 301702, 302200, 302400, 302801, 302802, 302901, 302902, 303700, 306100, 306200, 306300, and 306400 in Harford County, Maryland.
(b) Includes Baltimore County, Cecil County, and Harford County, Maryland.

Source: U.S. Census, 2000; Claritas, Inc., 2008; BAE, 2008.

Table 2.5 Population and Household Projections

	Market Area (a)									
	2000	2005	2010	Average Annual Growth Rate, 2000-2010	2015	2020	Average Annual Growth Rate, 2010-2020	2025	2030	Average Annual Growth Rate, 2020-2030
Population	101,238	111,577	122,972	2.0%	135,531	137,515	1.1%	139,527	141,569	0.3%
Households	38,290	42,932	48,137	2.3%	53,973	55,409	1.4%	56,883	58,396	0.5%
	Harford County									
	2000	2005	2010	Average Annual Growth Rate, 2000-2010	2015	2020	Average Annual Growth Rate, 2010-2020	2025	2030	Average Annual Growth Rate, 2020-2030
Population	218,590	234,700	254,700	1.5%	268,200	276,500	0.8%	283,000	290,500	0.5%
Households	79,667	87,500	96,100	1.9%	103,200	109,200	1.3%	113,800	117,200	0.7%
	3-Jurisdiction Area (b)									
	2000	2005	2010	Average Annual Growth Rate, 2000-2010	2015	2020	Average Annual Growth Rate, 2010-2020	2025	2030	Average Annual Growth Rate, 2020-2030
Population	1,058,833	1,122,236	1,183,500	0.6%	1,222,236	1,252,900	0.6%	1,273,974	1,297,250	0.3%
Households	410,767	439,839	466,425	1.3%	485,460	500,925	0.7%	513,915	525,075	0.5%

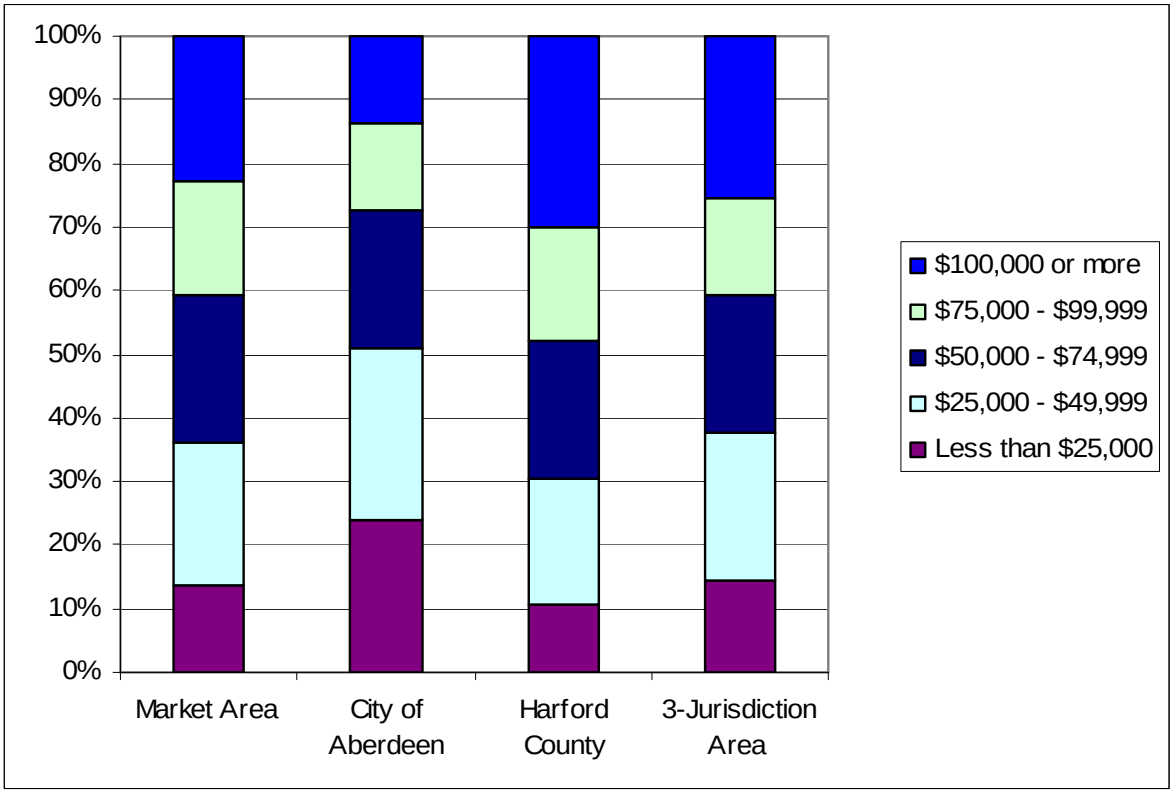
Notes:
(a) Represents census tracts 301102, 301104, 301201, 301202, 301203, 301301, 301302, 301402, 301601, 301602, 301701, 301702, 302200, 302400, 302801, 302802, 302901, 302902, 303700, 306100, 306200, 306300, and 306400 in Harford County, Maryland.
(b) Includes Baltimore County, Cecil County, and Harford County, Maryland.

Source: Baltimore Metropolitan Council, 2007; WILMAPCO, 2007; BAE, 2008.

Area Household and Population Characteristics

Figure 2.2 breaks down household income in more detail, indicating that the market area's distribution of household incomes looks similar to the 3-Jurisdiction area. Aberdeen has higher concentrations (51 percent) of households with incomes in the range under $50,000 relative to its surrounding areas (36 percent for the Market Area, and 31 percent for Harford County). Harford County has the highest percentage of households with incomes greater than $100,000.

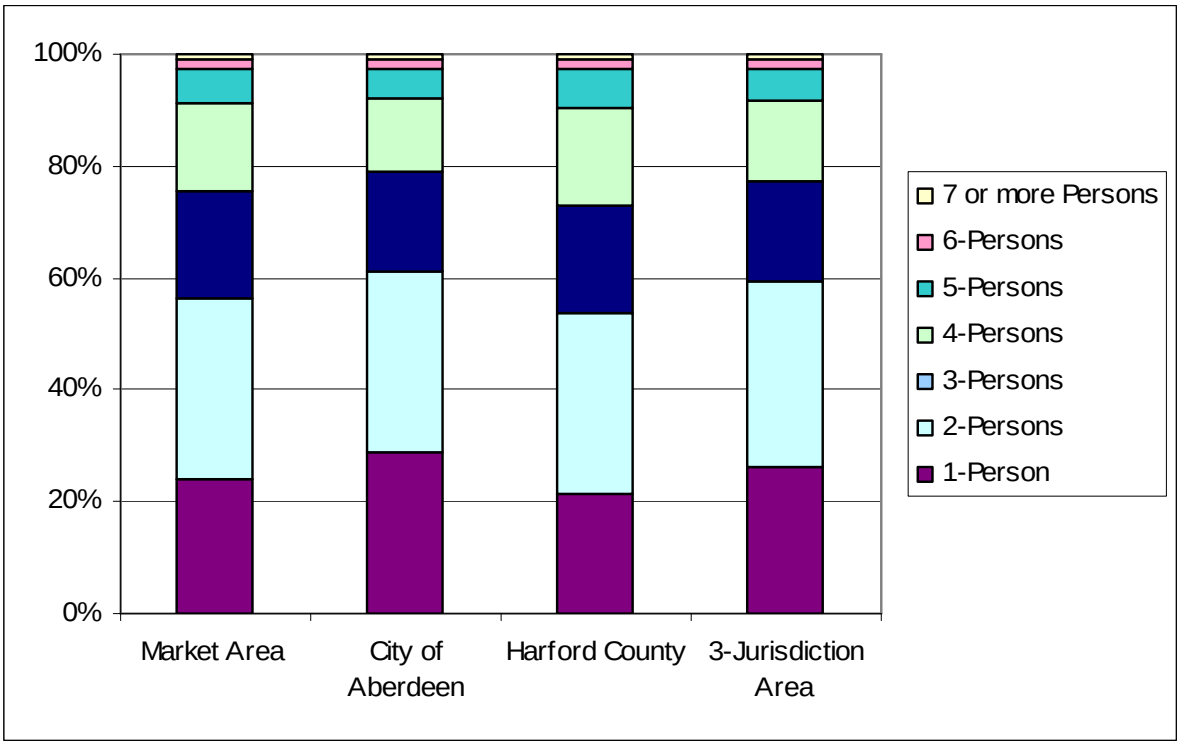
Figure 2.2 Household Income Distribution
2008



Source: Claritas, Inc., 2008; BAE, 2008.

Household size plays an important role in determining demand for specific types of housing. As mentioned earlier, average household sizes hover around 2.5 persons per household and are trending towards smaller households. Figure 2.3 provides a more detailed breakdown of area households by their size. More than 75 percent of existing households in the market area consist of three or fewer persons, and these smaller households predominate in the other geographic areas studied as well. One and two-person households comprise more than half of all households in all jurisdictions. While the Sage report estimates approximately one school-aged child per new, BRAC-related household, Figure 2.3 reminds us of an implication of this assumption: for every household with two or three school-aged children that relocates, there will be one or two additional households with no school-aged children.

Figure 2.3 Household Size
2008



Source: Claritas, Inc., 2008; BAE, 2008.

The continued aging of the largest generational groups that are already present in the market area, and trends toward smaller household sizes, will support demand for smaller units and residential offerings that support the lifestyles of these groups. As more Baby Boomers become empty nesters, and as their children reach their 20s and begin seeking housing, it is likely that smaller units appropriate to these households will command a greater share of the demand for housing. Although demand will remain for conventional single-family detached units, current demographic trends and national trends favoring Smart Growth alternatives, as described in a subsequent chapter, suggest an opportunity to meet a growing demand for more compact housing types.

Table 2.6 presents 2000 Census data pertaining to the commuting patterns of persons working at APG. The table demonstrates that APG workers have varied commute times under one hour, but about sixty percent of workers commute less than 30 minutes. About 23 percent of workers enjoy a commute under 15 minutes.

Table 2.6 Commute Time of APG Workers

Commute time	Percent
Work at Home	0.5%
Less than 5 minutes	1.2%
5 to 14 minutes	21.3%
15 to 24 minutes	28.9%
25 to 29 minutes	8.8%
30 to 39 minutes	19.3%
40 to 49 minutes	10.5%
50 to 59 minutes	2.5%
60 to 89 minutes	5.1%
90 or more minutes	1.7%
Total	**100%**
Work at Home	**0.5%**
Percent commuting less than 15 minutes	**22.5%**
Percent commuting between 15 and 29 minutes	**37.7%**
Percent commuting 30 minutes or more	**39.2%**

Notes:
(a) Includes both peninsulas of Aberdeen Proving Ground.

Source: US Census Transportation Planning Package, 2005; BAE, 2008.

2.4 BRAC Demand Estimates

Numerous reports have thoroughly detailed the economic impact of BRAC-related growth at APG in terms of employment and resulting demand for new commercial and residential land uses. The Sage Policy Group's *Aberdeen Proving Ground BRAC Impacts on Seven Jurisdictions* ("The Sage Report") completed in 2007, evaluated likely BRAC impacts at APG in depth. The present analysis builds upon this earlier work, and this section includes tables with data found in the Sage Report. Other sources informing BAE's analysis include the 2000 U.S. Census, Claritas (a third-party data provider), the report entitled *BRAC Activities Affecting Aberdeen Proving Ground, Andrews Air Force Base, Bethesda Naval Hospital, and Fort Meade and in the State of Maryland* by SAIC ("the SAIC Report"), projections from local governments, surveys of households considering relocating to the area, and interviews with individuals familiar with the BRAC transition.

Estimated BRAC-Related Demand in Harford County

The Sage Report assumptions are used for general demand estimates and as a starting point for further analysis. The Sage Report presents three different growth scenarios: low-, mid-, and high-range scenarios. As described in Technical Memorandum 2.1, at the base of each scenario are assumptions about the number of direct and contractor tail positions relocating to APG as a result of BRAC. Sage Policy Group developed each scenario with assumptions and calculations regarding residential and business location patterns, indirect and induced growth impacts, and household size and household employment patterns, among other factors. The low-range scenario, based on estimates of direct relocating positions from the APG Garrison Commander, corresponds most closely with other current external estimates, and therefore is used in this analysis.

Table 2.7 shows employment growth by four categories: direct, contractor tail, indirect, and induced. Direct jobs are those relocating directly on base at APG while contractor-tail jobs represent the increase in contractors seeking proximity to APG. Indirect jobs reflect those created by the presence of new on-base and contractor-tail jobs and the resulting increase in business demand they will cause. Induced employment is a further impact caused by expenditures from the new employees in the three previous categories.

Table 2.7 Sage Low-Case Allocation of All BRAC-Related Employment

Type of Employment	Number
Direct (on-base)	8,200
Contractor-tail	4,295
Indirect	2,702
Induced	6,623
Total	**21,820**

Source: Sage, 2007; BAE, 2008.

The Sage Report uses the employment estimates it derives to generate related estimates of households, total population, and school age population resulting from increased employment. Table 2.8 provides a breakdown of impacts by the four closest jurisdictions, which are anticipated to capture nearly all new employment. Notably, the Sage Report makes a basic assumption that BRAC-related job growth, both in direct jobs at APG as well as contractor tail, indirect and induced employment, will be met largely by new households rather than existing households. These new households will transfer with positions from sending bases such as Fort Monmouth, or would move to the area in response to job openings not filled by relocating employees. As stated in the Sage Report:

> While certainly some of the new jobs associated with BRAC will be filled by current residents of the region, the relatively low unemployment rate that characterizes the region implies that to the extent that there are vacancies created through job transfer, there will need to be an expansion in the labor force to backfill vacated jobs.

Harford County's low unemployment rate would support the report's supposition that job growth in the County would require household growth, unless available positions were filled by existing households in nearby areas (such as the City of Baltimore) where there is a higher unemployment rate and surplus labor force. Filling open positions with the existing labor pool would also require that these local workers had the skills required for the open positions.

Table 2.8 Sage Report Summary of Low-Case Scenario Impacts by Jurisdiction

Jurisdiction	Employment	Households	Population	Public School Population
Harford County	16,253	5,964	16,103	3,101
Cecil County	1,151	1,626	4,390	846
Baltimore County	2,859	3,613	9,755	1,879
Baltimore City	465	540	1,459	281
Total	**20,728**	**11,743**	**31,707**	**6,107**

Source: Sage, 2007; BAE, 2008.

The Sage Report then converts employment impacts into square footage estimates for retail and office space by county based on assumptions regarding typical square footage per employee for commercial space and retail square footage per household. As Table 2.9 indicates, the majority of new office space, and more than half of the anticipated retail space required under the low-case scenario, will locate in Harford County.

Table 2.9 Sage Report Retail and Office BRAC-Related Demand *2017*

Jurisdiction	Retail Demand	Office Demand
Harford County	400,745	1,559,138
Cecil County	98,335	187,607
Baltimore County	242,774	479,975
Baltimore City	36,300	80,446
Total	**778,154**	**2,307,166**

Source: Sage, 2007; BAE, 2008.

Although all direct positions at APG will transfer by 2012, the Sage Report recognizes that contractor tail, indirect and induced jobs may be generated more slowly. Table 2.10 depicts projected phasing of demand estimated by the Sage Report.

Table 2.10 Sage Report Phasing of Demand

Type of Demand	2012	2017
Population	13,324	16,103
Households	4,935	5,964
Employment	18,155	21,821
Office Space (a)	1,247	1,559
Retail Space (b)	333	402

Notes:
(a) Office demand is presented in thousands of square feet.
(b) Retail demand is presented in thousands of square feet.

Source: Sage, 2007; BAE, 2008.

These data form the baseline of BAE's real estate demand assumptions going forward.

Market Area Residential Demand

Given the estimated household and employment growth (i.e., demand) affiliated with BRAC activity in Harford County, how much of that demand could the market area expect to capture? The Sage Report estimates the addition of nearly 6,000 households in Harford County and uses likely commuting patterns to further predict housing choice locations for these employees. The report anticipates that 30 percent of workers employed onsite at APG will seek a location within a 20-minute commute of APG, which is assumed to be located primarily in Harford County along I-95, and corresponds roughly with the market area defined in Subtask 2.1.[4] The report further assumes another 10 percent will prefer the Bel Air section of Harford County, which is classified as a 20- to 30-minute commute time. An additional 6.5 percent are identified as preferring a Harford County location with a longer driving time, with all other employees commuting from outside the county. In other words, the report assumes that employees commuting from APG and choosing Harford County residences are divided up as follows: 65 percent choosing to live within the 20-minute commute shed that corresponds to the market area, 21 percent choosing a slightly longer commute from the Bel Air area, and 14 percent choosing other Harford County locations further away. The Sage Report makes no explicit assumptions about the housing choices of other new employees, and predicting their commuting patterns is difficult given the more disperse locations of their work sites. Presumably the

[4] The market area roughly corresponds to a 15-minute drive to the MD 715 Gate at APG, according to Microsoft Streets & Trips. The drive-time analysis does not factor in traffic delays, and therefore the market area is likely to be within a slightly longer commuting time.

contractor tail will desire locations close to APG, while indirect and induced employment likely will locate in a wider area.

Interviews with individuals who are involved in assisting early relocating employees anecdotally report that employees have an interest in Bel Air and Cecil County, as well as locations within the market area such as Havre de Grace.[5] Interest is much higher in locations within a short commuting distance, with few relocating employees showing an interest in locations with a longer commute than Bel Air.

For purposes of estimating potential demand within the market area, Table 2.11 demonstrates a range of market area demand if it is assumed that between 40 and 60 percent of new Harford County households locate within the market area rather than other County locations. The less conservative estimate of 60 percent is below the 65 percent capture of APG employees, given that some of the County's new, non-APG jobs (contractor-tail, direct and induced employment) will not locate in close proximity to APG. The more conservative estimate of 40 percent assumes that Bel Air and other parts of the County will have greater appeal than the market area, as a result of commute times to employment locations and a greater interest in Harford County communities outside the market area, due to spouse travel needs. The more conservative estimate also takes into account the Census journey-to-work data presented previously in Table 2.6, which shows a smaller share of APG workers commuting under 15 minutes compared to those commuting between 15 and 30 minutes.

Applying the capture rates to the estimated BRAC-related household growth in Harford County generates an estimated range of demand specific to the market area, shown in Table 2.11.

Table 2.11 Market Area Residential Demand Estimate

Harford County Estimated New Households		**5,964**
Household Capture Estimate	**High-Case Scenario (a)**	**Low-Case Scenario (b)**
Market Area - 20 minute commute to APG	3,578	2,386
Remainder of Harford County	2,386	3,578
Total	**5,964**	**5,964**

Notes:
(a) High-case scenario represents a market area capture of 60 percent.
(b) Low-case scenario represents a market area capture of 40 percent.

Source: Sage, 2007; BAE, 2008.

[5] Includes United States Army employee Debbie Devlin and Denise Carnaggio of Harford County Office of Economic Development.

BAE is assuming that this pool of residential demand represents the market in which a Smart Growth-oriented development would compete for new households. Later sections of this report and the Technical Memorandum (Subtask 2.4) will break this pool of residential demand further, shedding light on likely demand for a Smart-Growth-oriented development.

Market Area Commercial Demand

Table 2.10 above shows that there is an estimated demand for about 400,000 square feet of new retail and approximately 1.6 million square feet of new office space in Harford County due to BRAC according to the low case scenario presented in the Sage Report. This demand is in addition to baseline demand that is not BRAC-related. Demand for office space is tied to the projected growth of contractor tail, direct and indirect employment that will be housed in offices. Of the 16,300 new BRAC-related jobs predicted to locate in Harford County, about 8,200 will be direct APG employees who will not add to the demand for office space. Nearly all contractor tail employment, estimated in the low-case scenario to be about 4,300 jobs, is likely to locate in Harford County in close proximity to APG. The remainder of estimated Harford County job growth, around 3,500 to 4,000 jobs, is likely to result from indirect and induced employment. Much of the County's contractor tail demand is expected to reside within the market area, while demand associated with indirect and induced employment growth would likely be distributed more evenly throughout the county, not unlike the current distribution of office employment. In fact, the market has already responded by supplying a significant amount of space on or within close proximity to APG, and targeted to contractor-tail employees. A 50 percent market area capture of the county's BRAC-related indirect and induced employment growth would yield a total demand associated with 2,000 or fewer new jobs.

The estimated retail demand will most likely be more spread out than that of office, since most new BRAC-related retail demand will be more of a function of new households in the area and only a few specific types of retailers will be seeking base proximity. Rather, new retail developers and tenants will be following new rooftops in the area and seeking sites with strong concentrations of households, good visibility, and excellent access. While it is difficult to determine how this retail will be allocated throughout Harford County, it is less likely that the approximately 400,000 square feet of new retail demand will be represented by one large retail center. This new demand will likely be met by smaller, less concentrated increments of new retail. Although impossible to predict the location of new retail in the area, given traditional site selection criteria that depends upon the location and characteristics of new households, BAE is assuming a similar breakdown to that of the housing demand. If half of the new Harford County retail demand located in the I-95 corridor and the balance located in the Bel Air submarket, each would have an estimated demand of about 200,000 square feet.

Technical memoranda 2.3 and 2.4 will address the supply and opportunities for commercial development in further detail.

2.5 Smart Growth-Oriented Demand Potential

Within the general demand for residential and commercial real estate identified, the specific types of residential and commercial uses in demand will depend upon the depth of various market audiences: for example, buyers versus renters, families versus childless singles and couples, empty nesters versus young professionals, and large versus small office/retail users. Although there will be ample demand for conventional suburban, lower-density, auto-oriented, commercial and residential product, it is clear that given the size and diversity of new residential and commercial growth, some of the demand will be attracted to Smart Growth-oriented development, which is characterized by criteria such as higher density, transit orientation, pedestrian-oriented streets, and/or mixed and multi-use development. Although mostly unproven in the local market, this type of development would appeal to a distinct set of residential and commercial market audiences who will emerge in the area as a result of BRAC-related and baseline growth.

Although numerous studies have attempted to gauge the extent of the impact of BRAC on the local market, no studies delve deeply into the likely demographic makeup of the future residents and the details and preferences of likely new commercial users other than those categories, such as contractors, whose location preferences, such as proximity to APG, are well known. However, given the sheer scale of growth, along with induced and indirect economic impact, a very broad range of residential and commercial market audiences will likely emerge. Some emerging market segments will be drawn to a Smart Growth-oriented development that offers an alternative to more conventional, lower density and car-dependent suburban product that is prevalent in the market today. **If supported by zoning and promoted by policies and actions that provide choices for households to reduce automobile travel, demand for Smart Growth-oriented development can be captured.**

This section summarizes pertinent information that is available about some of the employees that may be moving to the area. The Sage Report and SAIC Report explore characteristics of relocating BRAC positions and the likely new households that will relocate with these jobs. Employee information mainly derives from the SAIC report, which collected data primarily pertaining to relocations from Fort Monmouth NJ. Survey data collected from Fort Monmouth employees include some information on housing preferences, as well as employment and household characteristics. Employees with relocating positions provided preferences and household information in a 2006 survey and again more recently in 2008.[6,7] These sources are referred to as the 2006 and 2008 Fort

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[6] Officials at a Fort Monmouth Relocation Fair in 2006 surveyed 4,250 government employees at Fort Monmouth and received 2,264 responses. An additional 537 responses were received from embedded contractors.

[7] This survey collected information from 1,783 current Fort Monmouth employees, almost exclusively in DoD civilian positions. Responses came from those employees who chose to complete an on-line survey.

Monmouth Surveys, respectively. Available data sources generally limit their focus to direct positions relocating to APG, particularly on the population originating from Fort Monmouth representing the bulk of BRAC relocations. Although this group represents the single largest segment of new BRAC-related employment, and a segment whose household characteristics may be more easily studied than nondirect positions, it is important to note that their characteristics do not necessarily represent all employment and households generated by BRAC.

Prior to the summary of information available on the employees and households who may fill BRAC-related employment, we present literature on trends in Smart Growth development. Documenting national trends and varying preferences among different residential market segments helps to inform our understanding of the demand for Smart Growth housing choices in the market area, where little if any new construction of this type exists.

National Trends in Smart Growth-Oriented Development

As presented by the Congress for New Urbanism, one of the most vocal proponents of walkable and mixed use communities, research commissioned by the Funders' Network for Smart Growth and Livable Communities in 2001 defined Smart Growth-oriented development as "dense, walkable residential environments," and found that the demand for such residential developments was positioned to grow substantially. More recent research confirms this hypothesis. Most surveys taken to determine preferences for Smart Growth-oriented development focus on the older "empty nester" demographic as the most likely population group to embrace, demand, and move in to these types of developments. However, more recent research, detailed below, finds that all demographic groups would prefer to live in communities with short commutes to work and within walking distance to a town or city center.

Research conducted in 2001 by the University of Southern California School of Policy, Planning, and Development found that people 55 years of age were three times more likely than 25 to 34 year olds to consider a townhouse in a city setting to be the most desirable living situation. However, younger demographics now seem to be following that trend, as seen in more recent research. For example, a 2007 survey conducted by Robert Charles Lesser & Co, LLC (RCLCO) Consumer Research found that nearly one in three consumers in "Generation Y" (born 1981 to 1999) are willing to pay more for living in an environment where they can easily walk to retail and employment centers. In this same RCLCO study, one-third or more of families with young children reported that they are willing to trade lot size for walkable communities with more convenience. Respondents in this sector reported that amenities such as libraries, restaurants and cafes, main street villages and fitness centers would increase their demand to live in Smart Growth communities.

Overwhelmingly, research regarding Smart Growth development points to the conclusion that all demographics and household types prefer short commutes to work, school, shopping, etc. This preference, combined with current trends in environmental awareness

and automobile and gas costs, will likely increase the demand for pedestrian-oriented, higher density, mixed-use development.

The most cited topical study is the 2004 National Survey on Communities, a survey of 1,000 adults conducted by Smart Growth America and the National Association of Realtors. This survey found that 55 percent of Americans preferred to live in a community based on a mix of stand-alone single family residences, along with other housing, sidewalks, shopping and schools within walking distance, commute distances of under 45 minutes and nearby public transportation (all common characteristics of a Smart Growth-oriented development).

A follow up survey, conducted by the same organizations in 2007, found that 75 percent of those polled said that improving public transportation and creating communities that are walkable are better long-term solutions for traffic than building new roads. Ninety percent of respondents believed that new developments should be designed to encourage walking and less driving and that public transportation should be improved and accessible.

Furthermore, a 2006 article in the Journal of the American Planning Association projected that by 2025, the demand for attached and small-lot housing (common attributes of Smart Growth-oriented development) will exceed the current supply by 35 million units, while the demand for large-lot suburban development will fall short of the current supply.

A national perspective on trends toward Smart Growth-oriented development suggests that the characteristics of Smart Growth development are increasingly accepted and desired by households, including those who do not currently live in, or have choices to move into, such developments. Although the desire for mixed use, walkable communities will not be universal, the research in particular focuses on the interest in this type of development by older, childless households, a residential market segment that is likely to be strong from new households filling the expanded employment base at APG.

Residential Preferences

As mentioned previously, no source of data, alone or in combination with others, gives a clear picture on who will be arriving and what types of housing they will be seeking. Two surveys of a sample of Fort Monmouth employees reveal some preferences, as does anecdotal information from those working with employees that are in the process of relocating. Outside of the data from Fort Monmouth, information is incomplete on the preferences of other employees and households that will arrive in connection with BRAC activity. Furthermore, many employees have not yet decided whether or not to relocate, and changing economic conditions affecting retirement savings, housing markets and alternative employment opportunities, among other factors, will certainly impact the housing-related decisions that households will make. Nevertheless, available data provides some insight on the likely residential preferences of new households.

Employee and Household Market Segmentation

The information available about employees in relocating positions describes a wide range of ages, education levels, and pay schedules. However, these employees tend to cluster around higher job titles and salary ranges, tend to be in the middle to end of their careers, and tend to be highly educated.

The SAIC report identified nearly 4,000 Department of Defense civilian employees with a job function moving from Fort Monmouth to APG. Of this group of employees, two thirds are between 40 and 60 years of age (Table 2.12). While about 30 percent of these employees perform their functions with a high school degree as their highest level of educational attainment, 47 percent have attained a college degree, and 15 percent have education beyond a Bachelor's degree (Table 2.13). The distribution of employee age and educational attainment are also reflected in titles and salaries: nearly 56 percent are in GS-11 and GS-12 positions, paying an average of over $80,000 annually in 2006. The next largest segment, nearly 18 percent of employees, consists of higher level GS-14 and GS-15 positions, with an average pay of over $112,000 in 2006 (Table 2.14). A breakdown of relocating military personnel found a similar distribution of salary grades (Table 2.15). These tables help to discern the characteristics of some of the highest paid positions created in and around APG as a result of BRAC. Table 2.16 displays the estimated range of average household income by type of BRAC-related employment: direct APG employment, contractor tail employment, and indirect and induced employment. Contractor tail positions, which are typically technical and professional in nature, will have similar salaries on average. Indirect and induced positions, predicted by the Sage Report to comprise about 9,300 of 21,820 estimated new positions, will include a much broader skill base and range of educational requirements that will on average command lower salaries than the technical positions located on base and in firms with military contracts to provide related services.

Table 2.12 Age Distribution of DOD Civilians in Positions Moving from Fort Monmouth to Aberdeen Proving Ground

Age Range	Number	Percent
Under 30	544	13.8%
30-39	358	9.1%
40-49	1,298	33.0%
50-59	1,324	33.6%
Over 60	415	10.5%
Total	**3,939**	**100%**

Source: SAIC, 2006; BAE, 2008.

Table 2.13 Education Level of DOD Civilians Whose Positions are Moving from Fort Monmouth to Aberdeen Proving Ground

Education Level	Number	Percent
High School Diploma	1,208	30.7%
Associate Degree	275	7.0%
Bachelor Degree	1,869	47.4%
Master's Degree	547	13.9%
Doctorate	40	1.0%
Total	**3,939**	**100%**

Source: SAIC, 2006; BAE, 2008.

Table 2.14 Pay Grade of DOD Civilians with Positions Moving from Fort Monmouth to Aberdeen Proving Ground

Level	Average Pay Grade	Number	Percent
General Service 1-6	$28,854	206	5.2%
General Service 5-11	$46,695	200	5.1%
General Service 7-11	$51,183	622	15.8%
General Service 12-13	$80,692	2,197	55.8%
General Service 14-15	$112,725	705	17.9%
Senior Executive Service	$151,856	10	0.3%
Total		**3,940**	**100%**

Source: SAIC, 2006; BAE, 2008.

Table 2.15 Pay Grade for Military with Positions Moving from Fort Monmouth to Aberdeen Proving Ground

Level	Average Pay Grade	Number	Percent
Enlisted	$41,678	115	29.9%
Warrant Officer 1-3	$64,853	11	2.9%
Officer 01-03	$66,892	22	5.7%
Officer 04-06	$103,380	60	15.6%
Commissioned Officer	$82,074	165	42.9%
Warrant Officer, unspecified rank	$68,803	12	3.1%
Total		**385**	**100%**

Source: SAIC, 2006; BAE, 2008.

Table 2.16 Purchasing Power of New Households

Category of Worker	Direct	Contractor Tail	Indirect	Induced
Household Income - 2007	$152,351	$124,780	$81,740	$62,893
House Affordability	$552,639	$452,630	$296,504	$228,139
Rent/Month	$3,174	$2,600	$1,703	$1,310

Source: Sage, 2007; BAE, 2008.

Many employees surveyed indicated that they have a spouse or significant other to consider in a relocation decision. Of interest to note, however, is the number of respondents in both surveys who indicated that they did not have a spouse or partner. Of those indicating a preference to move to Maryland in the 2006 Survey, 34 percent of those definitely moving and 25 percent of those considering the relocation were single; a question included in the 2008 Survey regarding spouse or partner use of public transportation found 28 percent of respondents had no spouse or partner.

The surveys include little information about the presence of school children to supplement the Sage Report estimation that each new BRAC-related household in Harford County would have an average of 0.52 school children (See Table 1.8 in previous section). One question posed to respondents of the 2006 Survey, who indicated a preference to move to Maryland, concerned the type of school that dependents would attend. Thirty-seven percent answered, suggesting an equivalent percentage of surveyed households include school-age children. Sources interacting with early relocatees confirm that there is a wide range of household types among them, from families with college age children to single individuals.

Purchasing Power and Tenure Choice

Although accurately breaking down future residential demand into the aforementioned detailed market segments with precision is not possible, data from previous studies and surveys as well as recent anecdotal evidence help to at least shed further light on the subject of likely residential preferences. These sources, combined with salary and job grade details discussed above, suggest that within the wide salary range of relocating positions, the concentration of positions in higher-paying titles, as well as the relatively high value of homes that many relocating employees currently own, will provide many relocating employees with high housing purchasing power. Furthermore, although the majority of likely relocatees indicate their preference for purchasing a single-family home, there is a substantial portion who indicate a preference for renting and owning higher density housing.

The Sage Report estimates the likely average purchasing power of new households in the area, broken down by job category, as summarized in Table 2.16, presented above.

The table above provides a measure of the average home price and apartment rent that new households are able to afford. Naturally, the actual range of salaries and corresponding purchasing power will be much broader.

A 2006 survey of Fort Monmouth employees whose positions are relocating included questions about the current value of their homes, and whether they prefer owning or renting. In the survey, respondents can be broken down into those that currently own a home (75 percent), and those that currently rent (25 percent). Of those that own a home, about 42 percent estimated their home value between $301,000 and $500,000, and about 16 percent had a home worth more than $500,000. Although these values represent the peak of the recent boom in housing sales prices, survey responses indicate that many of the relocating households will have household income and home values that are high relative to the majority of households and homes currently in the market area.

Table 2.17 Self-Reported Housing Value of Fort Monmouth Employees with Relocating Positions

	Definitely Relocating		Not Sure		Total	
Home Value (a)	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Don't Currently Own a Home	92	28.1%	96	22.7%	188	25.1%
Under $150,000	3	0.9%	5	1.2%	8	1.1%
$151,000-$300,000	59	18.0%	58	13.7%	117	15.6%
$300,000-$500,000	134	41.0%	181	42.9%	315	42.1%
Over $500,000	39	11.9%	82	19.4%	121	16.2%
Total	**327**	**100%**	**422**	**100%**	**749**	**100%**

Notes:
(a) Home values are presented in 2006 dollars.

Source: "Oct 2006 BRAC Survey Results and Analysis"; BAE, 2008.

In the same 2006 survey, 82 percent of respondents who are definitely moving, and planning to relocate to Maryland, planned to purchase their home. Sixty-four percent planned to purchase a single-family home, and 18 percent planned to purchase a townhouse or condominium. Fifteen percent planned to rent a single-family home, townhouse, condominium, or apartment, and the remaining four percent were not sure of their housing plans. Intentions of employees unsure of their relocation plans were similar, with about 80 percent indicating that they would purchase a house, townhome or condominium. Another noteworthy finding from the survey concerns the choice to maintain a primary residence and household in New Jersey. When asked where they would establish their primary residence, one quarter of respondents who were not sure about their relocation decision intended to keep a primary residence and household in New Jersey while securing a rental close to APG to use during the week. In addition, eight percent of respondents who were sure about their decision to relocate also chose this option.

Sources working with relocating households report anecdotally that many want to buy homes, and those who rent in the beginning of the transition have an incentive to eventually purchase a home using a program that gives relocating Federal employees access to funds that can be used for closing costs and other associated expenses.

Table 2.18 Housing Preferences of Fort Monmouth Employees with Relocating Positions

	Definitely Relocating		Not Sure		Total	
Plan	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Will buy a home in Maryland	261	63.8%	333	60.0%	594	61.6%
Will buy a condo/townhouse in Maryland	72	17.6%	105	18.9%	177	18.4%
Will rent a condo/townhouse OR HOME in Maryland	32	7.8%	46	8.3%	78	8.1%
Will rent an apartment in Maryland	29	7.1%	29	5.2%	58	6.0%
Not sure	15	3.7%	42	7.6%	57	5.9%
Total	**409**	**100%**	**555**	**100%**	**964**	**100%**

Source: "Oct 2006 BRAC Survey Results and Analysis"; BAE, 2008.

While the data suggest that 80 percent or more of relocating households (at least from Fort Monmouth, representing the largest segment of positions) intend to purchase their home, rental demand may be higher during the initial stages of BRAC for a variety of reasons:

- Many employees may not want to commit to purchasing a home in the area and may prefer to rent, at least temporarily, until they decide where in the area they would prefer to live.

- Many older employees approaching retirement may not be fully committed to relocating but need to work for a short time before retiring. These households may seek rental units to live in during the week and travel back home on the weekends. Anecdotal information about relocations to Fort Monmouth and Naval Air Station Patuxent River (Pax River) in earlier BRAC rounds supports this suggestion.

- Younger employees, in general, may opt for rental housing for various financial and lifestyle reasons. As of December of 2007, the Army was hiring recent college graduates from Maryland and Delaware to move up to Fort Monmouth temporarily with the understanding that they would move back down to APG.[8]

Even though predicting the household characteristics and preferences of relocating employees is more art than science, the data about current Fort Monmouth employees does reveal some of the key criteria of potential direct employees. Other direct relocations, as well as contractor tail positions, will also likely include many high-income

[8] Report to Congress: 2005 Defense Base Closure and Realignment Commission Report, Fort Monmouth, New Jersey.

employees who decide to move to the area for a short or long period of time. Indirect and induced employment will likely result in new households that typically have lower incomes than direct and contractor tail households. However, these households will be generated not from job relocation but from new employment growth over time, and may make more permanent commitment to the area.

Subtask 2.4 further evaluates development opportunities. However, analysis above suggests that within the thousands of new households expected to be seeking housing in the market area, the very broad range of likely incomes and resulting broad purchasing/renting power will support demand for a wide variety of residential development formats.

Transit Orientation

The 2006 and 2008 Fort Monmouth Surveys are also good sources of information on commuting preferences. These surveys reveal relatively little interest in or preference for transit options. Current commuting patterns at Fort Monmouth as well as commuting preferences for APG indicate that the overwhelming majority rely on single passenger automobile transportation for their commute and plan to continue to do so in the future. The 2006 and 2008 Surveys found that 88 percent and 90 percent of respondents, respectively, rely on single passenger automobile commuting. When asked about commuting preferences at APG, 2008 Survey respondents reported a more varied range of responses. While 78 percent still considered their likely commuting choice to be a single passenger vehicle, 10 percent chose a carpool or vanpool, and an additional eight percent chose MARC commuter rail service to be their preferred commuting mode.

Table 2.19 Transit Option Most Likely to Be Used by Employees Definitely or Possibly Transferring to Aberdeen Proving Ground

	Preferred Commuting Option	
Mode	**Number**	**Percent**
Car	1,391	78.0%
Carpool/Vanpool	182	10.2%
Commuter Bus	26	1.5%
Local Shuttle	43	2.4%
MARC Rail w/ Shuttle	141	7.9%
Total	**1,783**	**100%**

Source: 2008 Fort Monmouth Survey; BAE, 2008.

It is important to note that current local transit options at Fort Monmouth may be influencing these survey responses, as well as perceptions about transit options that may or may not be available at APG. Transit options involving bus service near Fort Monmouth are limited. The Little Silver New Jersey Transit station is located one mile

from a Fort Monmouth entrance gate, requiring a walk that makes this transit option unappealing. It is possible that the mere presence of more attractive and feasible transit options would encourage higher participation rates among commuters, especially as Fort Monmouth employees are familiar with high quality commuter rail that New Jersey Transit provides to New York City.

Commercial Preferences

Development opportunities will be explored in further detail in Technical Memorandum 2.4, but it is safe to assume that a significant amount of office demand will be met by the pipeline of large-scale office development activity at and near APG. Nonetheless, there is likely a niche opportunity to meet some of the indirect and induced office demand through a Smart Growth location for numerous reasons:

- Employees appreciate transit options near their place of work. This attribute will appeal to both employees, as well as employers who may see its value for employee recruitment;
- Workers also appreciate walkable retail for lunch and for daily basic needs; and
- A mixed-use atmosphere would provide the potential for a walkable commute, which is extremely rare in this area.

The opportunity to attract a large-scale office user is probably minimal due to the competition at and adjacent to APG. Office space in a Smart Growth setting is typically provided in mixed-use buildings, with office space occupying space above ground floor retail and possibly in a building shared with residential or other commercial use as well. This type of layout will not appeal to all expected users, especially contractor tail employers who will want more control over their work environment and security, and may have a need for traditional office space combined with flex space. However, offering a vibrant, walkable mixed-use atmosphere with transit options would be a competitive advantage in drawing smaller service-oriented office users, such as financial advisors or insurance providers. These users often fall into the category of indirect and induced demand, estimated to be about 3,500 to 4,000 jobs countywide, generated from direct APG and contractor tail employment, as well as incremental demand for office space generated by baseline employment growth in the County.

Much of the estimated 200,000 square feet of new retail demand could be met by more conventional retail formats such as large, grocery-anchored community centers. However, although more retail analysis is necessary, assuming a dense, mixed-use, transit-oriented development were delivered, some of the new retail demand could certainly be met in this format, particularly if the amount of on-site and nearby residents and employees is substantial.

A more detailed analysis and more specific gauge of transit-oriented depth of residential and commercial demand will be summarized in Technical Memorandum 2.4 as part of the overall Assessment of Market opportunities subtask.

3.0 Real Estate Supply Analysis

3.1 Introduction

Technical Memorandum 2.3 characterizes the supply of real estate in the study area, including an inventory of existing and planned office, retail, hotel, and various types of residential space. The findings from this technical memorandum provide an understanding of the real estate environment in which any new development will compete. The report also includes an analysis of the market acceptance of two recent transit-oriented developments in the region.

3.2 Summary of Findings

Residential Sales and Rental Supply

- Harford County sales prices and volume sharply increased beginning in 2004, with the number of houses sold peaking in 2004 and median sale price peaking in 2007.
- Similarly, both single-family and multifamily construction permitting activity peaked in 2005. However, permitting activity did not show a dramatic spike over time similar to sales prices, but exhibited a precipitous 50 percent decrease in permitting activity from 2005 to 2006. While Harford County permitting activity has followed national and state trends in the real estate market, permitting activity in 2007 and 2008 has dropped to levels not seen in the County since 1983.
- Sales conditions have worsened, but Harford County has not experienced such a sharp decline in price. However, sales volume has decreased substantially while time on the market has increased markedly over the same period. This is a trend that can be noted throughout the entire country.
- There is currently a 10 month supply of existing houses for sale in the County, given the pace of sales and number of homes on the market. The sharp reduction in construction permitting as well as the increased demand related to BRAC should allow current conditions to improve.

- The majority of residential sales prices in the County in the first six months of 2008 for all types of units fell within the range of $200,000 to $300,000. A sizable percentage of the townhomes (24 percent) were priced below this range, and about two thirds of all detached product was priced above this range.

- The median sales price of housing during the first six months of 2008 was $332,670 for detached homes and $236,594 for townhomes.

- Although there is new townhome construction in the market area, the units are positioned as a value/price alternative to single-family detached units as opposed to a higher-density lifestyle alternative.

- There is an abundance of planned, proposed and approved residential projects within Harford County, consisting of all types of housing.

- There have been no new rental apartment projects since 84 units were delivered in 1997, perhaps due to the financial attractiveness of building housing for sale compared to rental projects. Not surprisingly, occupancies have been very high, ranging from 96 to 99 percent over the same period. The Class B/C inventory totals over 2,700 units and represents approximately two thirds of the total rental inventory in the County.

- A survey of apartment complexes found monthly rents per square foot ranged from $0.81 to $1.19, with a median at $1.02 per square foot. Given these conditions and the lack of high quality rentals, a shadow market may exist of houses that were owner-occupied at one point but now rented out by their owners instead.

Commercial Supply

- Harford County currently has the lowest office vacancy rate in the Baltimore metropolitan area, with vacancy rates of about 10 percent. Annual rental rates typically range from $12 to $20 per square foot, with the most desirable buildings renting for as much as $26 per square foot.

- The County's current office supply predominantly contains smaller buildings, with 254 buildings containing just over 2.7 million square feet of space.

- The office market is already responding to BRAC-related demand, with over 2 million square feet of new office space planned or under construction in Harford County. Much of the larger scale contractor tail demand is likely to be met by the Opus East GATE Enhanced Use Lease (EUL) project and the COPT project.

Retail Supply

- The retail market has demonstrated decline, and vacancy rates have risen as total inventory in the County has increased. Vacancy rates in Harford County are significantly higher than in neighboring counties.

- Currently, there is about 500,000 square feet of approved retail development in the pipeline in the County, mostly consisting of conventional neighborhood or community-serving developments.

Hotel Supply

- Several proposed hotels will add up to 350 rooms to the Aberdeen area's current inventory of 1,000 rooms. Current hotels vary in price and quality, with nightly rates ranging from $65 to over $150. New hotels, including a Hilton Garden under construction, will add to the higher end of Aberdeen's hotel inventory.

Case Study Examples

- Although no examples near the Aberdeen station can demonstrate market acceptance of transit-oriented development products, two examples from the region – Rockville Town Square and Lorton Town Center – are recent, successful TOD projects. Although each location bears similarities and differences to the Aberdeen station, there are lessons to be learned from both projects relevant to development oriented to the Aberdeen station. Perhaps most significantly, both TOD projects profiled used transit oriented development to take full advantage of underutilized sites and positively change market perceptions about these locations.

3.3 Residential Supply

For Sale Inventory Analysis

Historical resale data for Harford County indicate that the area was not immune to the rise and fall of the housing market that occurred in many regions across the country. Although not a hotbed for rampant investor speculation and oversupply, historical sales prices and volume did experience a sharp increase beginning in 2004, with sales volume peaking in 2004 and median sale price peaking in 2007. The median sale price, however, has not fallen sharply since, but has flattened out, along with a rapid increase in days spent on the market for active listings. Table 3.1 highlights this trend and Figure 3.1 shows the median sale price growth trend graphically.

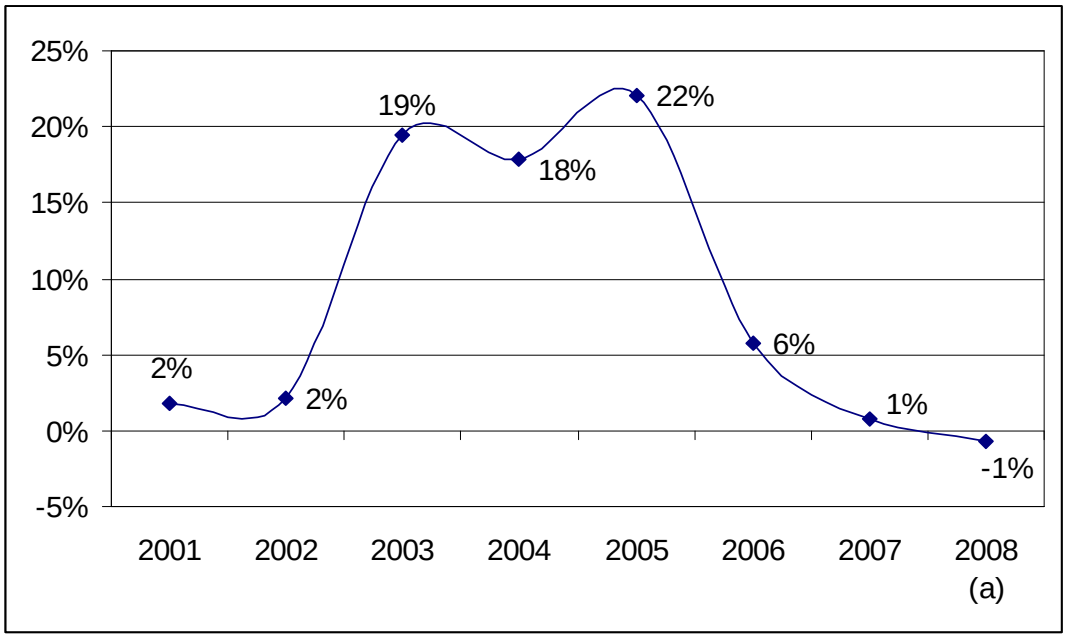
Table 3.1 Annual Residential Sales Trends in Harford County, Maryland
2000 to 2008

Year	Number of Units Sold	Median Sale Price	Average Days on Market
2000	2,721	$136,500	95
2001	3,160	$139,000	84
2002	3,360	$142,000	62
2003	3,506	$169,650	42
2004	4,065	$199,900	37
2005	4,103	$244,000	39
2006	3,646	$258,000	60
2007	3,064	$260,000	100
2008 (a)	1,732	$258,072	129

Notes:
(a) Data includes sales from January 1, 2008 through September 30, 2008.
To find the median sales price for 2008, the median sales price from each month was averaged.

Source: Metropolitan Regional Information Systems, Inc, 2008; BAE, 2008.

Figure 3.1 Annual Change in Median Home Sale Price, Harford County
2001 to 2008

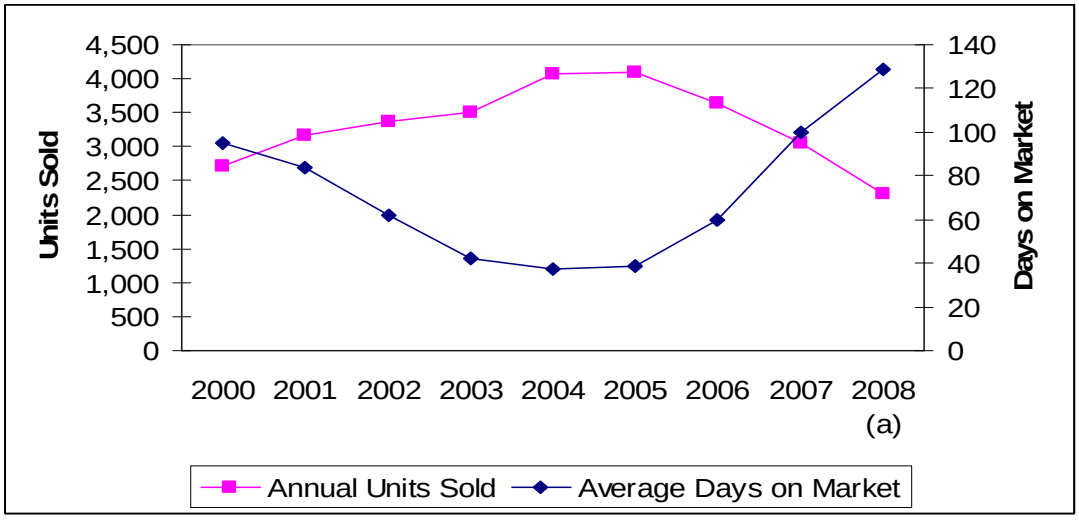


Source: Metropolitan Regional Information Systems, Inc, 2008; BAE, 2008.

(a) 2008 data through September.

The median sale price averaged a remarkable 20 percent annual gain from 2003 to 2005, which is clearly an unsustainable trend over time. Although the market psychology of an unprecedented housing market played a role in this rapid price appreciation, some of the gains were also likely due to the relatively large increase in employment in the County, reflected in Technical Memorandum 2.2. Most regions in the United States that experienced such unsustainable home price appreciation are currently in the process of a sharp correction in pricing, as the return to more traditional lending practices and other market forces are causing prices to once again reflect structural demand in the face of large new home inventories. However, Harford County has not experienced such a sharp decline in price, although sales volume has decreased substantially while time on the market has increased markedly over the same period. Although sales volume has decreased and unsold inventory has risen, the fact that prices have not fallen dramatically after such a run up is likely due to the presence of stronger-than-expected structural demand caused by the existing and future BRAC-related spike in new jobs and the resulting household growth in the area.

Figure 3.2 Historical Average Days on Market and Annual Sales Volume of Residential Units, Harford County
2000 to 2008



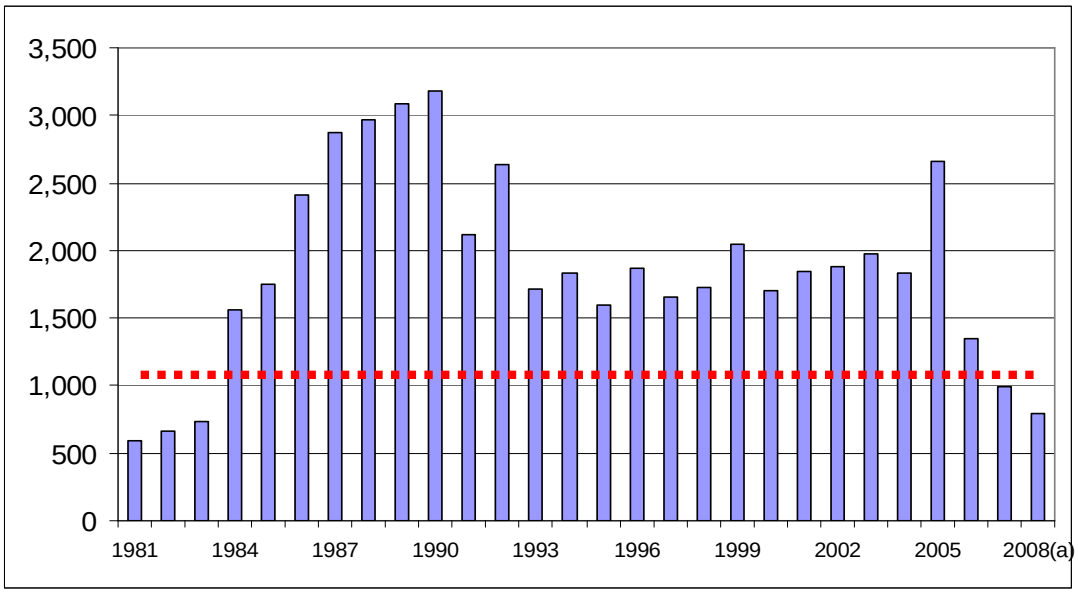
Source: Metropolitan Regional Information Systems, Inc, 2008; BAE, 2008.

(a) 2008 data through September, annualized.

Although average days on market is at the highest level during of the 2000 to 2008 period, and total units sold is at its lowest level for the period, the 2008 median sales price has only fallen to 2006 levels.

New home inventory levels will also play a role in the future health of the local residential supply. Figure 3.3 shows historical permitting trends for Harford County and reflects a similar peak in 2005 for both single-family and multifamily permitting activity. However, permitting activity did not show a dramatic spike over time similar to sales prices, but rather dropped somewhat in 2004 before peaking in 2005, and then showing a steep 50 percent decrease from 2005 to 2006. Continuing with decreasing permitting activity in 2007 and 2008, the number of building permits issued during those years has dropped to levels not seen in Harford County since 1983.

Figure 3.3 Historical Single-Family and Multifamily Permitting Activity, Harford County
1981 to 2008

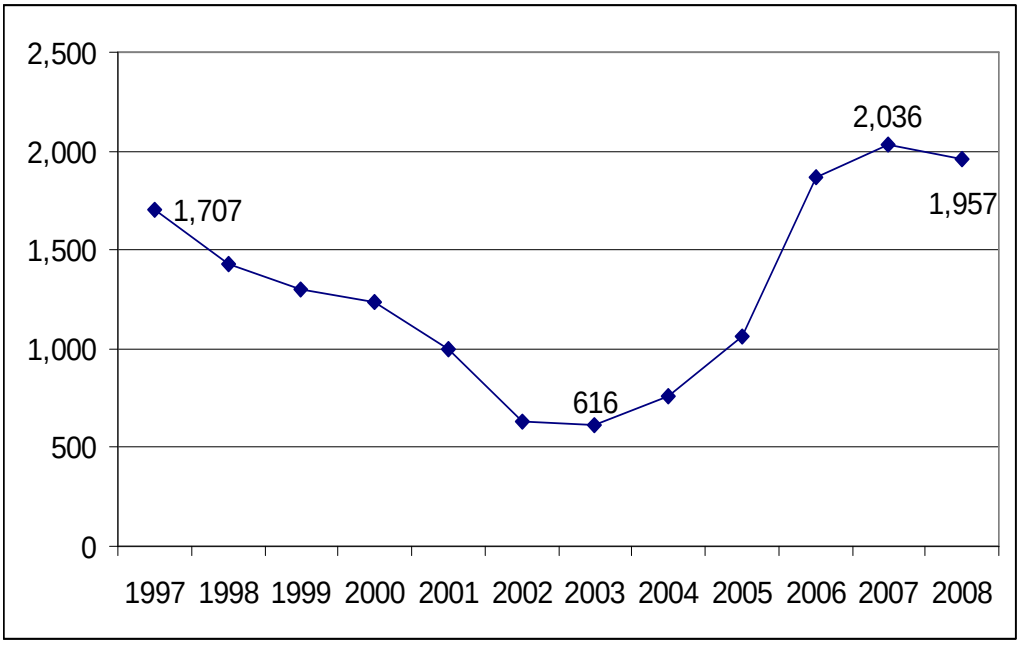


Source: Housing and Urban Development, 2008; BAE, 2008.

(a) 2008 data through September, annualized.

However, part of this pullback in permitting activity is a reaction to the sharp increase in total active listings on the market today and reduction in sales. Figure 3.4 shows that the total active listings on the market have more than tripled from their lowest levels in 2003, peaking in 2007 and dropping slightly in 2008. Nevertheless, in light of the ongoing BRAC-related growth taking place in the area, a pullback of permitting activity to levels not seen in 25 years is likely a major overcorrection.

Figure 3.4 Total Active Listings as of October, Harford County
1997 to 2008



Source: Metropolitan Regional Information Systems, 2008; BAE, 2008.

October 2008 total sales volume of 194 units and total active inventory of 1,957 units imply roughly ten months of inventory currently on the market for the county. Although the local housing market is demonstrating weak current fundamentals, there are signs that the outlook for the market will be positive in the coming years. The sharp downward adjustment in permitting activity, which has resulted in a 25 year low, should help expedite a return to healthy market conditions. This pullback, along with the fact that price depreciation has been minimal so far, are positive signals for the near-term future for-sale market, particularly in light of the anticipated BRAC-related growth.

Current Sales Prices

Tables 3.2 and 3.3, as well as Figure 3.5, highlight recent sales volume by price range for detached product and townhomes, shedding light on pricing activity as well as typical bedrooms for each product type.

Table 3.2 Recent Single-Family Home Sales in Harford County
By Number of Bedrooms (a)

	All Units		Number of Bedrooms		
Sale Price	**Number**	**Percent**	**2 or Fewer**	**3**	**4 or More**
Under $100,000	6	1.1%	1	4	1
$100,000-$199,999	46	8.2%	14	22	10
$200,000-$299,999	172	30.6%	8	111	53
$300,000-$399,999	176	31.3%	2	51	123
$400,000-$499,999	102	18.1%	0	8	94
$500,00-$599,999	36	6.4%	1	1	34
$600,000 or higher	25	4.4%	0	1	24
Total	**563**	**100%**	**26**	**198**	**339**
Median Sale Price	**$332,670**		**$185,714**	**$265,766**	**$385,772**

Notes:
(a) Data includes sales of single family homes from January 1, 2008 through June 30, 2008 in Harford County, Maryland.

Source: Metropolitan Regional Information Systems, Inc., 2008; BAE, 2008.

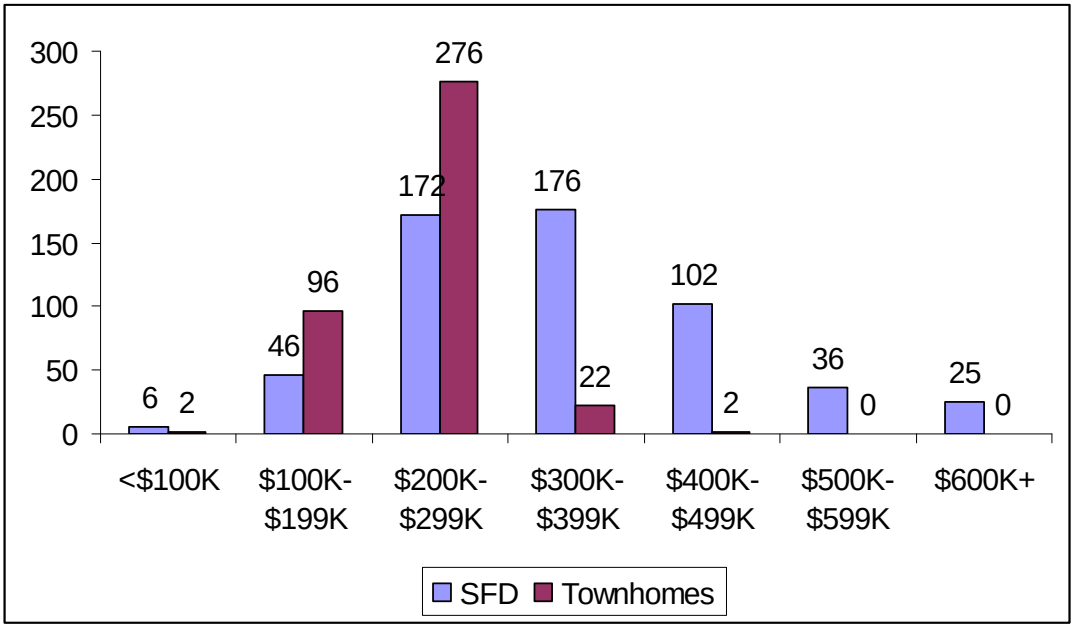
Table 3.3 Recent Townhome Home Sales in Harford County
By Number of Bedrooms (a)

	All Units		Number of Bedrooms		
Sale Price	**Number**	**Percent**	**2 or Fewer**	**3**	**4 or More**
Under $100,000	2	0.5%	0	2	0
$100,000-$199,999	96	24.1%	18	68	10
$200,000-$299,999	276	69.3%	18	226	32
$300,000-$399,999	22	5.5%	0	19	3
$400,000-$499,999	2	0.5%	1	1	0
$500,00-$599,999	0	0.0%	0	0	0
$600,000 or higher	0	0.0%	0	0	0
Total	**398**	**100%**	**37**	**316**	**45**
Median Sale Price	**$236,594**		**$202,778**	**$238,938**	**$239,063**

Notes:
(a) Data includes sales of townhomes from January 1, 2008 through June 30, 2008 in Harford County, Maryland.

Source: Metropolitan Regional Information Systems, Inc, 2008; BAE, 2008.

Figure 3.5 Single Family Detached and Townhome Sales by Price Range, Harford County
2008



Source: Metropolitan Regional Information Systems, Inc, 2008; BAE, 2008

The majority of sales volume was concentrated between $200,000 and $300,000, with a sizable percentage of the townhomes (24 percent) priced below this range, and about two thirds of all detached product priced above $300,000.

New Construction

Despite the slowdown in the housing market, there are still some new detached and townhome projects actively selling in the market area. Although there is new townhome construction in the market area, the units are positioned as a value/price alternative to single-family detached units as opposed to a higher-density lifestyle alternative like what would be offered in a Smart Growth-oriented development. There is little residential development in close proximity to the Aberdeen train station, and residential units currently under construction in Aberdeen do not include any Smart Growth-oriented elements. Development at Water's Edge in Belcamp does not offer the ability to walk to any nearby amenities. Winston's Choice, a new townhome development by Ryan Homes, is located within walkable proximity to the Aberdeen train station. While the development is within walkable proximity, no pedestrian-friendly elements such as sidewalks or bike paths currently exist. Winston's Choice offers base prices of $180,000 with 1,240 square feet. There is also a limited amount of new construction condominium options although most have the look and feel of a conventional garden apartment community and typically represent an even lower entry-level price point as opposed to a true lifestyle option.

Figure 3.6 Winston's Choice

Figure 3.7 Holly Woods Condos

The pipeline for new residential units in Harford County shows an abundance of planned, proposed, and approved projects although planners question the delivery of many of these projects based on recent trends in the residential market. Appendix A provides a list of all identified planned residential projects in the market area. Not all of the planned proposed projects will be built. In Harford County, the Department of Planning and Zoning tracks the planned and approved projects within its land use control jurisdiction (outside of municipalities) that have drawn building permits, and a summary breakdown is provided in Table 3.4. As of June 2008, building permits have been issued for 1,400 units out of the 5,400 units planned (about 26 percent). Of the 4,000 approved units not yet permitted, 29 percent are single-family detached, 37 percent are townhomes, and 34 percent are condominium/apartment units, with no specific indication of whether these multifamily units will ultimately be classified as for-sale or rental. Furthermore, 27 percent of the planned detached units have been permitted, 35 percent of the planned townhomes have been permitted, and only 15 percent of the planned multifamily units have been permitted.

Table 3.4 Breakdown of Planned Units, by Building Permit Status for Harford County
June 2008

	Single-Family Detached	Townhome	Apartment/ Condominium	**Total**
Units Planned	1,597	2,235	1,604	**5,436**
Units Permitted	424	773	234	**1,431**
% of Planned Units Permitted	26.5%	34.6%	14.6%	**26%**
Remaining Planned Units	1,173	1,462	1,370	**4,005**
Share of Total by Unit Type	29.3%	36.5%	34.2%	**100%**

Source: Harford County Department of Planning and Zoning, 2008; BAE, 2008.

Table 3.4 also shows that the remaining unpermitted units are distributed somewhat evenly across the categories, with 29 percent single-family detached, 37 percent townhomes, and 34 percent multifamily. Rental apartments will be discussed further in the next section, but it will be important to gain a better understanding of how the future multifamily pipeline breaks down into for-sale versus rental units. Historical deliveries shown in the rental section suggest that this break down has been primarily skewed towards for-sale product during the previous housing boom, from 2000 to 2006.

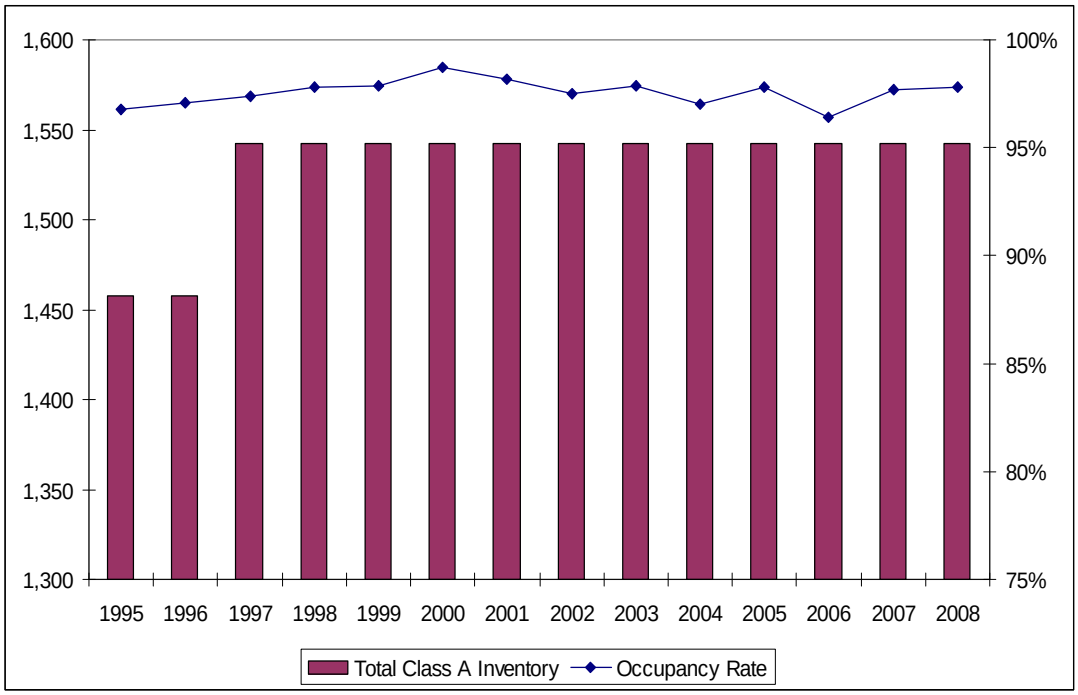
Rental Apartments

The Harford County rental apartment market is comprised of mostly dated buildings, with Class B and C units making up the majority of inventory. Class A units are units that typically have asking rents higher than any other rents in the market, as well as are newer

construction and a larger size. Figure 3.8 summarizes historical inventory and occupancy for Class A rental units in the area.

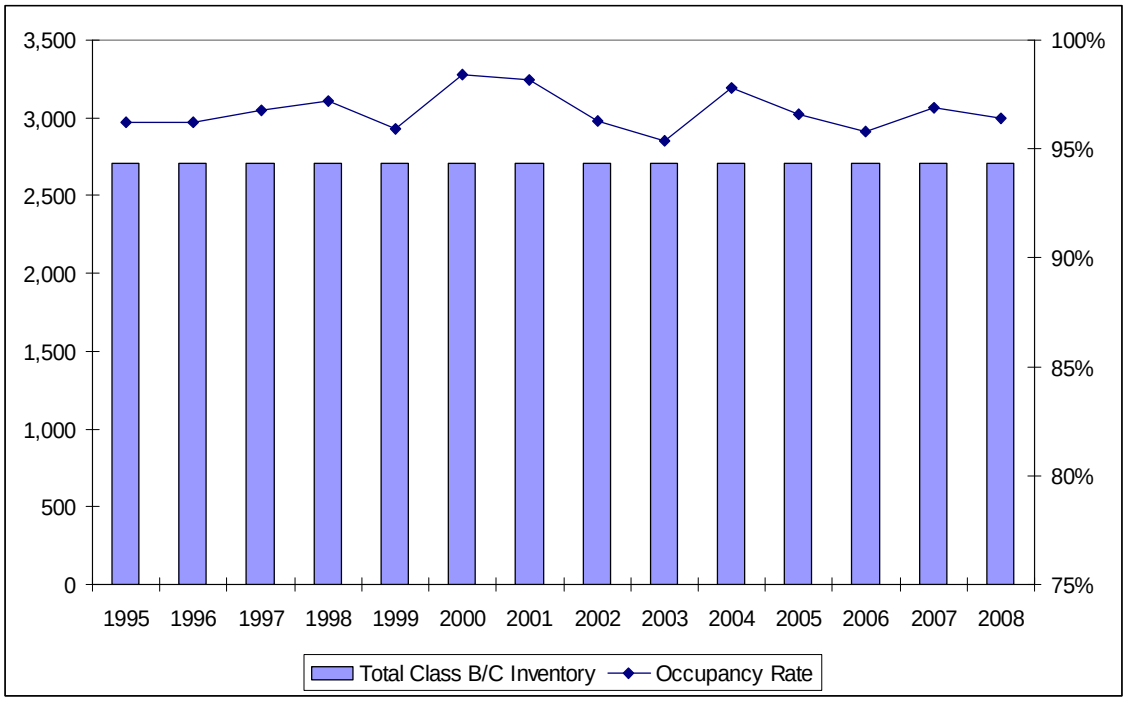
There have been no new rental deliveries tracked since 84 units were delivered in 1997. Not surprisingly, occupancies have been very high, ranging from 96 to 99 percent over the same period. Because of this lack of new supply over the past decade, Class B and C units make up the majority of existing rental stock in the county. Figure 3.9 shows total Class B/C inventory and occupancy over the same period.

Figure 3.8 Historical Total Inventory and Occupancy for Class A Rental Apartment Units, Harford County
1995 to 2008



Source: REIS, 2008; BAE 2008.

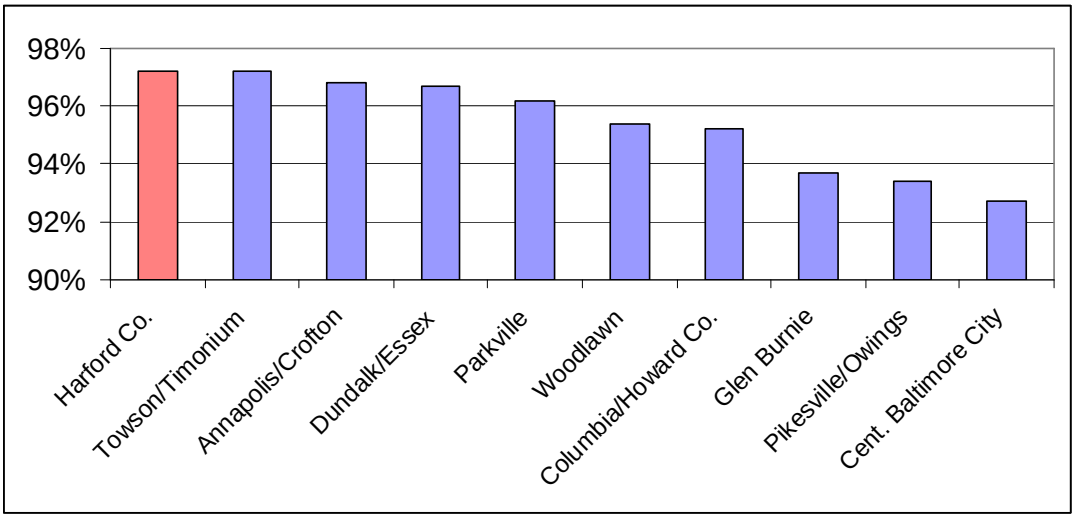
Figure 3.9 Historical Total Inventory and Occupancy for Class B/C Rental Apartment Units, Harford County
1995 to 2008



Source: REIS, 2008; BAE 2008.

The Class B/C inventory totals over 2,700 units and represents approximately two thirds of the total rental inventory in the County. Occupancy rates for Class B/C units have also been remarkably high, consistently ranging from 95 to 98 percent over the past 14 years. These occupancy rates across all classes indicate a somewhat undersupplied apartment market, an assertion that is further supported by the complete lack of new deliveries over the same period. These occupancy rates are exceptionally strong, and rank Harford County as tied for first among Baltimore submarkets in this category (Figure 3.10).

Figure 3.10 Rental Apartment Occupancy Rates by Baltimore Submarket
Third Quarter 2008



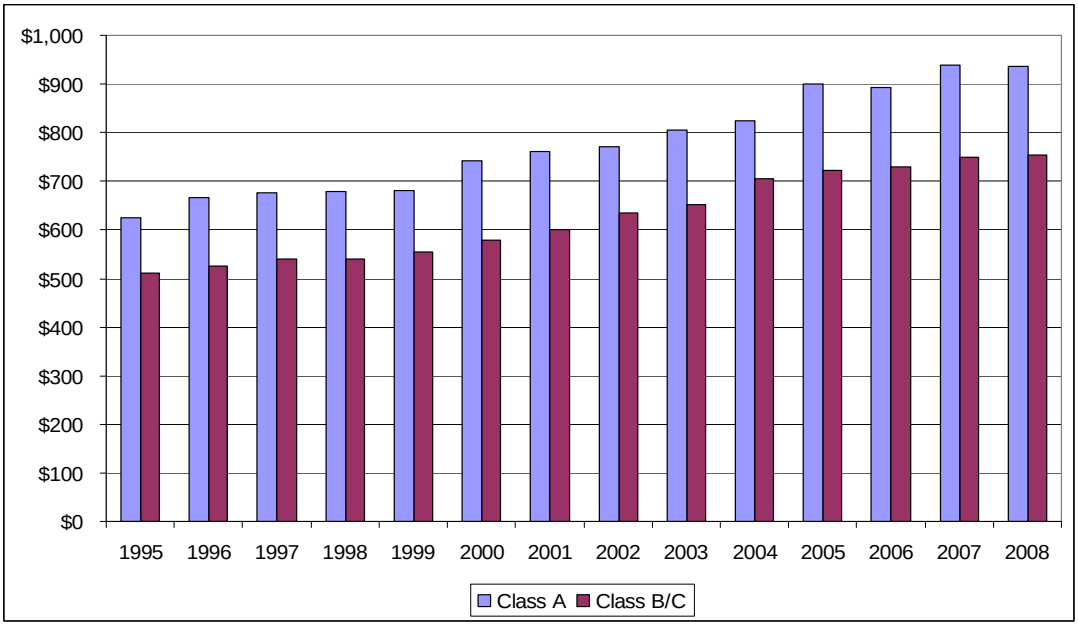
Source: Marcus & Millichap, 2008' BAE, 2008.

Not surprisingly, rental rates have steadily increased over time. Figure 3.11 shows historical effective rental rates for both classes over the same period.

Average rents for both classes have increased steadily over time, with the average annual growth rate for each class at three percent, roughly keeping pace with inflation.

BAE surveyed six rental communities located throughout the market area to better understand local market dynamics. This data is summarized in Appendix B. Rents ranged from $450 for a one-bedroom, one-bathroom unit at the Dennis Apartments in Havre de Grace, located north of the proving ground, to $1,149 for a three-bedroom, one-and-a-half-bathroom townhouse at Harford Commons in Edgewood, which is located closer to Aberdeen Proving Ground. The average rent of the units surveyed was $793, which is not far from the weighted average of the Class A and B/C units, at $820. Consistent with the aggregate market data, all of the apartment communities surveyed were older and offered only moderate, Class B/C levels of quality. Value ratios (rent/SF) ranged from $0.81 per square foot for a townhouse at Magnolia Farms to $1.19 per square foot for a 1br/1ba unit at Fox Run at Ashby Place. The average value ratio for the total units surveyed was $1.02 per square foot.

Figure 3.11 Historical Average Effective Rents, Class A and B/C Inventory of Rental Apartments, Harford County
1995 to 2008



Source: REIS, 2008; BAE, 2008.

Given the historically high inventory of active listings of for-sale units combined with a very tight rental market that offers primarily dated units of moderate quality, there could be an emerging shadow market in the location surrounding APG to meet excess rental demand. Although this category of private rental supply and demand is impossible to track, it would not be a surprise to discover that demand from renters seeking higher quality rental space could be met by homeowners who have relocated away from the area but have chosen not to sell their homes in the current housing climate. A recent search for rental housing on Craigslist, a popular on-line posting site, found multiple private listings for townhouses and condominiums for rent in the Aberdeen area.

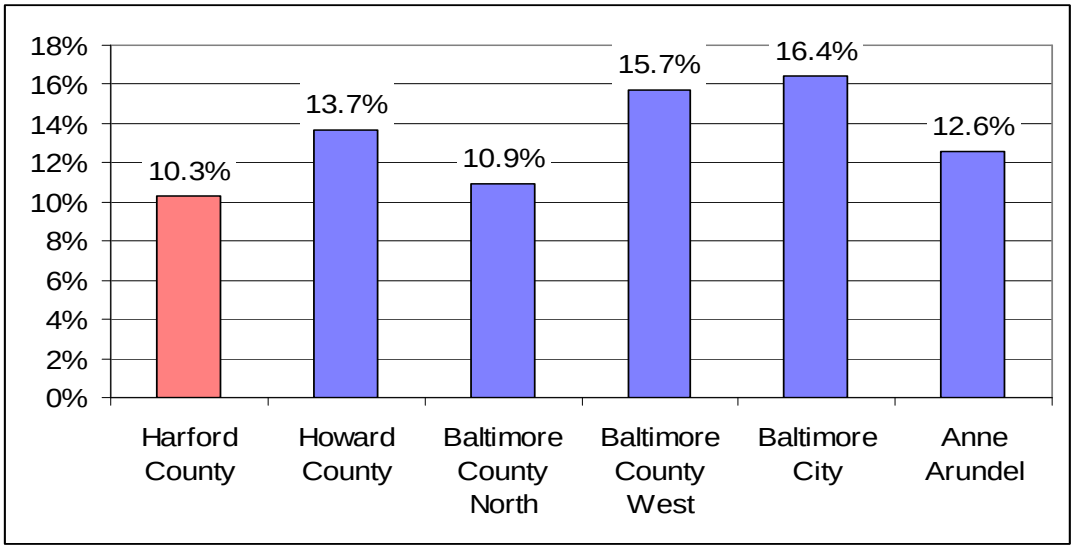
Figure 3.12 Fox Run at Ashby Place

3.4 Office Supply

Although still awaiting the full impact of BRAC-related growth, the Harford County office market has already felt some impact as contractors have begun actively relocating or expanding their currently smaller presence in the area. As a result, the County has maintained stable vacancy rates and rents while other Baltimore submarkets have suffered from the current economic downturn.

Figure 3.13 shows that Harford County currently has the lowest office vacancy rate in the Baltimore metropolitan area, according to Manekin, a regional commercial real estate broker and developer active in the local market.

Figure 3.13 Office Vacancies by Submarket, Baltimore Metropolitan Area
Third Quarter 2008



Source: Manekin, 2008; BAE, 2008.

Table 3.5 shows the characteristics and availability of a selection of available office listings in the City of Aberdeen, representing existing buildings near the current station area. Rents range from $12 to $20 per square foot for Class B office space, although new construction Class A space in some of the best locations is achieving rents as high as $26 per square foot.

Table 3.5 Selected Existing Office Properties in Aberdeen

Address	City	Property Type	Property Size (SF)	Space Available (SF)	Rent/SF/Yr
998 Hospitality Way	Aberdeen	Class B Office	20,000	7,800	$18-$20
400 Hickory Dr	Aberdeen	Class A Office	40,000	10,929	$15-$16
15 N. Parke St.	Aberdeen	Class B Office	12,541	1,325	$15-$18
401 Market St.	Aberdeen	Class B Office	5,500	1,500	$12.00
780 W Belair Ave	Aberdeen	Class B Office	7,200	1,200	$18.00
1200 Technology Dr.	Aberdeen	Class B Flex	59,400	10,500	Negotiable
1003 Old Philadelphia Rd.	Aberdeen	Class B Flex	48,000	18,775	$4.50-$13
		Total	***192,641***	***52,029***	

Source: Harford County Office of Economic Development, 2008; Co-Star, 2008; BAE, 2008.

According to Manekin, the current Harford County office inventory totals just over 2.7 million square feet of space and is comprised of 254 buildings, implying that the average office building contains under 11,000 square feet. While this size is typical of smaller, more suburban markets, the current BRAC-related pipeline of office development indicates that future office development will be anything but small in scale, and will dramatically change the face of the Harford County office market supply.

As described in Technical Memorandum 2.1, Opus East LLC (Opus) has entered into a contract with APG to participate in an Enhanced Use Lease (EUL) agreement. Under the terms of the lease, Opus can build up to two million square feet of office, R&D, hotel and conference facilities on 200 acres of land, and is authorized to build up to 180,000 square feet of space per year for the first five years of the lease. Opus will also operate the facilities. Opus' development, known as the Government and Technology Enterprise (G.A.T.E.) business park, will be the only office property that offers its tenants the ability to locate behind the security gates at APG's MD 715 entrance. This location strength will likely be an important strategic advantage in targeting contractor tail tenants. As such, with the potential for delivering 900,000 square feet of space essentially on-site at APG, the development is poised to capture a large majority of sizable contractor tail tenants relocating to the area. Opus has already signed CACI International to occupy a 60,000 square-foot building at the site and is about to break ground on an 80,000 speculative office building. The addition of 900,000 square feet of space from the GATE business park would represent a 33 percent increase in the local office market based on today's 2.7 million-square-foot inventory.

Figure 3.14 Opus East G.A.T.E. Business Park

Corporate Office Properties Trust (COPT) also recently broke ground on a 465,000-square-foot office development just outside of the MD Route 22 gate APG. Known as the North Gate Business Park, the first building will contain 84,000 square feet of space. Construction began on a second 83,000 square foot building around January 2009. Upon completion in 2010, asking rents are anticipated to be in the high $20s per square foot. Additionally, James Run Corporate Campus, a planned office and retail development located at the MD Route 543 interchange of Interstate 95 offers over one million square feet of office space for development within five miles of APG's MD 715 gate. No buildings have broken ground but the project is entitled and is being marketed to potential tenants.

These projects alone represent over three million square feet of office space planned, proposed, or under construction near APG and estimates indicate that as many as 150

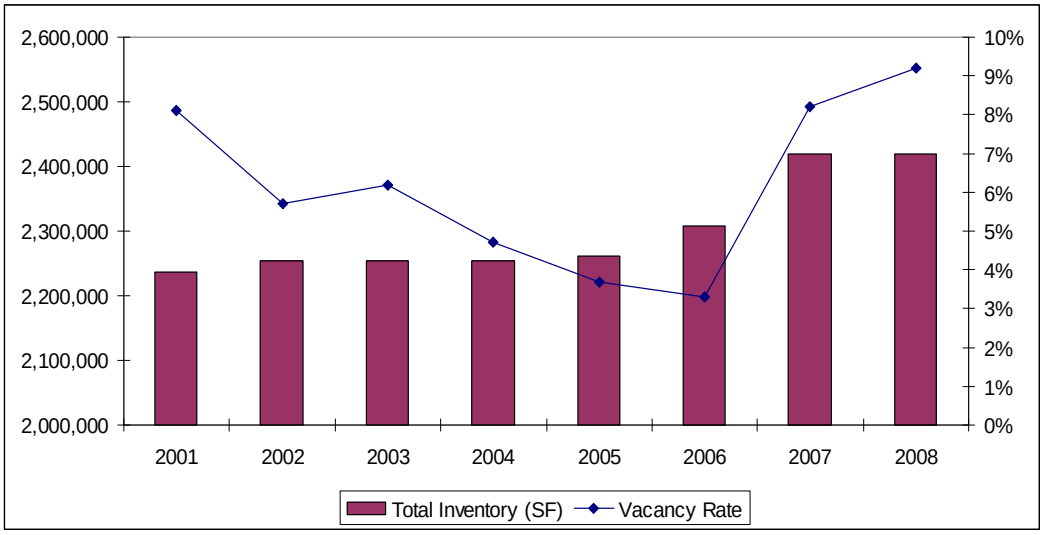
defense contractors will be relocating from Fort Monmouth to APG in the near future.[9] A detailed listing of all identified projects planned, proposed and under construction is found in Appendix Table A.2. There is a possibility that much of the office space demanded by defense contractors will be absorbed by these projects, particularly the Opus and COPT projects, which will offer Department of Defense-approved security enhancements and strategic locations relative to APG. Preliminary analysis suggests that the market for future large office users is in the process of being met by large-scale APG-oriented projects. As such, a Smart Growth-oriented development will not likely be driven by a large office space component geared towards attracting major tenants. However, Technical Memorandum 2.4 will delve deeper into the potential opportunity to target smaller office users that have historically characterized the Harford County market.

3.5 Retail Supply

The local retail supply picture does not appear to be as healthy as the office market. The vacancy rate for community and neighborhood retail experienced a steady decline from a high of 8.1 percent in 2001 to a low point of 3.3 percent in 2006. However, the vacancy rate spiked to over 8 percent in 2007 and over 9 percent as of the second quarter of 2008 (Figure 3.15).

[9] "Corporate Office Properties Trust breaks ground on BRAC project". Baltimore Business Journal, November 18, 2008.

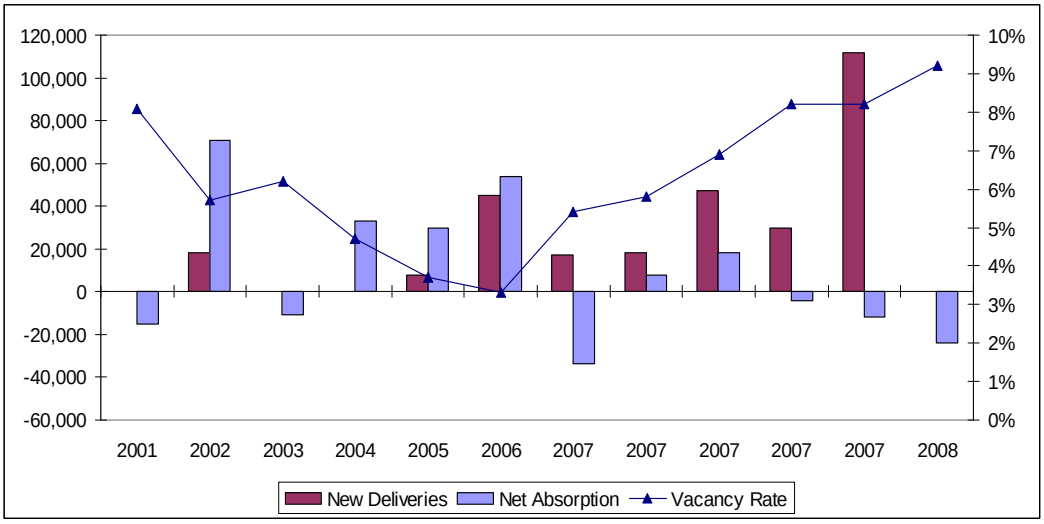
Figure 3.15 Historical Vacancy Rate and Total Inventory of Community and Neighborhood Retail Space, Central Harford County
2001 to 2008



Source: REIS, 2008; BAE, 2008.

Figure 3.16 shows that the market experienced positive net absorption for most of the period, although new deliveries in 2007 of 112,000 square feet, coupled with negative net absorption caused the spike in vacancy rate, which increased further with continued negative net absorption in 2008.

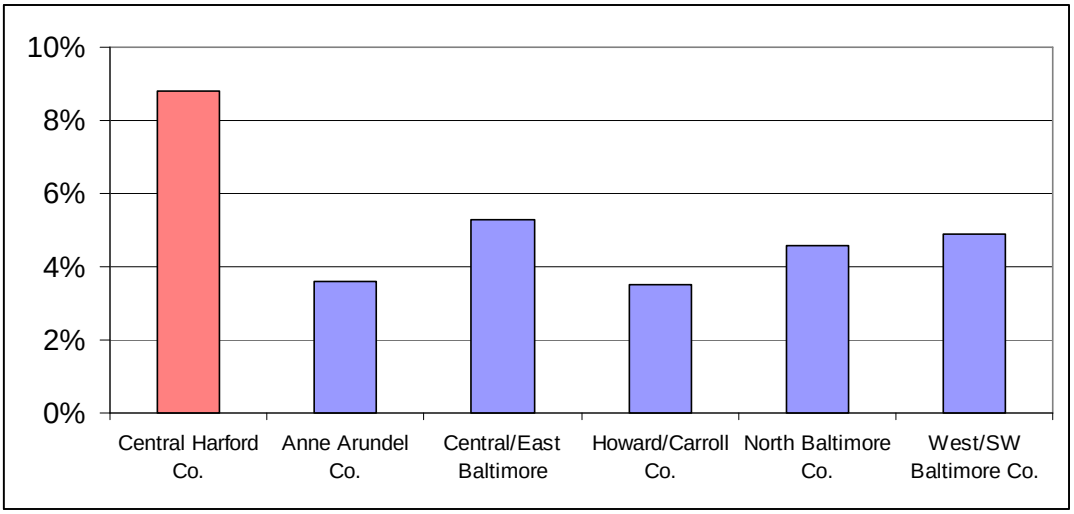
Figure 3.16 Historical Retail Vacancy Rate, New Deliveries, and Net Absorption, Central Harford County
2001 to 2008



Source: REIS, 2008; BAE, 2008.

Although this ramp up in vacancy is likely partly caused by recent economic trends, it is important to note that vacancy rates in the range of eight to nine percent are far higher than other Baltimore submarkets, as shown in Figure 3.17, indicating a deeper fundamental weakness in the submarket. Other submarket vacancy rates range from approximately three to five percent.

Figure 3.17 Neighborhood and Community Retail Vacancy Rates, Baltimore Submarkets
Second Quarter 2008



Source: Marcus & Millichap, 2008; BAE, 2008.

Multiple retail centers in Harford County were surveyed by BAE to better understand the market although numerous centers would not disclose information on vacancies and rents. Appendix C shows the vacancy and rent rates of a sampling of retail centers in the market. Rents ranged from $12 per square foot triple net (Campus Hills Shopping Center, Bel Air) to $35 per square foot triple net (Festival at Bel Air). Consistent with aggregate market trends, most retail centers surveyed had at least some vacant space. Of the retail centers whose representatives would disclose information, all had occupancy rates of 90 percent or more, with the exception of Campus Hills Shopping Center in Bel Air, which had an occupancy rate of 82 percent.

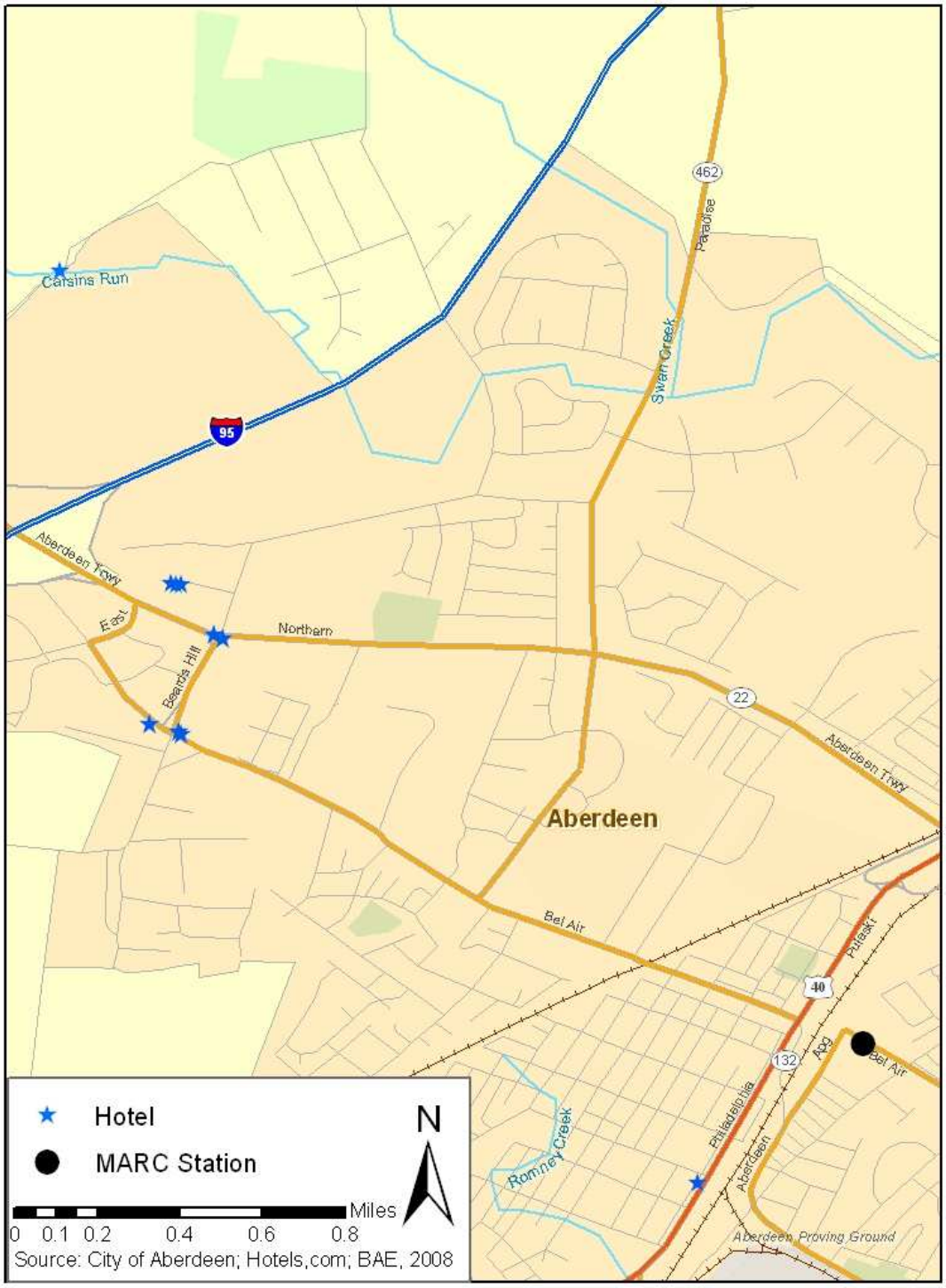
All of the retail centers surveyed were grocery anchored, and many featured big box tenants such as Kohl's and Toys R Us. The supermarkets anchoring the retail centers vary in size and class. Given the occupants of several retail centers, it appears that there may be higher vacancy rates in the near future, as certain national tenants continue to struggle and may scale back total stores, particularly in less densely populated areas such as Harford County. There is only one enclosed mall, Harford Mall located in Bel Air, which is approximately 15 miles southwest of the Aberdeen train station.

There is over 500,000 square feet of retail space in the development pipeline, however it remains unclear how many of the projects will be delivered. Mitchell Towne Center, located in Havre de Grace, will feature one building with mixed uses of office and retail. However, most retail in the development pipeline is more of the same type of conventional neighborhood or community-serving format. No concrete plans currently exist for a lifestyle or town center in the market area.

3.6 Hotel Analysis

There are numerous existing hotels in the City of Aberdeen with many in close proximity to I-95. Figure 3.18 shows the hotels in Aberdeen oriented on the highway as well as within proximity to the Aberdeen MARC station. The hotels offer a broad range of overall market positioning, price, and quality. The Courtyard by Marriott is located directly adjacent to Aberdeen's Ripken Stadium, and is designed as an exact replica of Baltimore's Camden Yards warehouse. The current rate for two adults is $149 per night. Also on the upper end of the local price spectrum is the Holiday Inn Chesapeake, which offers rates of $130 per night. The Holiday Inn Chesapeake also features Internet with "enhanced government security" to capture contractor tail demand.

Figure 3.18 Map of Selected Hotels in Aberdeen
2008



In addition to the existing hotels, there are several planned hotels in the Aberdeen pipeline. A 93-room Hilton Garden is currently under construction, and plans for a 75-room Comfort Suites and 105-room Hampton Inn have been proposed. Site plans have been submitted to the Aberdeen Planning Board for a Holiday Inn Express as well. Manekin may also build a hotel on their Water's Edge Corporate Campus in Belcamp.

Given that there are almost 1,000 existing hotel rooms and at least another 350 rooms in the development pipeline, it appears that there is adequate hotel supply in the local market, and perhaps even an over-supply although a closer look at occupancy rates will be necessary to finalize this conclusion. Table 3.6 represents a sampling of hotels currently available in Aberdeen. Room rates were obtained for the same two days in September 2008 for each hotel.

Table 3.6 Selected Hotels Near Aberdeen Proving Ground

Name/Address	Number of Units	Room Type	Room Rates	Comments/Amenities
Holiday Inn Chesapeake House	122	Standard Room 1 King Bed Smoking	$112.95 - $149.95	Restaurant and bar, indoor pool, whirlpool
1007 Beards Hill Rd		Standard Room	$112.95 - $149.95	Fitness center, newspaper, laundry facilities
Aberdeen, MD 21001		Standard Room 1 King Bed Non-smoking	$112.95 - $149.95	Car rental desk, pets allowed,
866.270.5110		2 Double Beds Non-Smoking	$112.95 - $149.95	"increased security" internet access
La Quinta Inn Aberdeen	112	Standard 2 Full Beds	$109	Pool, dining area, high-speed internet
793 W Bel Air Ave		Suite 1 King Bed	$129	Laundry facilities, continental breakfast
Aberdeen, MD 21001		Executive 1 King Bed	$109	
410.272.6000		Executive 1 King Bed & Whirlpoool Bath	$149	
Courtyard By Marriott Aberdeen	120	Deluxe Room 1 King Bed	$153.39	Pool, restaurant, fitness center, internet access
at Ripken Stadium		Deluxe Room 2 Queen Beds	$153.39	
830 Long Drive				
Aberdeen, MD 21001				
410.272.0440				
Red Roof Inn Aberdeen	109	Standard 2 Full Beds Non Smoking	$59.99	Coffehouse style coffee, USA Today
988 Hospitality Way		Standard 2 Full Beds Smoking	$59.99	Wireless Internet Access
Aberdeen, MD 21001		Business 1 King Bed Non Smoking	$64.99	
410.273.7800		Universal 1 King Bed Non-Smoking	$64.99	
Days Inn Aberdeen	49	Standard 2 Double Beds	$65	Pool, continental breakfast, pets allowed
783 W Bel Air Ave		Standard 2 Double Beds Non-smoking	$65	
Aberdeen, MD 21001		Standard 1 King Bed	$70	
410.272.8500		Standard 1 King Bed Non-smoking	$70	
Super 8 Aberdeen	62	Standard Room 2 Double Beds	$64.99	Complimentary breakfast, pets allowed
1008 Beards Hill Rd		Standard Room 1 King Bed	$64.99	
Aberdeen, MD 21001		Standard Room 2 Double Beds Non Smoking	$64.99	
410.272.5420				
Travelodge Hotel Aberdeen	61	Standard Room 2 Double Beds Smoking	$65	Restaurant and bar, newspapers
820 W Bel Air Ave		Standard Room 1 King Bed Smoking	$65	
Aberdeen, MD 21001		Standard Room 2 Double Beds Non-smoking	$65	
410.272.5500		Standard Room 1 King Bed Non-smoking	$65	
		Sleepy Bear Themed Room	$75	

Sources: Hotels.com, 2008; BAE, 2008.

3.7 Transit-Oriented Development Case Studies

Based on this snapshot of supply, it is clear that no true Smart Growth-oriented development exists in the market area today. As such, the viability of such a development type is unproven in the local market. However, case studies from elsewhere in the Baltimore-Washington region suggest strong market acceptance for projects that offer the unique combination of transit, pedestrian orientation, higher-density development, and mixed- and/or multiple-use. The following two case studies from outside the local area offer some guidance on TOD best practices and some valuable lessons learned.

Rockville Town Square

Rockville Town Square is a mixed-use development located two blocks from the Rockville Metro and MARC station in Rockville, Maryland. The site is located along MD Route 355 (also known as Rockville Pike), an area that had long been identified by Montgomery County planners as being in need of revitalization. Although in a somewhat more urban setting in closer proximity to Washington, DC, the location does offer some insights into redeveloping land that is 1) within close proximity to transit, 2) has uses that are not currently the highest and best for the site, and 3) located on a major local commercial corridor characterized by auto-oriented development patterns. Similar to U.S. Route 40, which runs through Harford County from Cecil County to Baltimore City, MD Route 355 is considered the "backbone" of Montgomery County, running from Frederick County south to Washington, D.C. Many strip malls, car dealerships, and scattered office buildings are located along MD Route 355 near the site.

Figure 3.19 Rockville Town Square Site

The development, which cost $400 million to deliver, involved the demolition of the Rockville Mall, a retail center notorious for its inability to attract and maintain tenants for decades. The mixed-use project consists of 180,000 square feet of ground-floor retail, with condominiums and apartments oriented above the retail space. The project included significant public sector participation. The City purchased the mall site for the project, and several sources of government funding were used to make the project financially feasible.

The project incorporates new public spaces, including a 100,000 square foot Montgomery County public library, which is considered the County's flagship branch. It includes public meeting rooms, computers, and a coffee shop for Montgomery County residents to use. Opened in the fall of 2007, a 40,000-square-foot Arts and Innovation Center serves as a community center, as well as is the home for the Metropolitan Center for the Arts.

There is a diverse mix of retail tenants, including numerous restaurants. According to the developer, the site is located too close to existing competitive retail centers, including the White Flint Mall and the Washingtonian, to have a larger-scale retail component with the best national tenants. As such, there are more restaurants and local "mom and pop" boutiques. There are, however, some basic-needs retail, such as a CVS Pharmacy, and a Super Fresh grocery store, which is almost complete.

Figure 3.20 Montgomery County Library, Rockville

Rockville Town Square offers three residential options in two different formats. All of the residential units are located above retail, with 492 apartments and 153 condominiums total. Fenestra Apartments offer floor plans ranging from studios to three-bedrooms. The Palladian offers for-sale and rent-to-own condominiums. In order to rent-to-own,

individuals rent a condominium, and at the end of their lease, they have the option to use 75 percent of their rent towards a down payment on the condominium. A key lesson learned with the residential program was the need maintain flexibility in developing the units as either rentals or for sale products in order to react to market trends. The residential mix shifted often, first from more rental to more condominiums, and then back again to more rental as the real estate cycle progressed from 2004 to 2008. The apartments are currently being leased and are at 73 percent occupancy.

Concept to completion at Rockville Town Square took five years which was considered record time in light of the variety of complications and constraints involved with a mixed-use redevelopment involving a public-private partnership. The project was certainly pioneering for its location, but its delivery has served as a major catalyst for continued redevelopment in the immediately surrounding areas. Two residential towers have been planned for a site that is currently a municipal parking lot. The towers would feature 45,300 square feet of retail space, 485 residential units, and an underground parking garage that would replace the existing parking lot. The parking garage features an electronic parking assistance system, as well as an electronic payment system. In addition, there are several parcels of land owned by other developers located nearby the development.

With spaces underground, in structured parking, and on streets, parking represented a major constraint in the development process. However, the developer was able to assume 15 to 20 percent less parking demand due to the transit orientation. Each residential option has less than two parking spaces per unit. The City of Rockville funded a major piece of the parking construction, and the City's support in general was considered critical to the success of the project. The development team emphasized the City's financial and political support as essential to the success of the project, as well as the ability of the entire development team to come together as a group.

Lorton Station

Lorton Town Center is located in Fairfax County, Virginia, and is oriented around Lorton Station, which is a stop for the Virginia Railway Express (VRE) as well as for the Amtrak Auto Train. Similar to Rockville Town Square, there are numerous parallels that make the project a useful case study. Along with its transit orientation, the site's close proximity to Ft. Belvoir and Quantico Marine Corps Base make it a relevant case study for APG development opportunities. The site is within close proximity to I-95 as well.

Figure 3.21 Lorton Station Map

Lorton, a submarket of Fairfax County, has historically been an undesirable location for new development. Until 2001, Lorton was home to the District of Columbia's maximum security prison, a site which has now been transformed into cultural centers and public parks.

The Town Center is a mixed-use development, with 24,000 square feet of retail space, 15,000 square feet of restaurants, and a variety of residential units in different formats. The project also includes an attractive, 100-acre park. Half a mile away, the mixed-use Lorton Marketplace also markets its proximity to the Lorton VRE station. Lorton Marketplace contains 99,000 square feet of retail, 18,000 square feet of restaurant, and 15,000 square feet of office space. From some residences, the retail is within walkable proximity.

Several residential options of various price ranges are offered at the site. Single-family detached (449 units), townhouses (233 units), condominiums (101 units), and apartments (301 units) are all available. The Residences at Lorton Station are two-level townhomes located above the retail shops. Prices start at $329,000 for a 1,221 square foot townhome with two bedrooms and two bathrooms. For the larger 1,251-square-foot floorplan, there is also an option to rent. Rent ranges from $1,899 to $1,999 per month. Similar to Rockville Town Square, Kettler, which manages the apartments and condominiums, offers a rent-to-own program where for every month that a tenant occupies an apartment, they receive $250 towards a down payment on a Kettler condominium.

The Metropolitan at Lorton Station offers luxury-oriented apartments, with rents ranging from $1,500 to $2,110 per month. Amenities include a 24-hour business center, concierge, and structured parking. Occupancy is currently at 96 percent, with ten vacancies.

Figure 3.22 Lorton VRE Station

There are also single-family detached options in "Laurel Highlands," located approximately one half mile from the Lorton VRE station. As of November 2008, there was only one K. Hovnanian single family home remaining for sale at $549,990.

Restaurant options available at Lorton Town Center include the Daily Grind, Vocelli Pizza, Subway, and Pane e Vino, a moderately priced Italian restaurant. Also present at Lorton Town Center are RE/MAX 100, FedEx Kinkos, and Wachovia Bank. The development also includes a mix of tenants catering towards women, including Curves, a gym for women, a nail salon, and a hair salon. Lorton Marketplace features restaurants such as Z-Pizza, Glory Days Grille, and Caribou Coffee. The development also features a Shoppers Food and Pharmacy, as well as similar lifestyle and convenience stores present in Lorton Town Center. In Lorton Marketplace, a dentist, eye doctor, daycare, dry cleaners, and salon are all part of the tenant mix.

The 43,000-square-foot Lorton Station Medical Center recently opened at Lorton Town Center as well. With various medical offices, including a cardiologist, laboratory, a dialysis center, and primary care physicians, this represents another potential development opportunity beyond retail and office tenants.

Like Rockville Town Square, Lorton Town Center required some development flexibility to better react to the recent real estate cycle. The Metropolitan at Lorton Station was converted to apartments in January 2007 after the original condominiums suffered from poor sales performance and certain retail components, including a movie theater, have been shelved for later-phase development. Lorton Town Center represents an example of a well executed mixed-use, transit-oriented, higher-density development achieving success in a somewhat pioneering location for its type.

4.0 Summary of Development Opportunities

4.0 Summary of Findings

- This market assessment found no development products in the market area, either existing or proposed, that would compete directly with a mixed-use, higher density development that is walkable and provides good access to transit.

- Current economic and real estate conditions may impede new real estate development opportunities in the short term, or detract from some of the opportunities associated with demand from BRAC-related growth. Nevertheless, for households and businesses that are seeking out or are receptive to a development offering a pedestrian-oriented design that includes a mix of uses and takes advantage of close proximity to commuter rail and other transit options, existing market offerings will not meet all of their interests.

- The development pattern of Harford County is characterized by large, single-family detached houses. While townhouses, condominiums, apartment complexes and housing on smaller lots are common in Harford County and the market area, these choices are nearly always positioned as value-oriented alternatives that command lower sales prices and rents. Given the number and characteristics of the households that are anticipated to seek housing in Harford County and the market area, the opportunity to develop higher density housing as "lifestyle" products, as opposed to only value-oriented choices, is strong.

- Residential demand will be the primary driver for a mixed-use development project. Housing types compatible with a station-area development include rental and for-sale attached housing and possibly smaller single-family detached housing units on small lots. Multifamily housing products appropriate to the area would generally be up to four stories tall, consist of wood frame construction and include ground floor retail and possible office space.

- Capturing only a small amount of demand from three sources – BRAC-related growth, baseline household growth, and moving households – is needed to support 100 to 300 units per year for a station area development.

- Rental housing represents a stronger opportunity, since households seeking to rent will have limited choices in the multifamily buildings that currently exist, particularly among higher quality rental buildings in the market area.

- Although much of the office development opportunity will be captured by the sizable deliveries on or near APG, a small portion of the anticipated growth of office space in Harford County could translate into a demand for station area office space. A preliminary demand capture exercise reflects an opportunity for between about 35,000 and 70,000 square feet of office space over a six year period.

- Given the amount of retail space available within Harford County, and the pipeline of planned retail development, the strongest retail opportunities are neighborhood and convenience oriented rather than regional draws.

- Modest unmet demand for hotel rooms suggest a possible opportunity for a hotel, depending on factors such as occupancy rates at existing hotels and need for more rooms in a specific class of hotel. However, given the current depth of existing and planned supply, and the timing of future BRAC-related employment growth, the opportunity for new hotel development is likely longer term.

4.2 Introduction

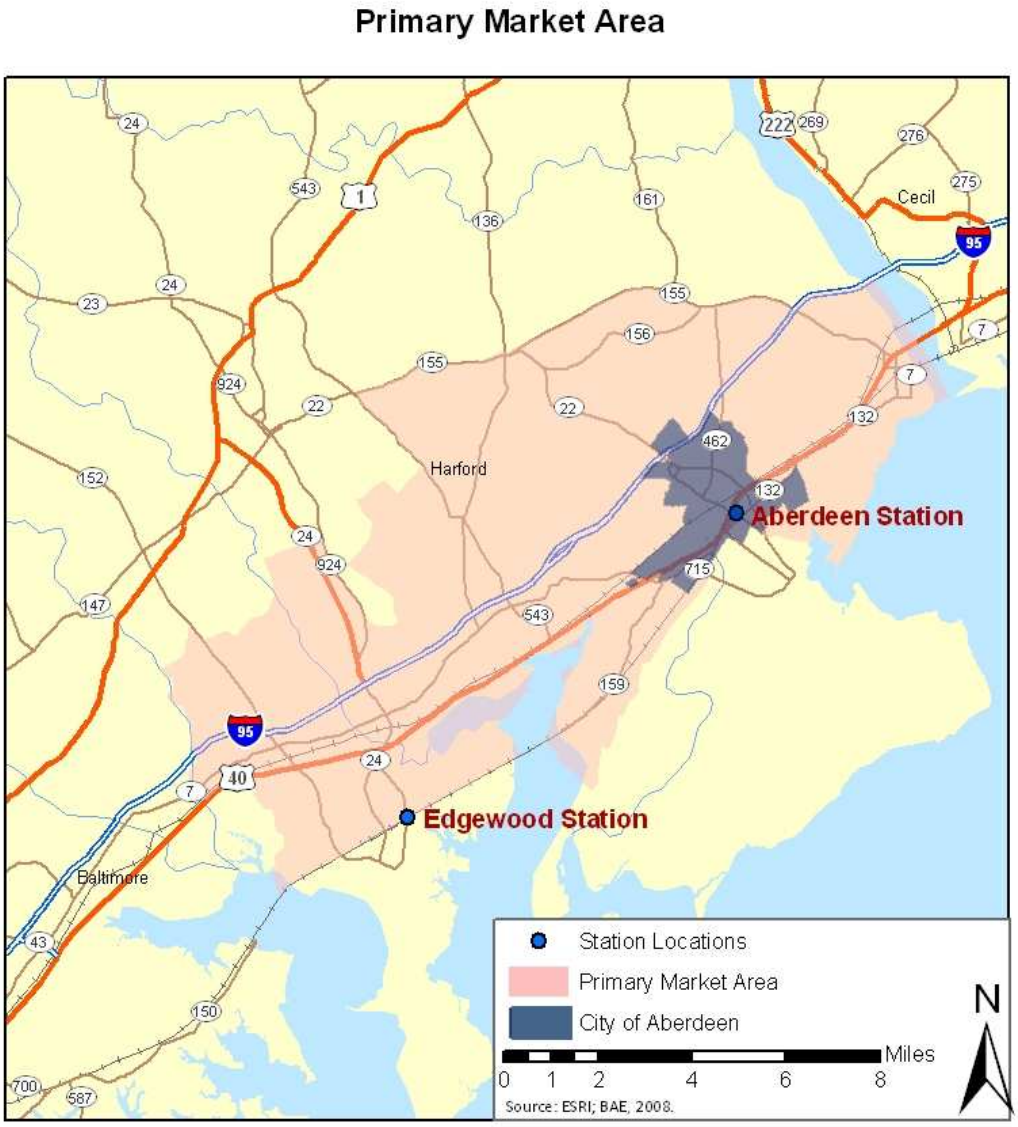
The purpose of this assignment is to assess the market impacts of increased employment and household growth connected to the relocation of 8,200 jobs to Aberdeen Proving Ground (APG) from several other closing or realigning military bases. These changes are a result of the most recent round of recommendations from the Base Realignment and Closure (BRAC) Commission, recommendations subsequently approved by President George W. Bush in 2005.

The technical memorandum for Subtask 2.4 summarizes the conclusions of the market analysis and incorporates the findings of technical memoranda prepared for previously completed subtasks. Subtask 2.1 covered the background and context for the assignment, including the details of the relocation of positions to APG and existing conditions at the Aberdeen Station. Subtask 2.2 analyzed the existing and future demand for real estate, both from anticipated BRAC-related employment and household growth, as well as the growth trends in the area in place prior to the announcement of the BRAC recommendations. The effort utilized the analysis and estimates of impacts described in earlier reports, anecdotal and survey data pertaining to segments of the relocating population, and research on national and regional trends. Subtask 2.3 described and analyzed the area's real estate supply. Both of these analyses focus on real estate supply and demand in the area of Harford County within the shortest distance and commuting time to APG, identified as the market area (See Figure 4.1).

The present report offers an evaluation of opportunities for residential, office, retail, and hotel development, drawing on the earlier findings and relating them to specific opportunities for a mixed-use development in either the existing station area or adjacent to a relocated station. The evaluation focuses on market based opportunities. Rather than focusing on site-specific opportunities and constraints, the report identifies conditions that

will encourage appropriate station area development; specifically, this report focuses on opportunities for development that is linked to the station and reinforces the use of transit for commuting, through a true transit-oriented development (TOD) consistent with MDOT's overarching TOD strategy. Enhanced transit opportunities resulting from growth are evaluated as part of Task 1. This report acknowledges that potential service increases, notably a van service connecting the train station to job locations at APG and more frequent commuter rail service, will further enhance the desirability of a well designed station area development.

Figure 4.1 Aberdeen Station Area Primary Market Area



4.3 Station Area Development Opportunities

The preceding technical memoranda found that the long-term growth trends for the area, as well as the influx of households and jobs in the next several years due to BRAC, create conditions that, in general, generate market demand for many different types of development. Opportunities for residential, office, retail, and hotel development will be evaluated further in subsequent sections of this document. The evaluation will focus on opportunities for a higher density, mixed-use development that could be classified as Smart Growth or Traditional Neighborhood Development (TND). For the purposes of this report, we consider these development concepts suitable for the station area development that is the focus of this market assessment. The amount of land within walking distance of a train station or transit hub is limited, so the opportunity to provide this type of development next to high-quality transit is unique and, if executed well, very appealing to many households and businesses and often able to command higher prices than similar buildings without good transit access and pedestrian connectivity. However, it is important to note that not all station-adjacent or station area development can be considered Transit-Oriented Development (TOD). The characteristics of TOD that reinforce the use of transit and support higher density development that is price competitive with conventional lower density development will be further described below.

Overall, this market assessment found no development products in the market area, either existing or proposed, that would compete directly with a mixed-use, higher density development that is walkable and provides good access to transit. Current economic and real estate conditions may impede new real estate development opportunities in the short term or detract from some of the opportunities associated with demand from BRAC-related growth. Nevertheless, for households and businesses that are seeking out or are receptive to a development offering a pedestrian-oriented design that includes a mix of uses and takes advantage of close proximity to commuter rail and other transit options, existing market offerings will not meet all of their interests. Furthermore, easy access to an APG van pool along with more frequent commuter rail will further enhance the appeal of a station area development and reinforce patterns of increased transit use that can result in demand for more transit and highway congestion relief.

The market has already responded to the need for increased office space to accommodate APG contractors as a result of expanded activity at APG. However, there are other opportunities that the market has not yet taken advantage of in residential, retail and office space. The continuing downturn in the economy and the difficulty of financing new development in the current economic environment, as well as possible physical constraints on new development (such as the availability of developable land, availability of water and other services, and appropriate zoning, as examples) are likely contributing to this lack of response. Even if these conditions limit development activity in the short term (the next year to three years), growth projected for the market area and surrounding areas will likely continue in the long term and provide a stable source of demand from which a station area development can draw.

4.4 Opportunities Related to Transit-Oriented Development

The proximity to high quality transit is not the only requirement for TOD to be successful. Land within a short walking distance to a transit station is limited in quantity and a scarce resource, therefore development adjacent to a transit station should take full advantage of the opportunity to increase the number of trips– to work, shopping, and services– that can be accomplished without a car in order to maximize the benefits of this unique resource. MDOT's policy of promoting TOD aims to maximize the investment made in transit infrastructure, and increase the environmental, health and financial benefits associated with increased use of public transportation. On its website, MDOT's Office of Real Estate describes the following characteristics of TOD, characteristics that encourage and invite people to walk and use transit in place of an automobile, which are consistent with Federal Transit Administration TOD criteria:

- It includes land within a 15-minute walk or one half mile of a transit station.
- It is pedestrian friendly, with streets that are easy to navigate and that provide a sense of safety to the pedestrians using them. It includes features such as landscaping and attractive public spaces that make walking inviting and interesting.
- Density is increased in the area closest to the station, with the number of parking spaces carefully considered and managed through shared use strategies to limit the amount of space devoted to parked cars.
- It should include high quality transit options that include buses linked to rail stations.

Additional characteristics that distinguish a TOD from a development that is only transit-adjacent include: walkable streets with block perimeters of fewer than 1,350 feet; parking managed with maximum (rather than minimum) requirements and prices that reflect full market rates; and place-based zoning that creates memorable streets and public spaces; among others.[10] It is important to note that these characteristics help to define TOD, but there is no singular definition of a TOD project. The current frequency of commuter rail service stopping in Aberdeen will, in particular, pose a challenge to promoting development that reinforces the use of the train and reduces the need for parking in the short term.

In the context of the Aberdeen Station (in its current location or a potential relocation site in close proximity to APG), the amenity of a potential multimodal transportation center can be one of the factors that will allow higher-density development to be considered a highly desirable housing option, a choice that is not necessarily considered a lower value

[10] Part of the 12-point checklist developed by Jeffrey Tumlin and Adam Millard Ball, found in the article *How To Make Transit Work,* Planning Magazine, May 2003.

product when compared to a single family detached house with an ample yard. However, in order to fully capitalize on the adjacency of a transit station, access to the station needs to be coupled with a mix of uses that include shops, services and even workplaces that are within walking distance, as well as an attractive, safe pedestrian environment and interesting public spaces that encourage walking to these destinations and to transit. Development including these characteristics can also reinforce demand for transit to support enhanced train service in the longer term, which will in turn continue to enhance the station area development's desirability and value.

The development pattern of Harford County is characterized by large, single-family detached houses. While townhouses, condominiums, apartment complexes, and housing on smaller lots are common in Harford County and the market area, these choices are nearly always positioned as value-oriented alternatives that command lower sales prices and rents. Given the number and characteristics of the households that are anticipated to seek housing in Harford County and the market area, the opportunity to develop higher density housing as "lifestyle" products, as opposed to only value choices, is strong. The demand analysis completed as part of this market assessment identifies the potential to offer some housing options positioned at the high end of the pricing range to households that are likely to be receptive to a townhouse, condominium, or multifamily rental. Furthermore, no competing supply of higher-end, higher-density housing options exist in the market area, outside of some luxury condominiums that market their water proximity and views (another unique and scarce resource) as part of their amenity package. Given the strong growth predicted to occur in the market area, a broader range of housing options than exists today will be supported.

Anticipated growth will bring a need for housing that is affordable to a diverse range of households, and options other than large single-family homes should be delivered to meet the needs of owners and renters at a range of income levels. The existing conditions surrounding the Aberdeen Station, notably the size and diverse ownership of land, the lack of development-ready parcels, and the barrier that U.S. Route 40 poses to accessing the train station from property to the west, will pose considerable challenges to the creation of a TOD. Nonetheless, the investment in creating the pedestrian environment, public space, and retail amenities near the Aberdeen Station will pay off in supporting a wider diversity of households in the City of Aberdeen and enhance the value of station area property, as well as creating a sense of place for the residents. The feasibility of creating a train station with a multimodal component and integrated private development will need to be the focus of further evaluation subsequent to this report.

4.5 Residential Development Opportunities

Residential demand will be the primary driver for a mixed-use development project. Housing types compatible with a station-area development include rental and for-sale attached housing and possibly smaller single-family detached housing units on small lots. Multifamily housing products appropriate to the area would generally be up to four

stories tall, consist of wood frame construction, and include ground floor retail and possible office space. There are no TND or TOD products in the market area, but existing townhomes, condominiums, and apartments would compete with the subject development if it did not differentiate itself from these products. However, the retail amenities, convenience, and vibrant environment of a station area development would encourage buyers and renters to choose such a product over a similarly priced single-family development with more space, or a townhouse or multifamily development that was lower priced, but offered none of these amenities.

4.6 Inventory and Demand

The demand estimate in Technical Memorandum 2.2 calculated BRAC-related demand in the market area to be approximately 2,400 to 3,600 units, building upon assumptions used in the Sage Policy Group report (the Sage Report). In addition, an average growth of about 1,100 units a year in the market area until 2015 is projected based on trend data, excluding BRAC impacts, from the Baltimore Metropolitan Council. Table 4.1 details an exercise that demonstrates how this overall market area demand might translate into specific demand for a station area development from the present to 2015. The purpose of this exercise is to show that capturing only a small amount of demand from three sources – BRAC-related growth, baseline household growth, and moving households – is needed to support 100 to 300 units a year for a station area development. This demand can be captured provided that housing choices cover a range of prices.

In addition to BRAC and baseline growth, a new station area development could count upon capturing some of the households already within the market area that are expected to move. The likely pool of household "turnover" in any given year is estimated based on 2000 U.S. Census data that identifies the portion of Harford County households that moved in the one year prior to the Census. The pool of households is also divided into owners and renters based on tenancy statistics for the market area, as well as BAE's assumptions regarding the number of BRAC-related households who will choose to rent. In considering the amount of demand a station area development might capture, the exercise assumes that a higher percentage of renter households would be interested in this type of higher density, smaller residence. The demand exercise also assumes that a station area development would capture a higher percentage of the BRAC-related growth than the baseline growth, given its close proximity to APG and assuming the planned shuttle to APG is operating. Given that about 10 percent of the surveyed Fort Monmouth employees relocating to APG indicated a preference for a vanpool or carpool commuting (a percentage close to the nine percent of Harford County workers who carpool to work), and that a higher proportion of APG workers with this preference are likely to be attracted to the market area and a site with a vanpool option, we applied a capture rate of 7.5 percent of demand for owner-occupied housing and 15 percent of demand for renter

occupied housing.[11] Turnover demand represents the largest pool of market area demand and station area demand, even with an assumed capture rate of one and three percent for owners and renters, respectively.

Table 4.1 also demonstrates how cumulative demand might be shaped each year, given the expected timing of incoming BRAC-related household growth and current economic conditions. Apportionment of captured market area residential demand between 2009 and 2015 considers the following: 1) new office space for relocating APG positions will be on line in 2011; 2) employee relocations and new hires will fill most positions by the end of 2011; 3) about 20 percent of direct jobs will be early relocations in 2009 to 2010; and 4) 80 percent of all BRAC-related impacts are assumed to occur before 2012. For baseline demand, weaker household growth is assumed for the next two years as a result of current economic conditions.

Although new station area housing that is part of a well designed mixed-use project will have a strong market position due to the lack of direct competition in the market area from existing development or pipeline projects, it is useful to review real estate supply conditions for existing housing to understand the context in which those seeking housing will make their choices and developers will decide when and what type of product to build.

[11] Source: 2005-2007 American Community Survey by the U.S. Census Bureau. Eight percent of workers in owner-occupied units and 11 percent of workers in renter-occupied units reported carpooling as their means of travel to work.

Table 4.1 Estimated Market Area Demand Capture for Station Area Housing

Residential Demand Estimate Summary		For-Sale Demand			Rental Demand	
BRAC-Related Demand		**Units (Low)**	**Units (High)**		**Units (Low)**	**Units (High)**
Cumulative Market Area Demand to 2017 - All Units (a)		2,400	3,600		2,400	3,600
Adjustment of Cumulative Demand to 2015 (a)	95%	2,280	3,420	95%	2,280	3,420
% Owners (b)	70%	1,596	2,394			
% Renters (b)				30%	684	1,026
Cumulative Demand Capture for TOD (c)	7.5%	120	180	15%	103	154
Baseline Growth Demand			**Units**			**Units**
Cumulative Market Area Household Growth to 2015 (d)			6,877			6,877
% Owners (e)	73%		5,034			
% Renters (e)				27%		1,843
Cumulative Demand Capture for TOD (c)	4%		201	8%		147
Turnover Demand			**Units**			**Units**
Total Existing Market Area Households (2008) (e)			43,073			43,073
% Owners (e)	73%		31,529			
% Renters (e)				27%		11,544
Estimate of Household Moves per Year (f)	8.1%		2,554	29.1%		3,359
Annual Demand Capture for TOD (c)	1%		26	3%		101
Cumulative Demand Capture for TOD o (over 6 years)	6		153	6		605
Total Estimated Demand		**Units (Low)**	**Units (High)**		**Units (Low)**	**Units (High)**
Total Demand for TOD or Compact Development 2009 to 2015		474	534		854	906

Estimated Annual Demand - Residential		Total	2009	2010	2011	2012	2013	2014
BRAC-Related Demand (Low Estimate)								
Distribution of Total Over Time (g)			10%	15%	50%	15%	5%	5%
Total Owner Demand Capture - TOD		120	12	18	60	18	6	6
Total Renter Demand Capture - TOD		103	10	15	51	15	5	5
Baseline Growth Demand								
Distribution of Total Over Time (h)			10%	10%	20%	20%	20%	20%
Total Owner Demand Capture - TOD		201	20	20	40	40	40	40
Total Renter Demand Capture - TOD		147	15	15	29	29	29	29
Turnover Demand								
Total Owner Demand Capture - TOD		153	26	26	26	26	26	26
Total Renter Demand Capture - TOD		605	101	101	101	101	101	101
Total Residential Demand								
Total Owner Demand for TOD or Compact Development	**36%**	**474**	**58**	**64**	**126**	**84**	**72**	**72**
Total Renter Demand for TOD or Compact Development	**64%**	**854**	**126**	**131**	**181**	**146**	**135**	**135**
Total Demand - All Unit Types		**1,328**	**183**	**194**	**307**	**229**	**207**	**207**

(a) Sage Policy Group, 2007; BAE, 2008
(b) Based on 2005-2007 American Community Housing Survey data for Harford County, adjusted for likely higher renter propensity of relocatees, consistent with Ft. Monmouth relocation surveys
(c) BAE estimate
(d) derived from Baltimore Metropolitan Council growth projections
(e) Claritas estimate for defined market area
(f) 2000 U.S. Census, represents percent of households moved in previous year
(g) Annual estimate based on planned transfer schedule and Sage Report phasing
(h) Annual estimate assumes slower household growth in 2009-2010

Housing Sales Inventory

New households generated from the influx of BRAC-related employment will be seeking housing at a time when the inventory of homes advertised for sale has increased substantially over the past five years. Although the inventory showed a slight year-to-year decrease from 2007 levels, there was an active inventory of over 2,000 housing units in Harford County. In addition, there is a pipeline of about 6,500 market area units under construction or approved for development, many in projects where earlier phases have been completed. Although Harford County (including the three incorporated municipalities within the County) building permit issuance for 2008 has declined to a level

not seen since the mid-1980s, pipeline projects represent development that could begin construction with little lead time when favorable conditions return.

Rental Housing Inventory

Rental housing represents a stronger opportunity, since households seeking to rent will have limited choices in the multifamily buildings that currently exist, particularly among higher quality rental buildings in the market area. Data presented in Technical Memorandum 2.3 indicate that no new rental projects have been delivered in the local market in over 10 years, and that two-thirds of Harford County's rental buildings are considered Class B or Class C space, indicating lower quality buildings. For the past 10 years, occupancy rates have been above 95 percent, sometimes reaching 98 or 99 percent, indicating a very healthy, if not supply-constrained market. It is important to note that a deep informal market of single-family home and townhouse rentals also exists, with advertising facilitated by online posting sites such as Craigslist.

Pricing and Amenities

There will likely be a broad range of incomes among the newly created households, but a review of the supply of housing for sale and for rent suggests that there will be an opportunity, particularly from BRAC generated growth, to develop new housing at the high end or above current market pricing. This is particularly true of rental housing. The Sage Report estimates average 2007 household purchasing power by employment category, ranging from $63,000 for households generated by induced BRAC-related economic activity, to $152,000 for households with employees working directly at APG. These averages yield a housing affordability range from about $228,000 to $552,000 for purchased houses and $1,300 to $3,200 monthly for rental homes. Household income estimates are averages, so the actual range will be greater. Baseline growth households will also have a range of income levels. To the extent that these new households reflect the current demographics of the market area or Harford County, about 40 to 50 percent will have incomes of $75,000 or more.

Given survey data from employees in relocating Fort Monmouth positions, as well as identified pay grades and salaries of Fort Monmouth employees, a majority of employees that relocate will be moving from a home worth $300,000 or more; they will also be predominantly in the upper end of the civilian (GS-12 to GS-15) and military (Commissioned Officer and Officer 04-06) salary grades. 12 percent of employees who definitely intend to relocate reported (in 2006) having a home worth more than $500,000, and 18 percent of DOD civilian positions relocating from Fort Monmouth are in the GS-14 and GS-15 title, with an average pay grade of $113,000.

On the supply side, available housing options do not match the purchasing power of this segment of higher income employees. Only two existing townhome sales in the first half of 2008 sold at prices above $400,000, a fraction of a percent of all townhome sales during this time period. About 11 percent of single family houses sold for $500,000 or more during this time period, nearly all of them four bedroom homes. Rental housing in

multifamily complexes near APG is generally priced under $1,000; the highest priced unit, a three-bedroom, 1.5-bath townhouse at Harford Commons in Edgewood, rents for $1,149 monthly.

Several factors related to the pricing of new units targeted to this market segment must be considered. While there are no transit-oriented or higher-density, mixed use projects in the market area for direct comparison, pricing on existing housing, particularly townhomes, provides value options for new households that do not plan to stay in the area for an extended period of time, have limited or no equity in the home they will leave, and/or will choose to have a smaller secondary residence near APG. As stated previously, townhouses, condominiums and apartments will need to have high quality amenities and building features in order to distinguish themselves from existing "value" products and be priced differently from the value-oriented products available in the area.

Figure 4.2 Waters Edge at Belcamp

There are examples of higher density for-sale products in the area that are not marketed as value products. Waters Edge townhouses and condominiums in Belcamp represents an example of a higher-end, higher density residential product that exists in the market area. Units at Waters Edge are the most expensive of Belcamp's townhouse stock; currently a few larger units are advertised for sale with asking prices above $400,000. These units feature water views, water access from a common pier, and open space; and community amenities such as a swimming pool, hot tub and exercise room; open floor plans, fireplaces and luxury interior finishes.

4.7 Commercial Development Opportunities

Office Development

Contractor Tail Demand

Commercial developers have responded to the increased BRAC-related demand with ample new office development. The GATE EUL by Opus East LLC (Opus) and the North Gate office park project by Corporate Office Properties Trust (COPT), as well as the James River Corporate Center in Belcamp by themselves have the potential to deliver over three million square feet of space, in addition to the office space already under construction or occupied at these projects and Waters Edge in Belcamp. The amount of planned or under construction space is enough to accommodate the needs of contractor tail firms that will move, expand or create a new office to service APG contracting opportunities. This pipeline should more than adequately accommodate the portion of the 1.5 million square feet of Harford County office space needs identified by the Sage Report, and will service contractor tail employees who choose to be in very close proximity to APG, or in reference to the GATE, actually within the base behind the security checkpoint.

Demand from Other Office Users

In estimating the demand created by other office users, we focus our analysis on office space needs created by indirect and induced employment generated from increased economic activity due to BRAC. Indirect employment, generated by increased business purchases by APG and the contractor tail, will be connected to firms that conduct business in a variety of settings: not only in offices, but in retail centers, warehouses, and other types of space. Induced employment generated by new consumer purchases related to the BRAC influx will also create demand for some office space, as well as retail space that will house most of this service-based economic activity. The Sage Report estimated that each indirect and induced job would generate demand for 160 square feet of office space on average, when accounting for the portion of jobs that will not locate in offices.

The 16,300 new BRAC-related jobs predicted to locate in Harford County will include all the 8,200 direct APG employees and likely the bulk of the 4,300 new contractor tail jobs predicted to follow the APG employees. The remainder, likely to be about 3,500 to 4,000 jobs, will be created through indirect and induced employment. Assuming that each job will require an average of 160 square feet of office space, indirect and induced employment will account for about 560,000 to 640,000 square feet of the County's demand for office space.

BRAC-related demand will be accompanied by demand created by baseline employment growth. As described in Technical Memorandum 2.2, employment projections, based on trend data, predict the addition of about 1,000 jobs to Harford County's economy each year between 2005 and 2015. Given the current ratio of existing office space to total employment in the County, baseline demand is expected to generate the need for about

50,000 square feet of space, on average, each year during this period. It is important to note that current economic conditions may affect the actual amount of 2005 to 2015 employment growth that will occur during the first two to three years, thereby reducing baseline demand during this time period.

Table 4.2 demonstrates how a small portion of the anticipated growth of office space in Harford County could translate into a demand for station area office space. The exercise calculates the square footage of demand that would be available to a station area mixed-use development if it captured between five and ten percent of the County's estimated BRAC-related demand and baseline growth demand in the market area. Using these assumptions would yield demand for between 34,500 and 69,000 square feet of office space over a six year period.

Table 4.2 Estimated Office Demand Capture For Station Area Development

Office Demand Estimate		Low	High
BRAC-Related Demand		**Square Feet**	**Square Feet**
Harford County demand for office space to 2017 (a)		600,000	600,000
Capture rate for office space in TOD		5%	10%
Demand Capture for TOD to 2017		30,000	60,000
TOD or Mixed Use to 2012	80%	24,000	48,000
Average Demand Per Year to 2012		8,000	16,000
Average Demand Per Year 2013-2017		1,500	3,000
Baseline Growth Demand		**Square Feet**	**Square Feet**
Total Market Area Demand to 2015 (b)		150,000	150,000
Capture rate for office space in TOD		5%	10%
Demand Capture for TOD or Mixed Use site to 2015		7,500	15,000
Average Demand Per Year to 2015		1,250	2,500
Combined BRAC and Baseline Growth Demand		**Square Feet**	**Square Feet**
Estimated Demand 2009-2015		34,500	69,000

(a) Sage Policy Group, 2007; BAE, 2008
(b) Baltimore Metropolitan Council; BAE, 2008

Healthy long-term demand suggested by baseline growth trends, as well as BRAC-related growth generated from indirect and induced employment, suggest a healthy base from which a mixed-use station area development could draw tenants. However, capturing this demand for office space will mean competing with other new and vacant space for business tenants, and in the short term strong baseline demand will not materialize if actual job growth does not meet projected annual averages. Easy access to commuter rail service as well as buses that feed into the station could make this location attractive to tenants whose employees can take advantage of this level of transit accessibility unique to the area. Although transit accessibility may be seen as a benefit for some employees,

station area office development can distinguish itself if it can offer an attractive pedestrian environment and retail amenities in walking distance. The presence of on-site retail amenities that would be attractive to workers, such as food service establishments, a pharmacy and a bank, would be important (in addition to the features found in other high quality office space) in order for office space to be quickly absorbed by the market and command rents at the higher end of the area's range.

Harford County's current office vacancy rate of approximately 10.3 percent for an inventory of about 2.7 million square feet of space is the lowest vacancy rate of any metropolitan Baltimore submarket, but it implies that there is about 275,000 square feet of vacant space in the County. Assuming that a five percent vacancy represents normal market turnover, the excess vacant supply of office space currently on the market totals 143,000 square feet, 5.3 percent of the total inventory. As described in Technical Memorandum for Subtask 2.3, Aberdeen had more than 50,000 square feet of vacant space advertised for lease at the end of 2008, with a larger block of Class A space, nearly 11,000 square feet, advertised at a rent of $16.00 per square foot.

Figure 4.3 998 Hospitality Way

Source: City of Aberdeen.

Figure 4.4 1200 Technology Drive

Source: Loopnet.

A large pipeline of projects planned, proposed and under construction is also in place to meet future demand. While not all projects will eventually get built, the pipeline includes over two hundred thousand square feet of office space in smaller projects, excluding larger developments of 100,000 square feet or more. Larger planned projects comprise over five million square feet in total. Appendix Table A-2 included in Technical Memorandum 2.3 provides a listing of these projects.

Pricing

New, well designed Class A office space in a station area development offering transit access and appealing retail amenities would likely achieve rents near the top of the area's range. Full service rents (including taxes and insurance) in the mid $20s per square foot would be reasonable given current market pricing. Achievable rents per square foot for small offices tend to be higher than for large offices.

Retail Development

Ground-floor retail would provide an important amenity and be a requisite contributor to the vibrancy of any mixed-use development. Despite currently high vacancy rates, the total growth in demand for retail services may provide specific opportunities for retail development. The current inventory of 2.4 million square feet in central Harford County, reported by REIS, currently has a nine percent vacancy rate, or 216,000 square feet available within the County. In comparison, BRAC-related activity is expected to create demand for about 402,000 square feet of retail space throughout the County. Using the same 40 to 60 percent capture rate used to gauge the possible capture of new County households in the market area yields an estimate of 160,000 to 240,000 square feet of potential retail demand.

A new station area mixed-use development could expect to tap into a portion of this demand. Specific retail opportunities would be those currently underserved in the area near the project site, where demand from households in a trade area larger than the project site is greater than can be served by the stores in close proximity to them. Therefore retail opportunities at the current station might be different from those at around the potential station relocation site. Another source of demand would be the potential pedestrian traffic to the site if it were in close proximity to a multimodal station where significant numbers of commuters passed from one mode of transportation to another (such as vanpool riders transferring to regional busses). Such a stream of traffic would be seeking convenience retail goods and services, such as pharmacy items and dry cleaning.

Given the amount of space available within the County, and the pipeline of planned retail development, the strongest retail opportunities are most likely to be neighborhood and convenience oriented rather than regional draws. In addition to the more than 200,000 square feet of existing retail space available for lease, there is about 500,000 square feet of planned retail projects in the development pipeline throughout the County. While all these developments may not get built, the pipeline represents potential competition that has progressed further ahead in the approval process. Based on these factors, the retail

component of a station area development is likely to be modest and will probably not benefit significantly from its proximity to transit (other than any benefit from transfers from one transit mode to another). The project's developer will need to be creative in finding potential tenants that can be successful in this location and also contribute to an environment where the retail amenities draw in new residents.

Pricing

Achievable rental rates for retail space would depend on the location as well as pricing of competing space. A new, high quality mixed-use retail development could expect to achieve annual rent of $20 per square foot, triple net (exclusive of utilities, taxes and common area maintenance).

Hotel Development

Hotel use in and around APG will clearly be oriented much more towards business users than tourists and travelers who are en route to a destination. The demand created from business and employment growth is challenging to quantify. However, a recent article comparing employment growth and growth in the number of rooms in the Washington DC metropolitan area (including Northern Virginia and Maryland's Montgomery and Prince George's Counties) found a strong correlation between these two trends: on average each new job equates to 14 room nights annually, and each 1,000 square feet of new rentable building area yields 0.22 new hotel rooms.[12] Although the Washington DC market for office space and hotel rooms relies on a much larger employment pool and diverse industry base than Harford County, the role of defense employment and defense contracting is significant in both.

As described in the technical memorandum for Subtask 2.2, BRAC activity will generate a conservatively estimated 16,300 jobs in Harford County. Using a factor of 14 annual room nights per job suggests additional demand for 623 new hotel rooms. The addition of approximately 50,000 square feet of office space per year from baseline growth would increase demand by 10 hotel rooms annually throughout the county. Although APG would be the most popular destination for hotel guests, the dispersion of new office space around the developed areas of the county would draw some portion of the estimated hotel demand to sites further away from APG than a station area development site.

On the supply side, the area includes 1,000 existing hotel rooms, and the development pipeline includes at least 350 new rooms planned or under construction. Modest unmet demand for hotel rooms could therefore suggest a possible opportunity for a hotel, depending on factors such as occupancy rates at existing hotels and needs for more rooms in a specific class of hotel.

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[12] *The HVS Employment-Hotel Growth Index: A New Tool for Projecting Hotel Room Night Demand* by David Fuller, Gregg Otten and Caitlin McKenna. HVS, 2008.

5.0 Preliminary Financial Analysis

5.1 Introduction

Technical Memorandum 2.5 tests the financial feasibility of certain hypothetical development scenarios using assumptions drawn from key findings and conclusions in Technical Memoranda 2.1 through 2.4. BAE created four different development programs to preliminarily assess the comparative financial viability of various scenarios in the market area in light of existing and future supply and demand conditions.

Because the scope of this study does not include a site-specific level of feasibility evaluation, the financial analysis presented in this memorandum uses hypothetical development programs that could potentially fit on an acre of land. The primary aim of the analysis is to provide an understanding of the relative financial attractiveness of each development type compared to the other three. Although the analysis also provides a sense of the general financial viability of each development program, it is important to note that the assumptions used are preliminary, are not based on designs that incorporate site conditions, and do not account for unknown costs such as remediation, business relocation or significant infrastructure improvements that would be tied to a specific site. These factors could cause cost and revenue assumptions to vary considerably from those presented below.

Based on existing supply found in the local market as well as development formats and product types typical of Smart Growth developments, the four development scenarios created for analysis are as follows:

- **Townhomes –** The Townhome scenario analyzes a single-use residential development program assuming density similar to townhome product found in the local market. However, this scenario assumes the units would be integrated within a transit-oriented development.

- **Mixed-Use Condominiums –** This scenario analyzes for-sale multifamily product in a mixed-use format with ground-floor retail as well as structured parking.

- **Conventional Rental –** Like the Townhome scenario, the Conventional Rental scenario assumes a multifamily rental building similar to conventional garden apartment style housing, but integrated within a Smart Growth/TOD format.

- **Mixed-Use Rental Apartments –** This scenario is essentially a rental version of the Mixed-Use Condominium scenario, with ground-floor retail as well as structured parking.

Each scenario assumes that the residential components will command price/rent premiums over the local market and will attract market audiences willing to tradeoff space (in the form of smaller unit sizes than what are commonly found in today's supply) for the benefits of walkability, access to multimodal transit including a shuttle service to APG, close proximity to services and amenities, and other benefits of Smart Growth/TOD living environments.

Residential and neighborhood serving retail land uses are considered the most likely to be developed in a Smart Growth/TOD format in this location, and therefore the analysis focuses on a comparative financial attractiveness of four different residential products varying in density, unit size and tenure.

As mentioned earlier, given the hypothetical nature of this exercise the assumptions regarding revenues and costs as well as the financial results of the analysis are considered preliminary in nature, and will need further vetting and ongoing research and analysis to be applied to actual development scenarios for specific parcels of land in the local market at present and in the near future. However, the results do allow for relevant comparison of the feasibility by product type, density, mix of uses, and other key considerations in future land use decisions in the local market.

5.2 Pro Forma Methodology

The method used to analyze the financial feasibility of the four scenarios is a "static" pro forma that calculates the residual land value after determining development revenues, a variety of costs, and developer profit. This methodology presents a static picture of the revenues and costs of a development project at buildout as opposed to a stream of revenues and costs over time that are discounted back to present value. Time is only accounted for in the estimate of interest in the construction loan. The model yields a calculation of land residual value, which represents the value "left over" after building costs and developer profit are subtracted from project revenues, and describes the most a developer could afford to pay for the land to build the project profitably.

Development costs are estimated based on regional industry standards and BAE experience in other markets. For scenarios that include for-sale residential product, the model calculates net income from the sale of the units after all development costs, to arrive at the residual land value. For land uses that earn a stream of rental revenue over time, such as rental apartments and retail space, the static pro forma estimates annual operating revenues to establish a Net Operating Income (NOI), which is then capitalized to derive a property value.

Common Assumptions

The four scenarios vary based on numerous factors including density, development format (e.g., single use versus mixed use), product type (e.g., for-sale versus rental residential units, townhomes versus condominiums, etc.), achievable pricing and rents, residential unit sizes, parking requirements, and construction costs. However, certain assumptions are consistent throughout each scenario. These common assumptions are as follows:

- **Site Area –** a consistent site size of one acre is used for the clarity of comparison of alternate housing densities for this exercise.
- **Parking Construction Costs –** Assumptions for parking hard costs are as follows:
  - **Surface Parking –** $1,500 per space; and
  - **Structured Parking –** $20,000 per space.
- **Parking Space Size –** 300 feet per space.
- **Construction Financing –** The model factors in financing costs to the developer using the following assumptions:
  - **Interest Rate –** 7.5 percent;
  - **Period of Initial Loan –** 18 months;
  - **Initial Construction Loan Fee –** 2 percent;
  - **Average Outstanding Balance –** 60 percent; and
  - **Loan-to-Cost Ratio –** 70 percent.
- **Commissions/Marketing –** 5 percent of gross sales revenues.
- **Other Soft Costs –** Soft costs, which include architect, legal fees, and other professional services are expressed as a percentage of hard costs, and are assumed to be 15 percent for each scenario.
- **Developer Profit –** Each scenario assumes a required developer profit of 12 percent of total development costs, consistent with BAE experience in other markets and regions.
- **Capitalization Rates –** The "cap rate" for rental units is 6 percent and retail cap rates are 7 percent, based on the latest Korpacz Real Estate Investor Survey. The capitalization rate represents the rate used to estimate the value of an asset (such as a building) based on the net revenue stream it provides.

5.3 Summary of Findings

The results of the four development scenarios are summarized as follows:

Table 5.1 Summary of Major Assumptions and Results

Scenario	Units/Acre	Price/Rent	Avg. Unit Size	Hard Construction Costs/Unit	Residual Land Value/Unit	Residual Land Value/Acre
Townhomes	15	$335,000	1,600	$203,900	$17,700	$265,600
Mixed-Use Condominiums	45	$280,000	900	$148,500	$20,700	$932,200
Conventional Rental	24	$1,250	800	$97,600	$9,500	$228,900
Mixed-Use Rental	45	$1,500	800	$105,600	-$18,600	-$839,000

The Mixed-Use Condominium scenario yields the highest residual land value, at over $930,000 per acre. The Townhome and Conventional Rental scenarios also have a positive residual land value using the underlying assumptions described in later sections. The Mixed-Use Rental demonstrates the worst financial performance using the current set of assumptions, which include an aggressive monthly rent per square foot of $1.88.

The results demonstrate how both density and product type impact financial feasibility. On a per unit basis, the revenue generated from for-sale products allow for much stronger financial performance than rental housing, despite higher construction costs. Although the land value per acre for the mixed-use condominiums is more than three times as high as for the townhomes, the much higher net revenue of a denser residential product will be reflected in the price that a land owner will be able to command for appropriately zoned higher density land. The lower and negative residual value of the rental scenarios demonstrate the challenge of building rental housing compared to housing for sale, despite a perceived demand for new, higher quality rentals with the influx of new employees connected to the relocation of positions to Aberdeen Proving Ground and the lesser risk associated with rental development in the current market. The results help explain why new rental housing projects have not been constructed in the local market despite very high apartment occupancy levels.

Although these scenarios do not consider major site-related costs required to produce a development-ready piece of land, such costs could burden projects even with characteristics of the more strongly performing examples considered, to the point that they would not happen without public financial support.

5.2 Detailed Results by Scenario

Townhomes

Revenue Assumptions

The conventional Townhome scenario assumes a density of 15 units per acre, which is generally consistent with lower-density townhome product found in suburban markets like Harford County. The average price per unit is assumed to be $335,000, which would reflect a premium over existing townhomes found in the local market today. The average unit size is 1,600 square feet, which is also somewhat smaller than product currently found in the local market but does reflect the preferences typical of buyers of Smart Growth products.

Cost Assumptions

Construction costs for the townhome product are assumed to average $119 per square for the finished square footage (1,600 square feet) and $30 per square foot for the unfinished garage space, which is assumed to be another 450 square feet per unit. These costs are based on data from the 2009 RSMeans Square Foot Costs manual and factor in varying degrees of construction quality, adjustments for townhome product (e.g., reduction in cost for shared walls), and location/regional adjustments, among others. Per unit on- and off-site improvements are assumed to be $10,000, but outside of the hypothetical model, this figure could vary widely based on actual site-specific constraints, and most importantly, this exercise does not currently integrate any potential large-scale site-specific redevelopment costs, such as remediation or major infrastructure upgrades. County development fees for townhome product are assumed to be $5,720 based on the latest information from Harford County.

Results

The average sales price yields gross revenues of $5.03 million, and net sales revenues of $4.77 million after the 5 percent commissions/marketing cost. Development costs total $4.03 million resulting in net revenues of $749,000. Developer profit, which is 12 percent of total costs, equals $483,000, leaving $266,000 in total residual land value and value per acre. Assuming 15 total units, this residual land value amounts to $17,700 per unit. Table 5.2 highlights all assumptions and calculations in the analysis.

Table 5.2 Static Pro Forma – Townhome Scenario

Major Assumptions	
Characteristics of Project	
Site Area (Acres)	1.0
Site Area (Sq. Ft.)	43,560
Project Density (DU/AC)	15
Base Project Size (Units)	15
Floor Area Ratio (FAR)	0.55
Efficiency Factor	100%
Total Building Area (Sq. Ft.)	24,000
Total Units	15
Average Unit Size (Sq. Ft. Livable): (a)	1,600
Garage Size	450
Average Sale Price: (a)	$335,000
Average Price/Square Foot	$209
Parking (b)	
Parking Ratio	-
Parking Spaces per Unit	-
Parking Spaces (Guest)	10
Total Parking Spaces	10
Parking Space Size	300
Development Costs	
Construction Costs (Sq. Ft. Livable) (c)	$119
Garage Construction Costs (Sq. Ft.)	$30
On & Off-site Improvements (Unit)	$10,000
Fees (Unit) (d)	$5,720
Other Soft Costs (e)	15%
Construction Cost - Guest Pkg/Space	$1,500
Commissions/Marketing	5%
Developer Profit (as % of costs)	12%
Construction Financing Assumptions	
Interest Rate	7.5%
Period of Initial Loan (Months)	18
Initial Construction Loan Fee (Points)	2%
Average Outstanding Balance	60%
Loan-to-Cost Ratio	70%
Hard & Soft Costs, Land, Site Costs	$3,792,825
Amount of Loan	$2,654,978

Pro Forma Analysis	
Development Cost Summary	
Construction Cost	$3,058,500
On & Off-site improvements	$150,000
Guest Parking Costs	$15,000
Fees/Permits	$85,800
Other Soft Costs	$483,525
Finance Costs:	
Interest on Construction Loan	$179,211
Points on Construction Loan	$53,100
Total Development Costs	$4,025,136
Total Development Costs/Unit	$268,342
Development Feasibility	
Gross Sales Revenue	$5,025,000
Less Commissions/Marketing	$251,250
Net Sales Revenue	$4,773,750
Less Development Costs	$4,025,136
Net Revenues	$748,614
Less Developer Profit	$483,016
Land Residual Value	**$265,598**
Residual Value Per Unit	**$17,707**
Residual Value Per Acre	**$265,598**

Notes:
(a) Sale prices based on premium relative to conventional new and re-sale townhome sales in market area. Size assumes TOD target markets prefer smaller units than current available supply.
(b) Units include a built-in two-car garage and no common parking space requirements
(c) Based on data from RS Means 2009 Square Foot Costs
(d) Harford County impact fee for townhouse product
(e) Other soft costs include architect, legal fees, and other professional services and are expressed as percentage of hard costs.

Sources: Harford County, RSMeans, BAE, 2009

Mixed-Use Condominiums with Ground-Floor Retail

Revenue Assumptions

The Mixed-Use Condominium scenario assumes a density of 45 units per acre, a density typical of four story, wood frame multifamily housing. The average price per unit is assumed to be $280,000, which would reflect a strong premium over existing for-sale multifamily housing found in the local market today that does not have major physical or locational attributes such as waterfront/views. The average unit size is assumed to be 900

square feet, which is also somewhat smaller than product currently found in the local market but does reflect the preferences typical of market audiences drawn to Smart Growth/TOD products in other markets.

The retail space assumes achievable rents of $15 per square foot "triple net," which is net of taxes, insurance, and maintenance. This figure is somewhat lower than what has been found in the local market for newer, higher quality retail space, and reflects an adjustment for any potential tenant improvements (TI) the developer may be required to deliver. Furthermore, a variety of detailed locational factors need to be determined to arrive at a more finalized achievable rent number, including a site's visibility, access, traffic counts, and other key criteria for retail site selection. The model assumes 95 percent stabilized retail occupancy upon buildout.

Cost Assumptions

Construction costs for the for-sale multifamily product are assumed to average $165 per square and $130 for the ground-floor retail space. These costs are based on data from the 2009 RSMeans Square Foot Costs manual and factor in varying degrees of construction quality, adjustments for multifamily product, and location/regional adjustments, among others. Per unit on- and off-site improvements are assumed to be $4,000, but outside of the hypothetical model, this figure could vary widely based on actual site-specific constraints. County development fees for multifamily product are assumed to be $1,637 based on the latest information from Harford County.

Results

The average residential sales price yields gross revenues of $12.6 million and net sales revenues of $11.97 million after the 5 percent commissions/marketing cost. With a capitalization rate of 7 percent, the retail component's value equals $3.05 million., bringing the project total to $15.02 million in gross revenues. Total development costs for the entire project are $12.58 million, resulting in net revenues of $2.44 million. Developer profit, which is 12 percent of total costs, equals $1.51 million, leaving $932,000 in total residual land value and value per acre. Assuming 45 total units, this residual land value amounts to $20,700 per unit. Table 5.3 highlights all assumptions and calculations in the analysis.

Table 5.3 Static Pro Forma – Mixed-Use Condominium Scenario

Major Assumptions	
Characteristics of Project	
Site Area (Acres)	1.0
Site Area (Sq. Ft.)	43,560
Project Density (DU/AC)	45
Base Project Size (Units)	45
Floor Area Ratio (FAR)	1.50
Efficiency Factor	85%
Retail Space	15,000
Total Building Area (Sq. Ft.)	65,294
Total Units	45
Average Unit Size (Sq. Ft.)	900
Average Sale Price:(a)	$280,000
Price/Square Foot	$311
Average Retail Rent (NNN) (b)	$15
Stabilized Retail Occupancy	95%
Parking (c)	
Residential Parking Ratio	1.50
Parking Spaces - Residential	68
Parking Spaces - Residential Guest	10
Retail Parking Ratio (spaces/1,000 SF)	3
Retail Parking Spaces	45
Total Parking Spaces	123
Parking Space Size	300
Development Costs	
Construction Costs (Sq. Ft.) - Residential (d)	$165
Construction Costs (Sq. Ft.) - Retail (d)	$130
Demolition (Sq. Ft)	$0
On & Off-site Improvements (Unit)	$4,000
Fees (Unit) (e)	$1,637
Other Soft Costs (f)	15%
Construction Cost - Surface Pkg/Space	$1,500
Construction Cost - Structured Pkg/Space	$20,000
Commissions/Marketing	5%
Developer Profit (as % of costs)	12%
Retail Capitalization Rate	7%
Construction Financing Assumptions	
Interest Rate	7.5%
Period of Initial Loan (Months)	18
Initial Construction Loan Fee (Points)	2%
Average Outstanding Balance	60%
Loan to Cost Ratio	70%
Hard & Soft Costs, Land, Site Costs	$11,855,415
Amount of Loan	$8,298,791

Pro Forma Analysis	
Development Cost Summary	
Construction Cost	$8,632,500
On & Off-site improvements	$180,000
Parking Costs	$1,432,500
Fees/Permits	$73,665
Other Soft Costs	$1,536,750
Finance Costs:	
Interest on Construction Loan	$560,168
Points on Construction Loan	$165,976
Total Development Costs	$12,581,559
Total Development Costs/Unit	$279,590
Development Feasibility	
Gross Sales Revenue	$12,600,000
Less Commissions/Marketing	$630,000
Net Sales Revenue	$11,970,000
Retail Capitalized Value	$3,053,571
Total Gross Revenues - Retail and Res.	$15,023,571
Less Development Costs	$12,581,559
Net Revenues	$2,442,012
Less Developer Profit	$1,509,787
Land Residual Value	**$932,225**
Residual Value Per Unit	**$20,716**
Residual Value Per Acre	**$932,225**

Notes:
(a) Sale prices based on premium relative to conventional new and re-sale condominium sales in market area
(b) Retail rents based on existing retail supply
(c) Assumes one space required per bedroom, and mix split evenly between one- and two-bedroom units
(d) Based on data from RS Means 2009 Square Foot Costs
(e) Harford County impact fee for multifamily product
(f) Other soft costs include architect, legal fees, and other professional services and are expressed as percentage of hard costs.

Sources: Harford County, RSMeans, BAE, 2009

Conventional Rental

Revenue Assumptions

The conventional rental scenario assumes a density of 24 units per acre, which is generally consistent with conventional rental apartment product found in suburban markets like Harford County. The average achievable rent per month per unit is assumed to be $1,250, which would reflect a strong premium over existing rental product found in the local market today. The average unit size is 800 square feet, which is also somewhat smaller than product currently found in the local market but does reflect the preferences typical of market audiences drawn to Smart Growth/TOD products in other markets. The model assumes a stabilized occupancy of 95 percent upon buildout and lease up.

Cost Assumptions

Construction costs for the conventional rental product are assumed to average $122 per square foot. These costs are based on data from the 2009 RSMeans Square Foot Costs manual and factor in varying degrees of construction quality, adjustments for multifamily product, and location/regional adjustments, among others. Per unit on- and off-site improvements are assumed to be $5,000, but outside of the hypothetical model, this figure could vary widely based on actual site-specific constraints. County development fees for townhome product are assumed to be $1,637 based on the latest information from Harford County.

Aside from construction costs, the rental units also have operating costs, which are broken down into direct and fixed costs. Direct costs are those costs associated with occupied units, and are assumed to be 20 percent of revenues derived from occupied units. Fixed costs are those that do not hinge on units being occupied, such as project maintenance, management, etc., and are assumed to be 20 percent of revenues derived from all units, assuming 100 percent occupancy. These figures are based on regional estimates from the Dollars and Cents of Multifamily Housing from the Urban Land Institute (ULI).

Results

Given the above revenue and cost assumptions, annual stabilized gross revenue totals $342,000 and net stabilized operating income (NOI) of $202,000 after fixed and direct costs. Applying a 6 percent capitalization rate yields a project capitalization value of $3.36 million. Total development costs are $3.13 million, resulting in a net project value of $229,000. Assuming 24 total units, this residual value amounts to $9,500 per unit. Table 5.4 highlights all assumptions and calculations in the analysis.

Table 5.4 Static Pro Forma: Conventional Rental Scenario

Major Assumptions	
Characteristics of Project	
Site Area (Acres)	1.0
Site Area (Sq. Ft.)	43,560
Project Density (DU/AC)	24
Base Project Size (Units)	24
Floor Area Ratio (FAR)	0.52
Efficiency Factor	85%
Total Building Area (Sq. Ft.)	22,588
Total Units	24
Average Unit Size (Sq. Ft.)	800
Average Rent:(a)	$1,250
Rent/Square Foot	$1.56
Parking (b)	
Parking Ratio	1.50
Parking Spaces	36
Parking Spaces (Guest)	10
Total Parking Spaces	46
Parking Space Size	300
Development Costs	
Construction Costs (c)	$122
Demolition (Sq. Ft)	$0
On & Off-site Improvements (Unit)	$5,000
Fees (Unit) (d)	$1,637
Other Soft Costs (e)	15%
Construction Cost - Pkg/Space	$1,500
Commissions/Marketing	5%
Developer Profit (as % of costs)	12%
Operating Costs	
Direct Expenses (as % of Occupied Rent Revenues)	20.0%
Fixed Expenses (as % of Total Unit Rents)	20.0%
Stabilized Occupancy	95%
Capitalization Rate	6%
Construction Financing Assumptions	
Interest Rate	7.5%
Period of Initial Loan (Months)	18
Initial Construction Loan Fee (Points)	2%
Average Outstanding Balance	60%
Loan to Cost Ratio	70%
Hard & Soft Costs, Land, Site Costs	$2,950,398
Amount of Loan	$2,065,279

Pro Forma Analysis	
Development Cost Summary	
Construction Cost	$2,342,400
On & Off-site improvements	$120,000
Parking Costs	$69,000
Fees/Permits	$39,288
Other Soft Costs	$379,710
Finance Costs:	
Interest on Construction Loan	$139,406
Points on Construction Loan	$41,306
Total Development Costs	$3,131,110
Total Development Costs/Unit	$130,463
Development Feasibility	
Annual Stabilized Gross Revenue	$342,000
Less Operating Costs	$68,400
Net Rental Revenue	$273,600
Less Fixed Costs	$72,000
Net Stabilized Operating Income (NOI)	$201,600
Project Capitalization Value	$3,360,000
Less Development Costs	$3,131,110
Net Project Value	**$228,890**
Value Per Unit	**$9,537**
Value Per Acre	**$228,890**

Notes:
(a) Rents based on premium relative to conventional apartments in market area
(b) Assumes one space required per bedroom, and mix split evenly between one- and two-bedroom units
(c) Based on data from RS Means 2009 Square Foot Costs
(d) Harford County impact fee for multifamily product
(e) Other soft costs include architect, legal fees, and other professional services and are expressed as percentage of hard costs.

Sources: Harford County, RSMeans, ULI, BAE, 2009

Mixed-Use Rental with Ground-Floor Retail

Revenue Assumptions

Like the Mixed Use Condominium scenario, the Mixed-Use Rental is denser (45 units and acre) and has smaller units (averaging 800 square feet) than the housing typically found in the area. The average rent per unit is assumed to be $1,500, which would reflect a strong premium over existing multifamily rental product found in the local market today.

The retail space assumes achievable rents of $15 per square foot "triple net," which is net of taxes, insurance, and maintenance. This figure is somewhat lower than what has been found in the local market for newer, higher quality retail space, and reflects an adjustment for any potential tenant improvements (TI) the developer may be required to deliver. Furthermore, a variety of detailed locational factors need to be determined to arrive at a more finalized achievable rent number, including a site's visibility, access, traffic counts, and other key criteria for retail site selection. The model assumes 95 percent stabilized retail occupancy upon buildout.

Cost Assumptions

Construction costs for the rental apartments are assumed to average $132 per square and $130 for the ground-floor retail space. These costs are based on data from the 2009 RSMeans Square Foot Costs manual and factor in varying degrees of construction quality, adjustments for multifamily product, and location/regional adjustments, among others. Per unit on- and off-site improvements are assumed to be $4,000, but outside of the hypothetical model, this figure could vary widely based on actual site-specific constraints. County development fees for multifamily product are assumed to be $1,637 based on the latest information from Harford County.

Aside from construction costs, the rental units also have operating costs, which are broken down into direct and fixed costs. Direct costs are those costs associated with occupied units, and are assumed to be 20 percent of revenues derived from occupied units. Fixed costs are those that do not hinge on units being occupied, such as project maintenance, management, etc., and are assumed to be 20 percent of revenues derived from all units, assuming 100 percent occupancy. These figures are based on regional estimates from the Dollars and Cents of Multifamily Housing from the Urban Land Institute (ULI).

Results

Stabilized gross annual revenue for the rental units are $770,000 with an NOI of $454,000 after fixed and direct operating costs. Applying a capitalization rate of 6 percent yields a value of $7.56 million for the rental component. With a capitalization rate of 7 percent, the retail component's value equals $3.05 million, bringing the project total to $10.61 million. Total development costs for the entire project are $10.23 million, resulting in net revenues of $388,000. Developer profit, which is 12 percent of total costs, equals $1.23 million, which results in a negative residual land value of ($839,000). Table 5.5 highlights all assumptions and calculations in the analysis.

Table 5.5 Static Pro Forma: Mixed-Use Rental Scenario

Major Assumptions	
Characteristics of Project	
Site Area (Acres)	1.0
Site Area (Sq. Ft.)	43,560
Project Density (DU/AC)	45
Base Project Size (Units)	45
Floor Area Ratio (FAR)	1.38
Efficiency Factor	85%
Retail Space	15,000
Total Building Area (Sq. Ft.)	60,000
Total Units	45
Average Unit Size (Sq. Ft.)	800
Average Rent:(a)	$1,500
Rent/Square Foot	$1.88
Average Retail Rent (NNN) (b)	$15
Stabilized Retail Occupancy	95%
Parking (c)	
Parking Ratio	1.50
Parking Spaces - Residential	68
Parking Spaces - Residential Guest	10
Retail Parking Ratio (spaces/1,000 SF)	3
Retail Parking Spaces	45
Total Parking Spaces	123
Parking Space Size	300
Development Costs	
Construction Costs (Sq. Ft.) - Residential (d)	$132
Construction Costs (Sq. Ft.) - Retail (d)	$130
Demolition (Sq. Ft)	$0
On & Off-site Improvements (Unit)	$4,000
Fees (Unit) (e)	$1,637
Other Soft Costs (f)	15%
Construction Cost - Surface Pkg/Space	$1,500
Construction Cost - Structured Pkg/Space	$20,000
Commissions/Marketing	5%
Developer Profit (as % of costs)	12%
Operating Costs	
Direct Expenses (as % of Occupied Rent Revenues)	20.0%
Fixed Expenses (as % of Total Unit Rents)	20.0%
Stabilized Occupancy	95%
Rental Capitalization Rate	6%
Retail Capitalization Rate	7%
Construction Financing Assumptions	
Interest Rate	7.5%
Period of Initial Loan (Months)	18
Initial Construction Loan Fee (Points)	2%
Average Outstanding Balance	60%
Loan to Cost Ratio	70%
Hard & Soft Costs, Land, Site Costs	$9,635,340
Amount of Loan	$6,744,738

Pro Forma Analysis	
Development Cost Summary	
Construction Cost	$6,702,000
On & Off-site improvements	$180,000
Parking Costs	$1,432,500
Fees/Permits	$73,665
Other Soft Costs	$1,247,175
Finance Costs:	
Interest on Construction Loan	$455,270
Points on Construction Loan	$134,895
Total Development Costs	$10,225,505
Total Development Costs/Unit	$227,233
Development Feasibility	
Residential Stabilized Gross Revenue	$769,500
Less Operating Costs	$153,900
Net Residential Rental Revenue	$615,600
Less Fixed Costs	$162,000
Net Stabilized Operating Income (NOI)	$453,600
Rental Capitalization Value	$7,560,000
Retail Capitalized Value	$3,053,571
Total Value - Retail and Res.	$10,613,571
Less Development Costs	$10,225,505
Net Revenues	$388,067
Less Developer Profit	$1,227,061
Land Residual Value	**-$838,994**
Residual Value Per Unit	**-$18,644**
Residual Value Per Acre	**-$838,994**

Notes:
(a) Rents based on premium relative to conventional apartments in market area
(b) Retail rents based on existing retail supply
(c) Assumes one space required per bedroom, and mix split evenly between one- and two-bedroom units
(d) Based on data from RS Means 2009 Square Foot Costs
(e) Harford County impact fee for multifamily product
(f) Other soft costs include architect, legal fees, and other professional services and are expressed as percentage of hard costs.

Sources: Harford County, RSMeans, ULI, BAE, 2009

Appendix A

Table A-1: Household Income, 2000 & 2008

	Market Area (a)				City of Aberdeen			
	2000		2008		2000		2008	
Income Range (b)	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Less than $25,000	7,058	19.3%	5,923	13.8%	1609	29.6%	1,382	24.0%
$25,000 - $49,999	10,573	29.0%	9,698	22.5%	1750	32.2%	1,558	27.1%
$50,000 - $74,999	9,628	26.4%	9,982	23.2%	1212	22.3%	1,244	21.6%
$75,000 - $99,999	5,177	14.2%	7,624	17.7%	518	9.5%	773	13.4%
$100,000 or more	4,059	11.1%	9,846	22.9%	346	6.4%	795	13.8%
Total Households	**36,495**	**100%**	**43,073**	**100%**	**5,435**	**100%**	**5,752**	**100%**
Median Household Income	**$51,601**		**$64,815**		**$40,836**		**$48,973**	

	Harford County				3 Jurisdiction Area (c)			
	2000		2008		2000		2008	
Income Range (b)	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Less than $25,000	12,544	15.7%	9,979	10.8%	80,015	19.5%	65,437	14.6%
$25,000 - $49,999	20,853	26.1%	18,180	19.7%	116,202	28.3%	104,220	23.2%
$50,000 - $74,999	20,283	25.4%	19,811	21.5%	96,060	23.4%	95,973	21.4%
$75,000 - $99,999	13,097	16.4%	16,530	17.9%	56,155	13.7%	69,849	15.5%
$100,000 or more	12,971	16.3%	27,645	30.0%	62,593	15.2%	113,769	25.3%
Total Households	**79,748**	**100%**	**92,145**	**100%**	**411,025**	**100%**	**449,248**	**100%**
Median Household Income	**$57,983**		**$72,605**		**$52,419**		**$64,318**	

Notes:
Data is based on Census SF3 sample data. Totals may differ from SF1 total data.
(a) Represents census tracts 301102, 301104, 301201, 301202, 301203, 301301, 301302, 301402, 301601, 301602, 301701, 301702, 302200, 302400, 302801, 302802, 302901, 302902, 303700, 306100, 306200, 306300, and 306400.
(b) Incomes are estimated in 2008 dollars.
(c) Includes Baltimore County, Cecil County, and Harford County, Maryland.

Source: U.S. Census, 2000; Claritas, Inc., 2008; BAE, 2008.

Table A-2: Household Size, 2000 & 2008

	Market Area (a)				City of Aberdeen			
	2000		2008		2000		2008	
Number of Persons	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
1-Person	8,432	23.1%	10,411	24.2%	1,466	26.8%	1,650	28.7%
2-Persons	11,684	32.0%	13,817	32.1%	1,774	32.4%	1,864	32.4%
3-Persons	6,962	19.1%	8,278	19.2%	967	17.7%	1,025	17.8%
4-Persons	5,846	16.0%	6,720	15.6%	776	14.2%	758	13.2%
5-Persons	2,489	6.8%	2,692	6.2%	317	5.8%	300	5.2%
6-Persons	753	2.1%	833	1.9%	114	2.1%	110	1.9%
7 or more Persons	374	1.0%	322	0.7%	61	1.1%	45	0.8%
Total Households	**36,540**	**100%**	**43,073**	**100%**	**5,475**	**100%**	**5,752**	**100%**
Average Household Size	**2.62**		**2.57**		**2.51**		**2.43**	

	Harford County				3-Jurisdiction Area (b)			
	2000		2008		2000		2008	
Number of Persons	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
1-Person	15,726	19.7%	19,583	21.3%	103,814	25.3%	117,182	26.1%
2-Persons	25,851	32.4%	29,983	32.6%	137,670	33.5%	150,107	33.4%
3-Persons	15,068	18.9%	17,770	19.3%	72,150	17.6%	79,880	17.8%
4-Persons	14,471	18.2%	15,956	17.3%	60,696	14.8%	64,458	14.4%
5-Persons	6,014	7.5%	6,294	6.8%	24,864	6.1%	25,638	5.7%
6-Persons	1,790	2.2%	1,898	2.1%	7,883	1.9%	8,308	1.9%
7 or more Persons	747	0.9%	624	0.7%	3,690	0.9%	3,358	0.7%
Total Households	**79,667**	**100%**	**92,108**	**100%**	**410,767**	**100%**	**448,931**	**100%**
Average Household Size	**2.72**		**2.65**		**2.53**		**2.49**	

Notes:
(a) Represents census tracts 301102, 301104, 301201, 301202, 301203, 301301, 301302, 301402, 301601, 301602, 301701, 301702, 302200, 302400, 302801, 302802, 302901, 302902, 303700, 306100, 306200, 306300, and 306400.
(b) Includes Baltimore County, Cecil County, and Harford County, Maryland.

Source: U.S. Census, 2000; Claritas, Inc., 2008; BAE, 2008.

Table A-3: Age Distribution, 2000 & 2008

	Market Area (a)				City of Aberdeen			
	2000		2008		2000		2008	
Age Range	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Under 18	26,728	27.7%	28,290	25.4%	3,658	26.4%	3,223	22.9%
18 - 24	6,991	7.3%	9,244	8.3%	1,199	8.7%	1,288	9.2%
25 - 34	14,968	15.5%	15,446	13.9%	1,674	12.1%	1,960	13.9%
35 - 44	17,367	18.0%	18,172	16.3%	2,279	16.5%	1,910	13.6%
45 - 54	12,922	13.4%	16,579	14.9%	2,024	14.6%	2,187	15.5%
55 - 64	8,037	8.3%	11,620	10.5%	1,253	9.1%	1,572	11.2%
65 and Over	9,357	9.7%	11,827	10.6%	1,755	12.7%	1,932	13.7%
Total	**96,370**	**100%**	**111,178**	**100%**	**13,842**	**100%**	**14,072**	**100%**
Median Age	**34.7**		**36.4**		**36.7**		**38.0**	

	Harford County				3-Jurisdiction Area (b)			
	2000		2008		2000		2008	
Age Range	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Under 18	60,965	27.9%	60,589	24.6%	263,117	24.8%	262,726	23.0%
18 - 24	14,767	6.8%	21,919	8.9%	85,614	8.1%	105,443	9.2%
25 - 34	28,685	13.1%	30,816	12.5%	141,997	13.4%	145,157	12.7%
35 - 44	40,303	18.4%	37,021	15.0%	178,571	16.9%	166,181	14.5%
45 - 54	31,998	14.6%	39,616	16.1%	152,799	14.4%	176,403	15.4%
55 - 64	19,712	9.0%	28,235	11.5%	95,245	9.0%	132,250	11.6%
65 and Over	22,160	10.1%	27,893	11.3%	141,490	13.4%	154,118	13.5%
Total	**218,590**	**100%**	**246,089**	**100%**	**1,058,833**	**100%**	**1,142,278**	**100%**
Median Age	**36.2**		**37.6**		**37.2**		**38.5**	

Notes:
(a) Represents census tracts 301102, 301104, 301201, 301202, 301203, 301301, 301302, 301402, 301601, 301602, 301701, 301702, 302200, 302400, 302801, 302802, 302901, 302902, 303700, 306100, 306200, 306300, and 306400.
(b) Includes Baltimore County, Cecil County, Harford County, and Baltimore City, Maryland.

Source: U.S. Census, 2000; Claritas, Inc., 2008; BAE, 2008.

Table A-4: Household Type, 2000 & 2008

	Primary Market Area (a)				City of Aberdeen			
	2000		2008		2000		2008	
Household Type	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
1 Person Household	8,432	23.3%	10,411	24.2%	1,466	26.8%	1,650	28.7%
Family Household (2 or More Persons)								
Married Couple, Own Children	9,459	26.1%	11,510	26.7%	1,008	18.4%	1,073	18.7%
Married Couple, No Own Children	10,211	28.2%	12,148	28.2%	1,447	26.4%	1,542	26.8%
Other, Own Children	3,658	10.1%	4,464	10.4%	767	14.0%	793	13.8%
Other, No Own Children	2,381	6.6%	2,727	6.3%	490	8.9%	512	8.9%
Nonfamily Household (2 or More Persons)	2,032	5.6%	1,813	4.2%	297	5.4%	182	3.2%
Total	**36,173**	**100%**	**43,073**	**100%**	**5,475**	**100%**	**5,752**	**100%**

	Harford County				3 Jurisdiction Area (b)			
	2000		2008		2000		2008	
Household Type	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**	**Number**	**Percent**
1 Person Household	15,726	19.7%	19,583	21.3%	103,814	25.3%	117,182	26.1%
Family Household (2 or More Persons)								
Married Couple, Own Children	24,213	30.4%	28,329	30.7%	95,803	23.3%	106,432	23.7%
Married Couple, No Own Children	25,072	31.5%	28,979	31.4%	119,876	29.2%	131,764	29.3%
Other, Own Children	6,623	8.3%	7,428	8.1%	37,299	9.1%	39,931	8.9%
Other, No Own Children	4,495	5.6%	5,127	5.6%	29,320	7.1%	31,394	7.0%
Nonfamily Household (2 or More Persons)	3,538	4.4%	2,699	2.9%	24,655	6.0%	22,545	5.0%
Total	**79,667**	**100%**	**92,145**	**100%**	**410,767**	**100%**	**449,248**	**100%**

Notes:
(a) Represents census tracts 301102, 301104, 301201, 301202, 301203, 301301, 301302, 301402, 301601, 301602, 301701, 301702, 302200, 302400, 302801, 302802, 302901, 302902, 303700, 306100, 306200, 306300, and 306400.
(b) Includes Baltimore County, Cecil County, and Harford County, Maryland.

Source: U.S. Census, 2000; Claritas, Inc., 2008; BAE, 2008.

Table A.5 Total Employment by Jurisdiction

Year	Baltimore County	Baltimore City	Cecil County	Harford County	Total
2002	360,971	369,689	26,855	71,332	828,846
2003	356,502	366,378	27,338	72,621	822,838
2004	364,555	354,824	28,209	77,197	824,785
2005	371,268	349,975	29,192	80,445	830,880
2006 (a)	373,984	348,253	29,963	81,999	834,198
2007	376,683	344,164	30,741	83,632	835,220

Notes:
(a) Third and fourth quarter data for 2006 was not included, due to a low reporting number.

Source: Maryland Department of Labor, Licensing, and Regulation, 2008; BAE, 2008.

Table A.6 Employment by Industry, First Quarter 2008

	Harford County			Cecil County			Baltimore County			Baltimore City		
Industry	**Number of Jobs (b)**	**Percent**	**Average Wage (c)**	**Number of Jobs (b)**	**Percent**	**Average Wage (c)**	**Number of Jobs (b)**	**Percent**	**Average Wage (c)**	**Number of Jobs (b)**	**Percent**	**Average Wage (c)**
Natural Resources and Mining	187	0.2%	$547	578	1.9%	$601	444	0.1%	$734	16	0.0%	$1,026
Construction	6,259	7.6%	$788	1,331	4.4%	641	26,579	7.1%	$1,050	10,890	3.2%	1,036
Manufacturing	4,753	5.8%	$1,040	4,591	15.0%	1,224	23,008	6.2%	$1,283	16,060	4.7%	986
Trade, Transportation, and Utilities	18,424	22.5%	$596	6,395	20.9%	$568	69,721	18.7%	$685	39,299	11.6%	$1,098
Information	520	0.6%	$1,008	270	0.9%	$733	6,750	1.8%	$1,239	5,767	1.7%	$1,496
Financial Activities	3,454	4.2%	$921	819	2.7%	$684	30,745	8.2%	$1,381	20,475	6.0%	$2,281
Professional and Business Services	10,075	12.3%	$980	1,631	5.3%	$782	53,714	14.4%	$1,006	41,933	12.4%	$1,044
Education and Health Services	9,599	11.7%	$731	3,227	10.6%	$677	62,996	16.9%	$783	91,513	27.0%	$956
Leisure and Hospitality	8,238	10.1%	$267	2,915	9.5%	$289	30,768	8.2%	$399	23,995	7.1%	$406
Other Services	2,718	3.3%	$577	905	3.0%	$412	12,105	3.2%	$538	10,531	3.1%	$647
Unclassified	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A	0	0.0%	N/A
Federal Government (b)	7,493	9.2%	$1,715	3,465	11.3%	$1,438	15,126	4.1%	$1,459	8,292	2.4%	$1,204
State Government	468	0.6%	$671	325	1.1%	$692	11,096	3.0%	$905	41,231	12.2%	$954
Local Government	9,635	11.8%	$940	4,101	13.4%	$733	30,343	8.1%	$853	29,307	8.6%	$944
Total All Industries	**81,823**	**100%**		**30,553**	**100%**		**373,395**	**100%**		**339,309**	**100%**	

Notes:
Represents employment data from January, February, March 2008.
Includes civilian employees only. Not all federal installations are represented, due to national security.

Source: Maryland Department of Labor, Licensing, and Regulation, 2008; BAE, 2008.

Appendix B

Table B-1: Planned and Proposed Residential Developments in the Market Area

Project Name	City	Status	Project Size
133-143 William Powell Court	Aberdeen	Plat approved by Aberdeen Planning Board	6 lots
Holly Woods, Twinleaf Drive	Aberdeen	140 remaining townhouses to be built, 394 condos remaining to be built	394 Townhouses, 432 condos
Hackley's Reserve	Aberdeen	all units have yet to be built, no building permits issued	301 townhouses
Gabler's Shore	Aberdeen	42 units remaining to be built	50 single family homes
Fieldside Village	Aberdeen	one building built, no funding for remaining units	152 condos
Normandy Woods, Schofield Avenue	Aberdeen	not yet platted	31 townhouses, 1 single family home
Winston's Choice	Aberdeen	50% of Phase I complete	97 townhouses
Winston's Choice Addition	Aberdeen	no units have been built	22 townhouses
Eagle's Rest	Aberdeen	no units have been built	131 single family homes, 5,000 sq ft minimum
Villas at Rock Glenn	Aberdeen	going for rezoning	87 townhouses
Bulle Rock	Havre de Grace	Building permits issued	2126 mixed use units
Chesapeake Heights	Havre de Grace	41 of 45 built (single family detached)	45 single family homes
Greenway Farms	Havre de Grace	115 units built	690 single family attached units
Ivy Hills	Havre de Grace	11 units built	43 single family attached units
Scenic Manor	Havre de Grace	Site plan approval	90 single family attached units
Autumn Run	Abingdon	56 units remaining to be built	207 townhouses
Abingdon Addition		all units have yet to be built, 23 building permits issued	45 single family homes
Abingdon Manor		all units have yet to be built, no building permits issued	21 single family homes
3303 Philadelophia Road		all units have yet to be built, no building permits issued	33 single family homes
Ally's Meadow	Joppa	9 units remaining to be built	14 single family homes
Brittany Quarters	Joppa	all units have yet to be built, no building permits issued	68 single family homes
Ashby Place II		12 units remaining to be built	122 townhouses
Bentley		all units have yet to be built, no building permits issued	23 townhouses
Flying Point Marina	Edgewood	all units have yet to be built, no building permits issued	200 apartments/condos
Fosters Run		all units have yet to be built, no building permits issued	236 single family homes
Harborside III		all units have yet to be built, no building permits issued	84 apartments/condos
Lesander Manor		all units have yet to be built, no building permits issued	14 single family homes
Mariner's Rest		all units have yet to be built, no building permits issued	30 townhouses
Melissa Manor		all units have yet to be built, no building permits issued	9 single family homes
Oak Grove/Stancills		all units have yet to be built, no building permits issued	270 single family homes
Old Trails		47 units remaining to be built	56 townhouses
Rock Hall Farms		51 units remaining to be built	53 single family homes
Rogers Ford		all units have yet to be built, no building permits issued	89 single family homes
Trimble Knoll		all units have yet to be built, no building permits issued	16 single family homes
Trimble Meadows		6 single family homes to be built, 131 townhouses to be built	6 single family homes, 175 townhouses
Van Bibber		all units have yet to be built, no building permits issued	9 single family homes
Woodlawn		all units have yet to be built, no building permits issued	103 single family homes
		Total Units Planned & Under Construction	**6,581**

Sources: Harford County Planning and Zoning, 2008; Aberdeen Planning Board, 2008; Harford County Department of Economic Development, 2008; City of Havre de Grace, 2008; City of Aberdeen, 2008
BAE, 2008.

Table B.2 Planned and Proposed Commercial and Industrial Development

Address/Project	City	Square Feet	Status/Comments
Industrial			
1501 Perryman Road	Aberdeen	1,000,000	Proposed
511 Chelsea Road	Perryman	1,388,400	Building A under construction, Building B proposed
500 Advantage Way	Perryman	650,000	Proposed
Retail			
Route 22	Aberdeen	3,500	Padsite
610 S Philadelphia Blvd	Aberdeen	3,000	Proposed
W Belair Ave @ Bush Chapel Rd	Aberdeen	5,950	Proposed, 42.1% leased
Route 22	Aberdeen	6,000	Restaurant padsite
1113 Beards Hill Road	Aberdeen	6,200	Under construction
Route 22	Aberdeen	15,000	Padsite
Route 22	Aberdeen	40,000	Proposed
Stadium Town Center	Aberdeen	109,000	Land has been acquired
"Box Hill" Route 24 & Route 924	Abingdon	372,500	
838 Old Philadelphia Rd	Aberdeen	5,600	Royal Farms Store, Lot combination approved
Rite Aid, Middelton Rd	Aberdeen	N/A	Tentative approval by Aberdeen Planning Board
"Aberdeen Station", Route 40	Aberdeen	2,406	
Wawa	Aberdeen	N/A	
Tractor Supply Store	Aberdeen	N/A	
Office			
Mitchell Towne Center, 1921 Pulaski Hwy	Havre de Grace	298,500	
Box Hill Corporate Center	Abingdon	1,346,000	Several sites available
James Run Corporate Center	Belcamp	1,080,000	Several sites available starting October 2010
Water's Edge Corporate Campus	Belcamp	149,000	24,000 sf building currently under construction
The GATE	APG	1,940,000	Does not include 60,000 sf building delivered Dec 2008
Northgate	Aberdeen	765,000	Includes 165,000 sf (2 buildings) under construction
729 W. Belair Ave	Aberdeen	3,900	Zoning change approved by Aberdeen Planning Board
Commons at Fieldside Village	Aberdeen	500,000	Seeking planning board approval
1306 Lewis Lane	Havre de Grace	30,000	
1130 Revolution Street	Havre de Grace	16,000	Breaks ground March 2009
2803 Old Philadelphia Road	Abingdon	33,000	
1301 Governor Court	Abingdon	30,000	
2801 Old Philadelphia Road	Abingdon	55,000	
200 Plumtree Dr	Bel Air	36,934	
1340 James Way	Belcamp	20,000	
1350 James Way	Belcamp	20,000	
Commercial/Mixed-Use			
Aberdeen Corporate Park	Aberdeen	200,000 office 40,000 retail hotel	
Holiday Inn Express, Rt 22 & Beards Hill Rd	Aberdeen	78 rooms	Needs Aberdeen Planning Board approval
Greenway Business Park	Aberdeen		
GY Trading Retail Center	Aberdeen		
Hampton Inn	Aberdeen		
Comfort Suites	Aberdeen		

Source: Harford County Planning and Zoning, 2008; Aberdeen Planning Board, 2008; Harford County Office of Economic Development, 2008; CoStar, 2008; Ryan Commercial, 2008; City of Havre de Grace, 2008; City of Aberdeen, 2008; Economic Alliance of Greater Baltimore, 2008; Gazette Newspapers, 2008; Manekin, 2008; LoopNet, 2008; BAE, 2008.

Appendix C

Table C-1: Survey of Apartment Complexes Near Aberdeen Proving Ground

Project/Address	Number of Units	Floor Plans	Rental Rates	Utilities	Square Feet	Rent per Square Foot	Percent Occupied	Parking	Comments and Amenities
Fox Run at Ashby Place	120	1 Br/1 Ba	$840	None	705	$1.19	90%	Lot	Military Discount
1600-A Ashby Sq		1 Br/1 Ba w/ den	$899		813	$1.11			
Edgewood, MD 21040		2 Br/2 Ba	$995		910	$1.09			
866.916.5265		2 Br/2 Ba w/ den	$1,055		1020	$1.03			
Edgewood Park	n/a	1 Br/1 Ba	$684	None	n/a	n/a	n/a	Lot	5% Military Discount
611 Edgewood Rd		2 Br/1 Ba	$779						
Edgewood, MD 21040									
410.679.8181									
Harford Commons	295	1 Br/ 1 Ba	$679	Water included	Varies	n/a	83%	Lot, curb	Military Discount
2033 Armstrong Street		1 Br/ 1 Ba Townhouse	$739		Varies				
Edgewood, MD 21040		2 Br/ 1 Ba	$759		Varies				
866.916.5317		2 Br/ 1 Ba Townhouse	$834		Varies				
		3 Br/ 1.5 Ba	$849		Varies				
		3 Br/ 1.5 Ba Townhouse	$1,149		Varies				
Dennis Apartments	74	1 Br/1 Ba	$450	Water. Garbage included	n/a	n/a	100%	Street	
229 N Union Ave		2 Br/ 1 Ba	$550 - $575						
Havre de Grace, MD 21078									
410-939-3885									
Magnolia Farms	n/a	1 Br/1 Ba	$650	Water, sewer, garbage	700	$0.93	n/a	Lot,	
28 E Bel Air Avenue		2 Br/1 Ba	$725		750	$0.97		unassigned	
Aberdeen, MD 21001		2 Br/1 Ba w/ den	$799		900	$0.89			
410-575-6294		2 Br/ 1 Ba Townhouse	$810		1000	$0.81			
Woodsdale Apartments	456	1 Br/1 Ba	$756	Water, sewer, garbage	642	$1.18	99%	Lot,	
102-D Waldon Road		1 Br/1 Ba w/ den	$803		770	$1.04		unassigned	
Abingdon, MD 21009		2 Br/1.5 Ba	$841 - $865		844	$1.00 - $1.02			
866-916-6324		2 Br/1.5 Ba w/ den	$945		947	$1.00			

Source: Internet Research, Telephone Interviews, BAE, 2008.

Appendix D

Table D.1 Retail Survey in Area Surrounding Aberdeen Proving Ground

Name	Address	City	Zip	Type	Gross Leasable Area	Average Lease Rate	Space Available	Year Opened	Anchor
The Center at Beards Hill	949 Beards Hill Road	Aberdeen	21001	Community	256,000	$20/sf	Yes	n/a	Klein's Supermarket, Home Depot
Aberdeen Marketplace	1018 Beards Hill Road	Aberdeen	21001	Community	103,600	n/a	Yes	n/a	Mars Supermarkets, Target
Edgewater Village Shopping Center	1815 Pulaski Highway	Edgewood	21040	Community	179,000	n/a	n/a	1994	Big Lots, Giant Food
Edgewood Square Shopping Center	2250 Hanson Road	Edgewood	21040	Neighborhood	80,112	n/a	n/a	1999	Food Lion, Dollar General
Woodbridge Shopping Center	1409 Pulaski Highway	Edgewood	21040	Community	117,000	n/a	n/a	1996	CVS, M&T Bank, Mars Supermarket
Campus Hills Shopping Center	2400 E Churchville Road	Bel Air	21015	Community	166,862	$12-$15/sf	Yes	1999	Gardiner's Furniture, Food Lion
Festival at Bel Air	5 Bel Air South Parkway	Bel Air	21015	Regional	437,227	$18-$35/sf	Yes	1989	Klein's Supermarket, Kohls, Marshalls
Tollgate Marketplace	615 Bel Air Road	Bel Air	21014	Regional	460,000	n/a	n/a	1994	Circuit City, Giant Food, Toys R Us
Harford Mall	696 Bel Air Road	Bel Air	21014	Regional	514,000	n/a	No	1999	Macy's, Macy's Furniture Store, Sears

Source: Shopping Center Directory; Co-Star, 2008;Harford County Department of Economic Development, 2008; BAE, 2008.