Chapter 1:
Fort Meade Area Housing Demand from BRAC

Key Findings:

By establishing the total number of jobs produced by BRAC directly and indirectly, estimating the number of jobs per household, and analyzing commuting patterns, the study team concludes that of the 6,021 initial housing units demanded due to BRAC at FGGM under the mid-case, over 90 percent will be demanded by households living in Maryland.

Among the most impacted housing markets will be the ones in Anne Arundel County, Baltimore County, Harford County, Carroll County, Howard County, Montgomery County, Prince George's County, and Baltimore City where collectively 88 percent of demand is allocated. The study team estimates that incremental demand for housing in the City of Laurel will exceed 70 units over the first few years of BRAC impact and then increase to over 120 units on a steady, permanent basis.

Moreover, of the 6,021 initial units demanded, just slightly less than 20 percent will involve rental as opposed to owner-occupied units.

In the long run, a steady state of housing demand will evolve as long-distance commuters who chose to stay in their existing homes rather than move to Maryland retire or change jobs and are replaced by new job holders who have more traditional commuting patterns. The "steady state" model reflects housing demand expectations on an annual, permanent basis beginning in 2015. This demand, reaching almost 10,000 rental and owner-occupied units on an annualized basis, will be substantially greater than the initial demand when jobs are first relocated to FGGM.

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I. Introduction

Purposes and objectives

This Sage Policy Group, Inc. (Sage) analysis estimates the likely near-term (2015) impacts on housing demand associated with the prospective relocation of thousands of employees to Fort George G. Meade (FGGM).[1] This timeline was established by the client. The analysis estimates impacts for the region surrounding FGGM on a jurisdiction-by-jurisdiction basis. Of specific interest is the region of Maryland encompassing Anne Arundel and Howard Counties, and the City of Laurel. Although it is understood that the impacts that BRAC will have could not possibly be isolated to these three areas, which the data in this analysis will support, it is nonetheless the interest of this study to assist these jurisdictions with the necessary information to plan for and anticipate an influx of new residential activity.

As is now well established by numerous studies, including several past Sage analyses, forecasting BRAC impacts is an imperfect science. No BRAC relocation is precisely like another, the implication being that past BRAC experiences represent imprecise guides. That said, the study team has endeavored to minimize potential error and has made its analytical assumptions explicit so that stakeholders can adjust projections by superimposing their own assumptions. As additional BRAC experience is gained, it will be possible for local officials and other stakeholders to incrementally adjust projections and estimates to account for new information and developments.

As an example, there is a remarkable degree of uncertainty with respect to where jobs associated with the so–called defense contractor-tail will ultimately be situated. Many jurisdictions in the study area have reason to believe that a significant proportion of jobs will find its way into their locale, due in part to availability of office inventory, proximity to labor markets, and other factors. Over the next few years, it will become more obvious where these jobs will be, allowing policymakers to react according to circumstances.

Methodology

This analysis addresses prospective BRAC–related impacts on Maryland counties and Baltimore City. Indeed, estimates of demand can be made for virtually all Maryland counties as well as the District of Columbia, Virginia, Pennsylvania, West Virginia, and Delaware. It is expected that the lion's share of FGGM–related impacts, however, will fall within a handful of jurisdictions in Central Maryland.

The principal data sources for the analysis include a series of reports that have investigated the likely effects of BRAC on Maryland. These reports generally rely upon data provided by individual Maryland jurisdictions. In other words, much of the data used to support the analysis are from official government sources. Data provided by the jurisdictions to support this analysis were supplemented by:

[1] There is also local interest in employment growth at the National Security Agency, located adjacent to FGGM. This report is exclusively concerned with the BRAC-related changes at FGGM and does not address any changes that may occur as a result of employment growth at the National Security Agency.

- data from the Maryland Department of Planning;
- data from the Baltimore Metropolitan Council;
- the U.S. Census Bureau; and
- miscellaneous other sources.[2]

To examine possible BRAC effects, the analysis generated three scenarios defined by different levels of economic activity that might be created by BRAC. These scenarios include the mid-case—assumed to be the most likely scenario—and a low and high case. The scenarios are defined primarily by the extent to which direct BRAC-related employment triggers additional employment creation among firms under contract with new FGGM entities: this is the so-called contractor-tail. Scenarios have been designed to address the policy uncertainties that surround the likely effects of BRAC, one of the key purposes of the analysis.

The analysis also addresses two points in time. The first—initial demand—occurs when jobs are first transferred to FGGM and a sizeable share of workers holding the transferred jobs are expected to choose to stay in their present homes and commute relatively long distances to the new location of their jobs (i.e. commute to FGGM). The second—"steady state" demand—occurs at some future date when these commuters have retired or changed jobs and are replaced by workers who will, with minor exception, seek housing in Maryland, particularly Central Maryland, rather than commute from more distant locations. The "steady state" model reflects housing demand expectations on an annual, permanent basis beginning in 2015.

Particular and specific aspects of the methodology used in this analysis are also described in the text and footnotes of the report. The Appendix and References at the end of the report provide additional information on sources and methods.

- Assumptions

The assumptions made in this analysis are identified in the text and many are also discussed in detail in the Appendix. Among the most important assumptions is that most of the jobs relocating to FGGM and the associated defense contractor-tail will, for the most part, neatly translate into labor force and population growth over time. While current residents will fill a significant portion of the jobs associated with BRAC, the region's relatively low unemployment rate implies that BRAC will trigger labor force expansion to both backfill vacated jobs and fill direct BRAC openings. This assumption has been made with respect to both the direct jobs at FGGM and the associated contractor-tail.

This assumption, however, is prone to imprecision. As an example, Baltimore City has relatively greater unemployment and underemployment than Howard and Anne Arundel counties. For city residents, BRAC represents an expansion in employment opportunities and this may induce present or latent labor force members to expand their supply of labor to the marketplace. To the extent that this occurs, the analysis will have overestimated population increases and related economic and fiscal effects. Of course, the assumption as it stands is also a reflection of likely

[2] A complete list of data sources and other referenced materials are listed at the end of the report.

skill mismatches between current unemployed and underemployed residents and the requirements of BRAC–associated jobs. Surveys also indicate that a significant share of workers will commute to FGGM from their current homes, particularly those associated with new FGGM functions that had previously been located in Northern Virginia. This will reduce the initial BRAC impacts on Maryland jurisdictions. Over the long run, however, as these commuters retire or change jobs, the full effects of BRAC changes at FGGM will be realized.

Another key Sage assumption revolves around likely commuting patterns. Many of those likely to transfer to FGGM and relocate to Maryland have indicated that their current commutes and the maximum time they are willing to commute are significantly longer than the average commuting times of Marylanders. While commutes of 45 minutes or more are familiar to many who live and work in Central Maryland, the average commute in Maryland is closer to 30 minutes according to Census data. This analysis assumes that new workers at FGGM will choose to seek housing in a pattern similar to that of current workers at FGGM, a commuting pattern more aligned with traditional Maryland behavior than those suggested by the DISA survey.

The study team has generated estimates that reflect both current experience of FGGM worker commutes and trends of commuting times, but as with virtually any analytical assumption, these may prove to be inaccurate. Many new FGGM workers may choose the longer commutes they have endured of late and create a much more geographically diffused housing demand. Alternatively, given the remarkable changes wrought by $4 gasoline in just the past year, long-distance commuting may increasingly become a historical curiosity. For now, however, the study team has chosen to pay homage to historical commuting patterns of those who actually work at FGGM.

Finally, this analysis assumes that the current economic distress will not be in effect when BRAC impacts occur at FGGM. These are expected to occur in 2010 and thereafter, sufficiently distant in the future that the current downturn will likely have passed. Recent events, however, have sharply weakened the national and regional economies. Sage presently expects this weakness to begin to evaporate by mid- or late-2009. Should this not occur, the effects of the current downturn would have consequences for BRAC-related housing demand. Specifically, more homes and apartments would be available in 2010 and beyond than is currently envisioned.

II. New Jobs at FGGM and their Effects on Housing Demand

Over the next several years, increases in employment at FGGM and the inevitable multiplier effect that will result from those new jobs will create significant incremental demand for housing and other goods and services in Central Maryland. The discussion below describes the succession of projected impacts that will be traceable to this new employment and their implications for housing in Central Maryland and adjacent areas.

Net changes in jobs at FGGM and associated employment impacts

Expected changes in the study area as a result of BRAC can be attributed to the anticipated increase in jobs at FGGM. According to published schedules, a few of these jobs may have already transferred to FGGM, but the great majority is not expected to relocate until the conclusion of the current decade.

Admittedly, there is some uncertainty about the number of jobs that will be relocated to FGGM. This analysis relies on a 2006 estimate that was developed in conjunction with a series of BRAC-related studies under the general guidance of the Maryland Department of Business and Economic Development. In its study of BRAC activities in Maryland, Science Applications International Corporation (SAIC) estimated that there would be an increase of 5,718 jobs at FGGM.[3] As shown in Exhibit II-1, these jobs can be grouped under three broad categories defined by the principal activities undertaken by the workers whose positions are transferring to FGGM. Adjudication activities include a variety of legal functions while media includes press and information services. The majority of new positions are units associated with the Defense Information Systems Agency (DISA). As indicated, with the exception of a relative handful of media jobs, the SAIC report anticipated that the job transfers would occur in 2010.

Exhibit II-1: Number of total new jobs at FGGM and their schedule

Activity	*2008*	*2009*	*2010*	*Total*
Adjudication			951	951
Media	160		509	669
DISA			4,098	4,098
Total/average	160	-	5,558	5,718

Source: SAIC
Note: Figures based on total arrival of BRAC agencies to FGGM

In addition to the on-base jobs, the shift of economic activity to FGGM will include a number of federal contractors who work directly with and for some of the DOD agencies that will become base residents. These companies and their workers are collectively referred to as the "contractor-tail." From the perspective of economic and fiscal impacts, these jobs will act in a manner similar to the new jobs located at FGGM. This is because the jobs are qualitatively similar, though some may be located on base and others off, and therefore the broader regional economic impacts are comparable.

[3] "BRAC Activities Affecting Aberdeen Proving Ground, Andrews Air Force Base, Bethesda Naval Hospital, and Fort Meade and in the State of Maryland," draft final report, Science Applications International Corp., March 31, 2006.

There is uncertainty about the number of workers who would constitute the contractor-tail as well as their propensity to relocate along with their DOD clients. The SAIC report indicated that DISA may support 3,000 to 5,000 non-embedded contractor positions, but did not provide estimates for similar contractors for the adjudication and media agencies. Given the possibility that DISA may be more reliant on outside contractors than the adjudication or media agencies, this analysis uses a range of estimates for the contractor-tail based only on DISA positions.

Exhibit II-2 summarizes the number of on-base and contractor-tail positions that are associated with BRAC. These range from a total 8,718 to 10,718 with the mid-case (i.e. most likely) total being 9,718.

Exhibit II-2: Estimates of on-base and contractor-tail positions at FGGM

Type of position	*Mid-case*	*Low case*	*High case*
On-base	5,718	5,718	5,718
Contractor-tail	4,000	3,000	5,000
Total	9,718	8,718	10,718
Source: SAIC			

According to the SAIC report, over 5,000 of the on-base jobs would transfer from locations that are relatively close to FGGM. Indeed, two units with over 300 positions are located in Anne Arundel County itself. Many other units are located in Northern Virginia and the District of Columbia. Although some units will move from as far as Texas, Arizona, and California, these units include fewer than 600 positions.

The significance of these locations can be seen in a survey of DISA workers currently located in Northern Virginia. Of those who had made a decision relative to transferring to FGGM and moving to Maryland, over 40 percent indicated that they would accept the transfer, but continue to live in their current residences. Not quite three in five indicated that they would retire or accept the transfer and move to Maryland.[4] It is assumed that new hires replacing those who retire will choose to live in the region within a more typical commuting distance of FGGM. Thus, not all of the new positions at FGGM will result in housing demand in Maryland. Rather, during the initial stage of job relocations, only approximately 3,400 of the new FGGM positions are estimated to create new demands for housing in Maryland as shown in Exhibit II-3.

As also noted in Exhibit II-3, in the long run an estimated 5,400 direct jobs at FGGM will create permanent, ongoing housing demand. This includes all positions relocating to FGGM except for two agencies already located in Anne Arundel County. These two agencies account for 317 positions and are excluded from this analysis under the assumption these jobholders will have no reason to consider moving from their current residences.

[4] "DISA/JTF-GNO base realignment and closure (BRAC) awareness survey," May 2008.

Exhibit II-3: Number of new positions that will create housing demand in Maryland

Nature of activity and organization	*Current location*	*Total positions*	*Share needing MD housing initially*	*Number needing MD housing: initially*	*Number needing MD housing: steady state*
Adjudication activities					
DOHA (1)	CA	48	100%	48	48
	OH	48	100%	48	48
	Arlington, VA	50	58%	29	50
	AZ	48	100%	48	48
	MA	48	100%	48	48
Air Force CAF	DC	163	58%	95	163
Navy CAF	DC	159	58%	92	159
NSA CAF	Linthicum, MD	178	0%	0	0
Wash HQ Service CAF	Arlington, VA	33	58%	19	33
DIA CAF	DC	32	58%	19	32
Def. Ind. Sec. Clearing Office	OH	146	100%	146	146
Joint staff CAF	DC	0	58%	-	0
Sub-total		951	62%	590	773
Media activities					
Soldiers media center	Northern VA (2)	102	58%	59	102
Naval media center	DC	147	58%	85	147
AF news service	TX	160	100%	160	160
AFIS	Crystal City, VA	260	58%	151	260
Sub-total		669	68%	456	669
DISA					
DISA	Northern VA	3864	58%	2,247	3864
JTRS program office	Arlington, VA	21	58%	12	21
DJC2 program office	FL	46	100%	46	46
JSC	Annapolis, MD	139	0%	0	0
JNMS program office	NJ	2	100%	2	2
DISA activity	NJ	25	100%	25	25
Sub-total		4,097	57%	2,332	3,958
Total		5,718	59%	3,378	5,400

Note: Totals may not add due to rounding.
1. Distribution of DOHA positions by location is an estimate by Sage.
2. Northern VA includes various communities in the suburbs of Washington, DC.
Sources: DISA survey, Sage

Insofar as housing demand is concerned, it is likely that the DISA contractor-tail positions will mimic the DISA on-base positions. The experience of Arlington County, Virginia is instructive.

In a prior BRAC round, the Naval Sea Systems Command moved from the county to the Navy Yard in Washington, D.C. After that move, 1 million square feet of office space in Arlington County that had been leased by contractors was vacated despite the proximity of that space to the

Navy Yard. It appears that in the world of defense contracting, immediate proximity is required, not just regional proximity.

If the relocation of 4,097 DISA positions to FGGM means that workers occupying 1,765 of those positions will commute from their current residences and 2,332 workers will be in the market for housing in Maryland when those jobs initially move to FGGM, then a similar allocation is assumed to apply to adjudication and media agencies and to the contractor-tail positions. That is, if offices for these other agencies and the contractor-tail positions relocate to the area surrounding FGGM from locations in Northern Virginia or the District of Columbia, many workers in these relocated offices will commute from their current homes. Assuming approximately 57 percent of the contractor-tail positions will seek housing in Maryland, the total number of on-base and contractor-tail positions needing housing within commuting distance of FGGM will range from just over 4,000 to almost 5,200 as shown in Exhibit II-4. In the mid-case or most likely scenario just over 4,600 of these positions will be associated with increased local housing demand.

Exhibit II-4: Estimates of on-base and contractor-tail positions needing housing in Maryland: initial demand

Type of position	*Mid-case*	*Low case*	*High case*
On-base	3,378	3,378	3,378
Contractor-tail	2,277	1,707	2,846
Total	4,608	4,039	5,177
Sources: SAIC, Sage			

In the longer run, housing demand in Central Maryland, driven by BRAC impacts at FGGM, is likely to increase. In the mid-case scenario, almost 9,200 positions will be associated with new housing demand as shown in Exhibit II-5.

Exhibit II-5: Estimates of on-base and contractor-tail positions needing housing in Maryland: steady state

Type of position	*Mid-case*	*Low case*	*High case*
On-base	5,400	5,400	5,400
Contractor-tail	3,778	2,833	4,722
Total	9,178	8,233	10,122
Sources: SAIC, Sage			

- Business multiplier impacts

The relocation of on-base and contractor-tail positions to FGGM will create new opportunities for businesses in Anne Arundel County and the surrounding region. These opportunities will arise from the need for a wide range of goods and services from office supplies to accounting services. Money spent for these goods and services will create revenues for regional businesses, which will use part of these revenues in turn for their own purchases of goods and services. The totality of cascading business-to-business transactions creates what is called the indirect effect of the new on-base and contractor-tail jobs.

The income earned by on-base and contractor-tail workers as well as by workers in the indirectly affected establishments will be largely spent in the region surrounding FGGM. These consumer expenditures create yet another set of jobs, which are considered the induced effect of the on-base and contractor-tail impacts.[5] BRAC, in terms of direct, indirect and induced employment estimates is assumed in the employment forecasts of each of the jurisdictions that have sponsored this report.

Given that some DISA agencies will relocate from relatively nearby locations and a significant share of the on-base and contractor-tail workers will be commuting from their current residences, the indirect and induced impacts will be more modest initially than they would be if all the new positions at FGGM were relocated from more distant locations. Some current suppliers of office equipment or computer repair services may well continue to provide these services after DISA or other agencies are moved from Northern Virginia or the District of Columbia. Similarly, workers who do not move are unlikely to change their patterns of consumer spending or the locations where that spending occurs.

From an economic perspective, this analysis assumes that indirect and induced impacts are only associated with positions that will create new housing demand in Maryland. Exhibit II-6 summarizes all jobs associated with the BRAC changes in employment at FGGM for the initial period following BRAC job relocations. Based on Sage's work on BRAC impacts at Aberdeen Proving Ground, there is one indirect job for every four to five on-base or contractor-tail jobs. Moreover, there is one induced job for roughly every two on-base or contractor-tail jobs.[6] For the mid-case, a total of almost 9,900 jobs would be created in Anne Arundel County and the surrounding region. The range for the low case and high case runs from almost 8,900 jobs to almost 10,900 jobs.

Exhibit II-6: Total jobs associated with housing demand related to BRAC at FGGM: initial demand

Type of job	*Mid-case*	*Low case*	*High case*
On-base	3,378	3,378	3,378
Contractor-tail	2,277	1,707	2,846
Indirect	1,223	1,100	1,346
Induced	2,997	2,695	3,299
Total	9,874	8,881	10,868

Note: Totals may not add due to rounding.
Source: Sage

These estimates of jobs associated with new housing demand are based on the assumption that the changes in employment at FGGM and the related indirect and induced jobs represent net new jobs at FGGM and the surrounding region. Given historically low unemployment in Maryland, there is relatively little probability that the demand for goods and services created by BRAC at

[5] See Appendix for discussion of methods to estimate indirect and induced employment.
[6] Sage Policy Group, Inc., "Aberdeen Proving Ground BRAC impacts on seven jurisdictions," September 2007. More specifically, based on economic conditions in Central Maryland, there are 0.22 indirect and 0.53 induced jobs for each on-base or contractor-tail job.

FGGM can be absorbed without increases in labor force size.[7] Moreover, even if Maryland's unemployment rate continues to increase (presently at a 5-year+ high), there are likely massive skills mismatches between available labor and those required by BRAC-related employment. However, given how sharp the national economic downturn has become, the availability of labor in Maryland should be tracked carefully over the next two years at a minimum.

Total jobs associated with housing demand when a steady state is achieved are listed in Exhibit II-7. In the most likely case, this housing demand will be driven by over 16,000 jobs generated by BRAC changes at FGGM.

Exhibit II-7: Total jobs associated with housing demand related to BRAC at FGGM: steady state

Type of job	*Mid-case*	*Low case*	*High case*
On-base	5,400	5,400	5,400
Contractor-tail	3,778	2,833	4,722
Indirect	2,019	1,811	2,227
Induced	4,864	4,364	5,365
Total	16,061	14,408	17,713

Note: Totals may not add due to rounding.
Source: Sage

Households and population associated with BRAC positions at FGGM

The transfer of jobs to FGGM and the consequent creation of jobs in Anne Arundel County and the surrounding region will drive the BRAC-related housing demand that the region will experience. The first step in estimating that demand is to understand the relationship between employment and household formation. Based on recent experience in Maryland, it is estimated that there are 1.64 jobs per household for households likely to be participating in the labor force.[8] Based on average household size in Maryland, it is estimated that there are an average of 2.61 persons per household.[9]

By using these estimates of jobs per household and household size, the increase in households and population attributable to BRAC changes at FGGM can be projected. Exhibit II-8 presents the estimated increase in jobs, households, and population for the mid-case, low case, and high case.

Exhibit II-8: Total households and population associated with BRAC effects at FGGM: initial demand

Type of job	*Mid-case*	*Low case*	*High case*
Increase in jobs	9,874	8,881	10,868
Increase in households	6,021	5,415	6,627
Increase in population	15,714	14,134	17,296

Source: Sage

[7] In September 2008, the Maryland unemployment rate was 4.5 percent. Over the past 3 years, the state rate has on averaged been below 4 percent. "Civilian Labor Force, Employment & Unemployment by Place of Residence (LAUS) – Maryland," www.dllr.state.md.us/

[8] See Appendix for discussion of this estimate.

[9] U.S Census, 2006 American Community Survey, Maryland.

In the mid-case estimate, over 6,000 households will seek housing in the region as a result of BRAC at FGGM. These households will increase the regional population by well over 15,000. The range for the low and high cases runs from 5,400 to 6,600 households seeking housing with related population growth that runs from over 14,000 to over 17,000.
When a steady state is realized, there will be a substantial increase in households and population in Central Maryland as a result of BRAC impacts at FGGM. As shown in Exhibit II-9, in the most likely case almost 9,800 new households will be associated with these FGGM job increases.

Exhibit II-9: Total households and population associated with BRAC effects at FGGM: steady state

Type of job	*Mid-case*	*Low case*	*High case*
Increase in jobs	16,061	14,408	17,713
Increase in households	9,793	8,785	10,801
Increase in population	25,560	22,930	28,190
Source: Sage			

Commuting patterns

Given these estimates of total housing demand, the distribution of this demand over the region surrounding FGGM can be estimated using data on likely commuting behavior. This report considers findings from two sources. First, Sage reviewed behavior patterns of commuters as measured by the U.S. Census Bureau, which routinely collects data on travel time to work. Second, the May 2008 survey of DISA/JTP-GNO workers affected by the relocation of positions to FGGM included information on the current commuting experience of workers likely to relocate as well as their estimate of the maximum time they would consider commuting. These survey responses are summarized in Exhibit II-10 and compared against Census data on typical commuting patterns for Marylanders.

Exhibit II-10: Commuting time for relocating workers

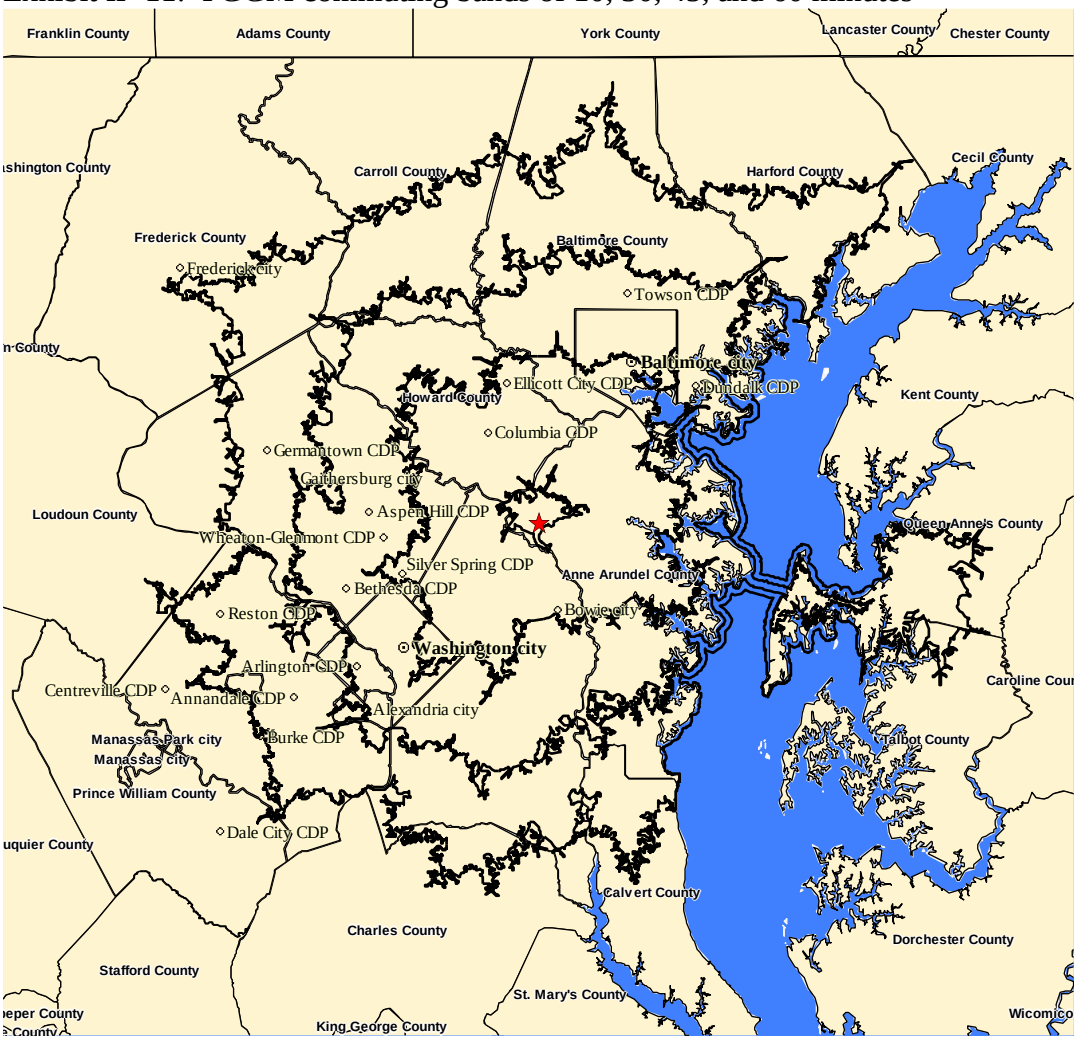
Minutes	*Current commutes*	*Maximum commutes*	*Census data*
Up to 10	6.2%	1.1%	8.7%
11-30	23.4%	17.8%	43.4%
31-45	22.9%	23.3%	23.6%
46-60	24.5%	34.4%	11.6%
Over 60	22.0%	20.0%	12.6%
No response	1.1%	3.4%	
Sources: May 2008 DISA/JTP-GNO BRAC survey, U.S. Census Bureau			

It should be noted that the estimated commuting pattern described by the DISA survey responses represents commuting times that are significantly longer than the Maryland average as estimated by the 2000 U.S. Census. For example, Census data indicate that over half of Marylanders commuted no more than 30 minutes, compared to not quite 30 percent of current DISA workers. Alternatively the Census indicated that fewer than one in four Maryland commuters drove more than 45 minutes to work, while the DISA survey indicates almost half of the BRAC-related workers now drive that long.[10]

[10] U.S. Bureau of the Census, 2000 Census of Population and Housing, Demographic Profile

A geographic presentation of these commuting patterns can be seen in Exhibit II-11 which presents an estimate of the commuting bands around FGGM. The bands around FGGM represent an estimate of the areas within a 10-, 30-, 45-, and 60-minute drive of the base. As shown, a 10-minte drive is almost entirely within Anne Arundel County. A 30-minute drive encompasses much of Anne Arundel, Howard, and Prince George's counties, southwestern Baltimore County and Baltimore City. Extending drive time another 15 minutes takes in much of Baltimore and Montgomery counties, the rest of Baltimore City and portions of Alexandria and Arlington County, Virginia. An hour's drive from FGGM takes one from Harford County to Frederick County, Queen Anne's County on the Eastern Shore to Fairfax County in Virginia.

Exhibit II- 11: FGGM commuting bands of 10, 30, 45, and 60 minutes



Source: DecisionData

It should be emphasized that the drive times shown in Exhibit II-10 are estimates. Anyone familiar with driving in the Washington-Baltimore corridor can relay stories of seemingly endless traffic jams and delays. Nevertheless, commuters tend to develop strategies that allow for more reasonable travel times that are not inconsistent with the patterns presented above.

Estimated Housing Demand

A zip code breakdown of current FGGM workers' residences is the most precise source identified that can be used to determine allocation of housing demand is data on the zip codes of current FGGM workers' residences. Using this dataset to assess allocation allows Sage to eliminate the analytical steps involved in estimating commuting drive times and the existing demand within those commuting bands. Given that this allocation of demand is based on empirical data for current FGGM workers, it is considered more reliable than allocations based on estimated commuting behavior using travel time to work data. As a result, this allocation is used to analyze future BRAC-related housing demand. By summarizing the number of workers by zip code and adjusting for zip codes that cross jurisdictional boundaries, the allocation of current housing location choices by FGGM workers can be estimated by jurisdiction. Exhibit II-12 summarizes this allocation for eight jurisdictions in central Maryland as well as for other locations.

Exhibit II-12: Location of current FGGM workers' residences

Jurisdiction	*Share of households*
Anne Arundel County	35.2%
Howard County	18.9%
Baltimore County	11.0%
Carroll County	8.3%
Baltimore City	4.8%
Other Prince George's County	3.5%
Montgomery County	2.9%
Harford County	2.2%
The City of Laurel	1.2%
Other Maryland	4.5%
Maryland Sub-total	*92.5%*
Virginia	3.6%
Pennsylvania	2.4%
Washington, D.C.	1.2%
West Virginia	0.1%
Delaware	0.0%
Non-Maryland Sub-total	*7.3%*
Total	100.0%
Sources: FGGM, Sage	

The allocation of housing demand listed above applies most clearly to the direct and contractor-tail positions. These jobs have similar characteristics in terms of required skills and compensation. While the exact work locations of the contractor-tail positions is not known, there is strong evidence that many, probably most, of these jobs will be located as close as possible to FGGM. Consequently, this analysis assumes that direct and contractor-tail jobs will have the same allocation of housing demand.

The allocation of housing demand for the indirect and induced jobs supported by new positions at FGGM and the contractor-tail is more speculative. The specific locations of these jobs are not

known. Indirect jobs, which are suppliers to FGGM agencies or contractor-tail businesses and the subsequent supply chain to these suppliers, are likely to be concentrated relatively near to FGGM or elsewhere along the Washington-Baltimore corridor. Induced jobs, which are relatively modestly paid positions in retail and consumer-related businesses, are likely to be located near the residences of all direct, contractor-tail, and indirect workers.

Thus, unlike the direct and contractor-tail jobs which are expected to be clearly concentrated at or near to FGGM, the indirect and induced jobs can be expected to be located along the Washington-Baltimore corridor and diffused throughout the central Maryland commuting shed of FGGM, respectively. Even assuming a tendency for shorter average commutes for these workers, their housing demand can be assumed to be less concentrated around FGGM. The relatively lower pay of these jobs will also tend to shift their housing demand from higher housing cost jurisdictions to lower housing cost jurisdictions.

Of the central Maryland jurisdictions that include the great majority of FGGM workers' residences, three have average housing prices well above the statewide average of $325,000 while the others are below the statewide average. As noted in Exhibit II-13, Anne Arundel, Howard, and Montgomery counties are higher cost housing areas, all over $400,000 as of September 2008. The remaining jurisdictions have average housing prices of $170,000 to $300,000.

Exhibit II-13: Average housing prices in central Maryland

Jurisdiction	*Average housing cost, September 2008*
Anne Arundel County	$403,687
Howard County	$431,839
Baltimore County	$277,494
Carroll County	$300,141
Baltimore City	$170,118
Prince George's County	$285,632
Montgomery County	$458,036
Harford County	$280,497
Maryland	$325,167
Source: Maryland Association of Realtors	

While more diffused, this analysis assumes that housing demand for indirect and induced workers will generally follow that of direct and contractor-tail workers. As discussed later in this report, average income of households of the indirect and induced workers are lower than the average incomes of the households of direct and contractor-tail workers. Consequently, for the three higher housing cost counties, the indirect and induced workers housing allocation estimate is reduced by 20 percent (e.g., housing demand in Anne Arundel County is reduced from 38.5 percent to 30.8 percent).[11] The reduction of housing demand from these higher housing cost

[11] This 20 percent reduction is based on the assumption that Anne Arundel County accounts for roughly 80 percent of the indirect and induced jobs generated by BRAC changes at FGGM. This assumption in turn is based on IMPLAN estimates of indirect and induced job generation in Anne Arundel County and in central Maryland. This indicates that the location of these types of jobs are more diffused in central Maryland than the direct and contractor –tail jobs and that housing demand is also likely to be more diffused.

areas is shifted on a prorated basis to other Maryland jurisdictions and the District of Columbia.[12] The resulting shares of housing demand for housing related to BRAC changes at FGGM is summarized in Exhibit II-14. For this analysis, the distribution of housing demand presented in this exhibit applies both to the initial demand and to the steady state demand for housing.

Exhibit II-14: Estimated location of all BRAC-related housing demand

Jurisdiction	*Share of direct and contractor-tail demand*	*Share of indirect and induced demand*	*Share of all housing demand*
Anne Arundel County	38.5%	30.8%	35.2%
Howard County	20.6%	16.5%	18.9%
Baltimore County	9.4%	13.1%	11.0%
Carroll County	7.1%	10.0%	8.3%
Baltimore City	4.1%	5.7%	4.8%
Other Prince George's County	3.0%	4.2%	3.5%
Montgomery County	3.2%	2.6%	2.9%
Harford County	1.9%	2.7%	2.2%
The City of Laurel	1.0%	1.4%	1.2%
Other Maryland	3.9%	5.4%	4.5%
Virginia	3.6%	3.6%	3.6%
Pennsylvania	2.4%	2.4%	2.4%
Washington, D.C.	1.0%	1.4%	1.2%
West Virginia	0.1%	0.1%	0.1%
Delaware	0.0%	0.0%	0.0%
Sources: FGGM data on housing location of current workers, Sage			

As shown in the exhibit, Anne Arundel and Howard counties account for over half of expected demand. Baltimore and Carroll counties account for almost one in five households seeking housing. These four counties plus Baltimore City and Prince George's, Montgomery, and Harford counties are expected to encompass 88 percent of housing demand. Remaining demand is scattered across most other Maryland counties, Virginia, Pennsylvania, the District of Columbia, West Virginia, and Delaware. Demand outside Maryland is estimated at roughly 7 percent.

This summary of housing demand by jurisdiction is used to allocate all housing demand resulting from the BRAC changes at FGGM. It should be stressed that any allocation scheme is an estimate, which while reasonable and logical, is also subject to uncertainties.

As noted in Exhibits II-6 and II-7, total housing demand includes demand generated by on-base and contractor-tail positions as well as indirect and induced positions. While it is assumed that the contractor-tail workers will be located in offices in close proximity to FGGM, that is not true of indirect and induced workers. The places of work for these other positions are likely to be

[12] Other Maryland jurisdictions include 15 Maryland counties that account for at most 1.1 percent of the housing demand of current FGGM workers. For all but two of these counties, housing demand represents less than .03 percent of this demand.

more dispersed around the region. Commuting patterns for these workers could easily extend much farther from FGGM. For example, induced employment will likely be located in Harford and Frederick counties. Workers may choose to commute to these work sites from Pennsylvania or West Virginia.

On the other hand, the price of gasoline has already had a remarkable impact on commuting behavior. Demand for public transit has increased and car pooling has become more popular. In extreme cases, workers have found that they can no longer afford long commutes to their jobs. Despite the recent (February 2009) decline from $4 a gallon gasoline, it seems highly unlikely that energy prices will return on a long-term basis to levels experienced just a few years ago. Indeed, prices have increased from their low point in late 2008 and will likely increase substantially in the longer term. As a result there will be continuing pressures to reduce commuting costs and concentrate rather than disperse commuting patterns.

Given the tension between the tendency for indirect and induced housing demand to be more dispersed and the tendency for energy prices to reduce commuting costs, the estimated housing allocation presented in Exhibit II-14 represents what the study team views as a reasonable middle ground. Exhibit II-15 presents the results of applying the estimated allocation of housing demand to the estimated number of households who would be creating a net new initial demand for housing in the region surrounding FGGM. All three scenarios are shown (i.e. mid-case, low case, and high case). This demand is what would be expected without consideration of supply or price; that is, this could be considered unconstrained demand determined by assumed commuting patterns and accounting for the mix of relevant incomes. Supply is treated in a separate report and both demand and supply will be considered jointly in ensuing Sage submissions.

Exhibit II-15: Net increase in housing demand by jurisdiction: initial demand

Jurisdiction	*Estimated net housing demand (households)*		
	Mid-case	Low case	High case
Anne Arundel County	2,122	1,908	2,335
Howard County	1,135	1,021	1,250
Baltimore County	660	594	727
Carroll County	502	451	553
Baltimore City	290	260	319
Other Prince George's County	212	190	233
Montgomery County	176	158	193
Harford County	134	120	147
The City of Laurel	72	65	79
Other Maryland	273	246	301
Virginia	219	197	241
Pennsylvania	144	129	158
Washington, D.C.	73	65	80
West Virginia	7	6	8
Delaware	3	3	3
Total	6,021	5,415	6,627
Source: Sage			

In the mid-case, the most likely scenario, just over 6,000 households would be seeking housing. The greatest number—2,122 households—would be looking in the Anne Arundel County housing market. An additional 1,135 households would be expected to seek housing in Howard County while 660 households would be looking in Baltimore County. An additional 1,386 households would seek housing in other Central Maryland jurisdictions.

There has been an expressed interest in the demand for housing in Laurel in particular. As a community within a roughly 15-minute drive of FGGM, Laurel is obviously implicated by the substantial demand for housing that BRAC will create. Given the estimated allocation of just over 1 percent of total demand, Laurel is estimated to see initial demand for 72 houses under the mid-case.

This allocation of housing demand is made without reference to available supply or cost. The nature of supply can easily affect demand, modify the location of housing choices, and thus shape how the BRAC-related demand or any need for housing is met.

The ultimate increase in housing demand associated with job relocations to FGGM is presented in Exhibit II-16. In the most likely case, demand in Anne Arundel County is expected to top 3,400 units, over 1,800 units in Howard County, and over 1,000 in Baltimore County. Other Central Maryland jurisdictions are expected to see housing demand increase by almost 2,200 units.

Exhibit II-16: Net increase in housing demand by jurisdiction: steady state

Jurisdiction	*Estimated net housing demand (households)*		
	Mid-case	Low case	High case
Anne Arundel County	3,451	3,096	3,806
Howard County	1,847	1,657	2,037
Baltimore County	1,074	963	1,184
Carroll County	816	732	901
Baltimore City	471	423	519
The City of Laurel	117	105	130
Other Prince George's County	344	309	380
Montgomery County	286	256	315
Harford County	218	195	240
Other Maryland	444	398	490
Virginia	356	319	393
Pennsylvania	234	210	258
Washington, D.C.	118	106	130
West Virginia	12	10	13
Delaware	5	4	5
Total	9,793	8,785	10,801
Source: Sage			

Characteristics of housing demand

The broad outlines of housing demand can be characterized based on the expected income of those expected to be buying or renting and on the responses to a survey of DISA/JTP-GNO workers. These factors allow for an estimation of demand by the value of housing and for differentiation between demand for owned versus rental housing.

Workers whose positions are relocating to FGGM are relatively well paid. According to the SAIC report, the distribution of positions by pay level indicates that about half will be compensated at the equivalent of GS 12 or GS 13 federal workers (Army Captains or Majors). Another third will have higher ranks (almost all at GS 14/15, Lt. Colonel/Colonel level), while about one in six will have lower ranks. Because the expected compensation of DISA workers is higher than others and because it is assumed that the contractor-tail positions will be paid the same as on-base DISA workers, the income distribution varies slightly from the mid-case to the low- and high-case alternatives. Exhibit II-17 presents the estimated distribution of workers by pay level.

Exhibit II-17: Distribution of BRAC-related workers at FGGM by pay level

Pay level	*Mid-case*	*Low case*	*High case*
GS 1-11, up to 1st Lieutenant	18%	19%	17%
GS 12, Captain	17%	17%	17%
GS 13, Major	32%	31%	32%
GS 14-18, up to Major General	33%	33%	34%
Sources: SAIC, Sage			

The estimated compensation for workers at these levels is presented in Exhibit II-18. This pay is based on 2008 compensation levels and assumes a moderate level of experience for workers at those pay levels. For federal civilian workers, this equates to Step 5 (out of 10) at a given pay grade.

Exhibit II-18: Average compensation for BRAC-related workers at FGGM

Pay level	*Mid-case*	*Low case*	*High case*
GS 1-11, up to 1st Lieutenant	$53,608	$53,490	$53,715
GS 12, Captain	$79,068	$79,068	$79,068
GS 13, Major	$94,025	$94,025	$94,025
GS 14-18, up to Major General	$120,399	$119,960	$120,351
Sources: SAIC, Sage			

In its analysis of the BRAC-related impacts at Aberdeen Proving Ground (APG), Sage estimated that household income for all positions generated by BRAC was 130 percent of the income of those positions. That is, if a job relocated to FGGM paid $100,000, on average the household of that worker would have an income of $130,000. Most of the additional 30 percent of income would be derived from the employment of spouses. Exhibit II-19 lists the estimated household income of BRAC-related workers at FGGM.

Exhibit II-19: Estimated household income for BRAC-related workers at FGGM

Pay level	*Mid-case*	*Low case*	*High case*
GS 1-11, up to 1st Lieutenant	$69,690	$69,537	$69,830
GS 12, Captain	$102,788	$102,788	$102,788
GS 13, Major	$122,233	$122,233	$122,233
GS 14-18, up to Major General	$156,519	$155,948	$156,457
Sources: SAIC, Sage			

Sage's analysis of BRAC at APG also included estimations of typical compensation for the indirect and induced jobs created by the activities of on-base and contractor-tail workers. The average compensation of these workers and their household incomes are listed in Exhibit II-20. These income estimates are based on economic conditions and labor markets in central Maryland from Harford County to Howard County to Anne Arundel County and apply to BRAC changes at both APG and FGGM. The study team fully recognizes the fundamental differences between the Harford, Anne Arundel and Howard County labor and housing markets. Housing is more expensive in both Anne Arundel and Howard County relative to Harford County, and compensation tends to be higher because of greater Washington-area influence on wage setting.

Exhibit II-20: Compensation and household income for indirect and induced workers

Type of worker	*Worker income*	*Household income*
Indirect	$64,763	$84,192
Induced	$49,831	$64,780
Source: Sage		

Exhibit II-21 summarizes household income for all workers affected by BRAC at FGGM who would be creating demand in the regional housing market. As noted above, there are slight variations in the mix of jobs for on-base and contractor-tail workers for the three cases. Therefore, household incomes also vary slightly between scenarios.

Exhibit II-21: Estimated household income for BRAC-related workers at FGGM

Pay level/type of worker	*Mid-case*	*Low case*	*High case*
Induced workers	$64,780	$64,780	$64,780
GS 1-11, up to 1st Lieutenant	$69,690	$69,537	$69,830
Indirect workers	$84,192	$84,192	$84,192
GS 12, Captain	$102,788	$102,788	$102,788
GS 13, Major	$122,233	$122,233	$122,233
GS 14-18, up to Major General	$156,519	$155,948	$156,457
Sources: SAIC, Sage			

The housing purchasing power of these incomes can be estimated by assuming that 25 percent of income is devoted to the principal and interest payments of a mortgage.[13] Affordable mortgages

[13] Generally accepted government guidelines consider 30 percent of income as a maximum limit of affordability with no more than 35 percent of income devoted to housing payments and utility costs. Communications from Kurt Sommer, Maryland Department of Housing and Community Development, to Carl DeLorenzo, Sage Policy Group, Inc., October 24, 2008. According to the Bureau of Labor Statistics, the average American household spends 3.4 percent of income on property taxes. Insurance costs would also be considered part of income devoted to housing.

can be estimated assuming 30-year fixed loans at 6.5 percent for 90 percent of the price of housing for sale. Based on these factors the average value of homes that could be purchased by all the households whose employment is generated by BRAC at FGGM is shown in Exhibit II-22 which also lists the distribution of households for each pay level. For example, 30 percent of all households likely to seek housing in the region are the households of induced workers who will be able to afford, on average, housing priced at $237,000.

Exhibit II-22: Estimated housing values for BRAC-related workers at FGGM

Pay level/type of worker	*Value of housing*			*Share of demand*		
	Mid-case	Low case	High case	Mid-case	Low case	High case
Induced workers	$237,242	$237,242	$237,242	30%	30%	30%
GS 1-11, up to 1st Lieutenant	$255,225	$254,663	$255,736	10%	11%	10%
Indirect workers	$308,336	$308,336	$308,336	12%	12%	12%
GS 12, Captain	$376,441	$376,441	$376,441	10%	10%	10%
GS 13, Major	$447,651	$447,651	$447,651	18%	18%	18%
GS 14-18, up to Major General	$573,218	$571,126	$572,989	19%	19%	19%
Source: Sage						

The DISA/JTP-GNO survey asked what relocating workers would be interested in spending when buying housing (as opposed to renting). The responses of those who provided an answer are summarized in Exhibit II-23. These responses track the housing values listed above. However, the distribution listed above includes the indirect and induced workers, who were not a part of the survey. Although more junior on-base and contractor-tail workers who may afford to spend as much as $300,000 on a home represent 18 percent of the on-base and contractor-tail workers, over 40 percent of those in the survey of prospective on-base workers expressed a preference for housing at this cost level. Alternatively, approximately one in three on-base and contractor-tail workers were in the highest pay grades and could afford homes worth over $500,000, but only 17 percent of these workers indicated a preference for homes that expensive. This suggests that workers filling the relocating BRAC positions may wish to spend relatively less on housing than they could afford to spend. This is perfectly intuitive and also consistent with U.S. Census data indicating that the average household spends 13 percent of income on mortgage or rent.[14]

With 25 percent of income devoted to mortgage payments, the analysis used here implicitly assumes close to 29 percent of income devoted to housing. BLS data also indicate the average U.S. household spends almost 5 percent of income on utilities, not including telephone services. This suggests that a household spending 25 percent of income on a mortgage is likely spending 34 percent of income on housing and utilities, almost the limit of affordability as defined by the U.S. Department of Housing and Urban Development. BLS data are from the Consumer Expenditure Survey, 2006.

[14] Bureau of Labor Statistics, Consumer Expenditure Survey, 2006.

Exhibit II-23: Housing value preferences of DISA/JTP-GNO workers

Housing values	*Share of demand*
Up to $150,000	5%
$150,000-$300,000	36%
$301,000-$500,000	41%
$501,000-$700,000	14%
Over $700,000	3%

As noted above, the value of housing that could be purchased given expected household incomes ranges from $237,000 to over $573,000. The households of induced workers and more junior on-base and contractor-tail workers constitute 40 percent of the estimated total housing demand and can afford homes averaging from $237,000 to $255,000. At the other end of the range, almost one in five household could afford homes averaging over $570,000.

Within these averages, there is a range of affordable housing values. This is particularly true for induced and indirect workers and the more junior on-base and contractor-tail workers. For these categories of workers, there is a broader range of compensation compared to the more senior workers where each cohort (e.g., GS 12, Captain) is relatively homogeneous.

Not all DISA/JTP-GNO workers responding to the May 2008 survey expressed an interest in buying housing. Of those expressing a preference, about one in five indicated an interest in renting an apartment, condominium, or single family home.

For those opting to rent rather than buy, the estimated monthly rent that could be afforded is presented in Exhibit II-24. This is based on devoting a maximum of 30 percent of total household income to rent.[15] The share of demand assumes an equal propensity to rent for all types of workers.

Exhibit II-24: Estimated monthly rent payments for BRAC-related workers at FGGM

Pay level/type of worker	*Value of housing*			*Share of demand*		
	Mid-case	Low case	High case	Mid-case	Low case	High case
Induced workers	$1,619	$1,619	$1,619	30%	30%	30%
GS 1-11, up to 1st Lieutenant	$1,742	$1,738	$1,746	10%	11%	10%
Indirect workers	$2,105	$2,105	$2,105	12%	12%	12%
GS 12, Captain	$2,570	$2,570	$2,570	10%	10%	10%
GS 13, Major	$3,056	$3,056	$3,056	18%	18%	18%
GS 14-18, up to Major General	$3,913	$3,899	$3,911	19%	19%	19%
Source: Sage						

[15] As noted earlier, BLS data indicate 5 percent of income on average is devoted to utilities. Thus spending 30 percent of income on rent assuming utilities were the renter's responsibility would equate to the 35 percent affordability limit for income devoted to housing and utilities.

Further, the allocation of housing demand presented earlier can be disaggregated into a demand for purchased housing and rental housing. The estimated allocation assumes that induced and indirect workers have the same preferences for owned versus rented housing as do the on-base and contactor-tail workers.

On the basis of the survey of workers likely to move when their jobs are transferred to FGGM, it is estimated that just over four out of five households would prefer to purchase housing with the remaining households preferring to rent. This is a somewhat higher share of owners than is found in the Maryland counties where these households are likely to find housing. In those 12 jurisdictions, not quite three of four households own their homes. The own/rent split varies among the jurisdictions with Baltimore City having an almost equal number of households owning and renting while some of the more rural or exurban counties have ownership rates well above 80 percent.

Given the higher proportion of likely owners among those seeking housing as a result of BRAC impacts at FGGM, the actual splits between owners and renters in each jurisdiction have been adjusted in favor of ownership. Nevertheless, each individual jurisdiction's tendency towards ownership or renting has been maintained. These adjustments have been made on a jurisdiction by jurisdiction basis so that the estimated total demand for owner-occupied and rental housing in the Maryland jurisdictions is consistent with the stated preferences as measured by the survey of those likely to relocate. That is, almost one in five will rent; the others will seek to own. Exhibit II-25 summarizes this demand by jurisdiction for the initial period following job relocations to FGGM.

Exhibit II-25: Summary net increase in housing demand by jurisdiction by owned/rented: initial demand

Jurisdiction	*Net demand; owner-occupied housing*			*Net demand; rental housing*		
	Mid-case	Low case	High case	Mid-case	Low case	High case
Anne Arundel County	1,793	1,613	1,973	329	296	362
Howard County	908	817	1,000	227	204	250
Baltimore County	528	475	581	132	119	145
Carroll County	437	393	481	65	59	72
Baltimore City	188	169	207	101	91	112
Other Prince George's County	159	143	175	53	48	58
Montgomery County	137	123	151	39	35	43
Harford County	114	102	125	20	18	22
The City of Laurel	54	49	60	18	16	20
Other Maryland	212	190	233	61	55	68
Virginia	184	165	202	35	32	39
Pennsylvania	118	106	130	26	23	28
Washington, D.C.	63	57	70	9	8	10
West Virginia	6	5	6	1	1	2
Delaware	2	2	3	1	1	1
Total	4,903	4,409	5,396	1,118	1,006	1,231
Source: Sage						

When a steady state of demand is reached, substantially more households will be seeking either owner-occupied or rental housing. This estimated demand by jurisdiction is listed in Exhibit II-26.

Exhibit II-26: Summary net increase in housing demand by jurisdiction by owned/rented: steady state

Jurisdiction	*Net demand; owner-occupied housing*			*Net demand; rental housing*		
	Mid-case	Low case	High case	Mid-case	Low case	High case
Anne Arundel County	2,916	2,616	3,216	535	480	590
Howard County	1,477	1,325	1,629	369	331	407
Baltimore County	859	771	948	215	193	237
Carroll County	710	637	783	106	95	117
Baltimore City	306	275	338	165	148	182
Other Prince George's County	258	232	285	86	77	95
Montgomery County	223	200	246	63	56	69
Harford County	185	166	204	33	29	36
The City of Laurel	88	79	97	29	26	32
Other Maryland	344	309	380	100	90	110
Virginia	299	268	330	57	51	63
Pennsylvania	192	172	211	42	38	46
Washington, D.C.	103	92	113	15	14	17
West Virginia	9	8	10	2	2	3
Delaware	4	3	4	1	1	1
Total	7,974	7,154	8,795	1,819	1,632	2,006

Source: Sage

Chapter 2: Fort Meade Area Housing Supply and its Relation to BRAC Demand

Key Findings:

Base Realignment and Closure will largely be associated with reductions in the level of active unsold existing inventory in the years ahead and will be less associated with new construction than had been presumed when BRAC's prospective impacts on Central Maryland were first being explored in 2005.

Sage concludes that under the low case, new construction would be reduced 80 percent in 2009 and 40 percent in 2010 relative to the pace of construction that would prevail but for the nearly unprecedented softness in the local housing market.

Consequently, rather than adding almost 4,000 new housing units in 2009-2010, Anne Arundel County would see not quite 1,600 total new units added in those two years.

For Howard County, the reductions in new construction would be from almost 3,900 units in the high case to just over 1,500 units in the low case.

For the City of Laurel, the roughly 750 new additions to the housing stock projected under the high case would decrease to about 400 units in the low case.

Despite the expected lack of building, the inventory of unsold homes is expected to remain higher than normal in the near-term.

The presence of BRAC effects emanating for Fort George G. Meade will help to stabilize housing prices in 2010, which in turn should permit the homebuilding industry to eventually return toward previously established rates of development sometime thereafter.

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List of Exhibits

I. Introduction

Purposes and objectives

This analysis is concerned with the supply of housing in Anne Arundel County, Howard County, and Laurel that would be available to meet this housing demand. These three jurisdictions are projected to be the preferred location of 55 percent of those seeking housing as a result of projected BRAC job increases at FGGM.

The location of BRAC jobs is another source of uncertainty. There is evidence that most of the contractors that will work for the FGGM agencies relocating through the BRAC process will want to locate as close as possible to FGGM and may even have office space on base. Less clear are the locations of the indirect and induced jobs associated with BRAC at FGGM. The location of jobs is a highly influential factor in determining the location of unconstrained housing demand, which in turn relates to questions of housing supply. Over the next few years, it will become more obvious where these various types of jobs will be located, clarifying issues of housing demand and supply, and allowing policymakers to react according to circumstances.

This chapter will address the historic stock and projections for the region's housing stock through 2015. It is not clear whether the steady state demand will be realized by 2015, but that time horizon may be a reasonable limit on what can be projected for the housing supply.

II. Housing supply in Anne Arundel County, Howard County, and Laurel

This review of the housing supply in the jurisdictions surrounding FGGM addresses not only the current status of the housing market, but also the projected future supply and the historic nature of the housing stock. The goal is to provide a long-term perspective on housing supply. In reviewing the various data sources, another goal is to provide the most reasonable estimate of the future supply of housing in the context of lingering uncertainties regarding the level of new construction and augmentation of the total housing stock.

Existing and historic stock

In theory, getting an accurate count of the current number of housing units in Anne Arundel County, Howard County, and the City of Laurel should be a reasonably straightforward exercise. In practice, a review of standard sources of housing data shows disparities among the estimates. In some cases these disparities are significant and not obviously resolved.
Exhibit II-1 presents historic and recent estimates of the total housing stock from frequently used secondary sources. These sources include the U.S. Census, the Maryland Department of Planning, and Decision Data, one of a number of proprietary data services that gathers data from various sources. [16]

Exhibit II-1: Housing inventory—historic and recent conditions

Jurisdiction	*Housing units, total, 2000 (1)*	*Housing units, total, 2004 (2)*	*Housing units, total, 2006 (1)*	*Housing units, total, 2007(3)*
Anne Arundel County	186,937	183,991	201,602	204,109
Howard County	92,818	94,651	102,807	104,259
City of Laurel	9,548	N.A.	N.A.	10,191

Notes: 1. Data from U.S. Census for 2000 and 2006
2. Data from Maryland Department of Planning for 2004.
3. Data from Decision Data for 2007.

Fortunately there are data from Anne Arundel County, Howard County, and the City of Laurel that can serve as additional comparisons to these estimates. Anne Arundel County's Department of Planning and Zoning maintains historic and projected estimates of housing and population that indicate a countywide total of 194,432 housing units for 2006, substantially more than the Maryland Department of Planning estimate for 2004, but also well below the Census estimate for 2006. The Howard County Department of Planning and Zoning's tally of the housing stock is 101,441 units as of January 1, 2006. Given that the county's estimate for new construction in 2007 was 1,470 units, this enumeration of the existing housing stock is consistent with the U.S. Census estimate of 102,807 units for the county. Alternatively, it appears that the most current housing stock estimate for the City of Laurel shown in Exhibit II-1 is a significant undercount of actual conditions. The City of Laurel's capital improvement program estimates that the total housing stock in June 2007 was 11,544 and increased to 12,055 by June 2008. These estimates both represent substantially higher values than the 2007 estimate shown in the exhibit.

[16] Maryland Department of Planning housing stock estimates are from the Department's 2006 "BRAC Report" which analyzed housing supply and demand in the counties most likely to be affected by BRAC.

Recent data on authorization for new construction reflects the potential pace of housing stock expansion in the three jurisdictions. From 2002 to 2006, Anne Arundel County authorized construction of an annual average of 2,327 housing units. As shown in Exhibit II-2, Howard County authorized an average of 1,642 housing units for construction each year in the 2002-2006 period. For both counties, about three out of four of these housing units were single-family residences. Data for the City of Laurel are incomplete for this period.

Exhibit II-2: Housing Units Authorized for Construction, 2002-2006

Year	*Type of housing*	*Anne Arundel County*	*Howard County*	*City of Laurel*
2002	Total	2,359	1,547	
	Single Family	2,026	1,341	41
2003	Total	3,001	1,479	
	Single Family	2,164	1,010	211
2004	Total	2,364	1,837	
	Single Family	1,769	1,284	35
2005	Total	2,495	1,778	
	Single Family	1,565	1,340	
2006	Total	1,414	1,567	
	Single Family	1,108	1,040	
Total	Total	11,633	8,208	N.A.
	Single Family	8,632	6,015	287
Average: 2002-2006	Total	2,327	1,642	N.A.
	Single Family	1,726	1,203	N.A.

Source: Maryland Department of Planning, Maryland State Data Center

For both counties, the current housing stock is heavily weighted in favor of owner-occupied housing. Roughly three of four residences in the counties are owner-occupied. Alternatively, about 40 percent of the housing units in the City of Laurel are owner-occupied while a majority is renter-occupied.

As shown in See Exhibit II-3, Vacancy rates vary among the jurisdictions. In 2006, Anne Arundel County recorded the highest vacancy rate at 6.3 percent while Howard County had the lowest rate at 3.8 percent. Vacancies in Laurel amounted to 5.8 percent of total housing units. Data presented for Laurel are from 2000 (the most recent year available from the Census for the City), while data for the counties are from 2006.

Exhibit II-3: Housing inventory characteristics

Jurisdiction	*Housing units, total*	*Housing units, occupied*	*Housing units, owner occupied*	*Housing units, renter occupied*	*Housing units, vacant*
Anne Arundel County (1)	201,602	188,944	146,616	42,328	12,658
Howard County (1)	102,807	98,919	75,866	23,053	3,888
City of Laurel (2)	9,548	8,998	3,759	4,505	550

Notes: 1. Data for Anne Arundel and Howard counties are for 2006.
2. Data for City of Laurel are for 2000.
Source. US Census, American FactFinder

As is true for estimates of recent housing stock, published secondary sources provide contradictory estimates of future housing inventories. Data for 2009, 2012, and 2015 for the two counties are presented in Exhibit II-4. As was true for recent historical estimates of the housing stock, projections by the Maryland Department of Planning indicate less availability than local estimates. For the counties, the 2009 projections by the State's planning department are lower than the Census estimates of 2006 housing supply (see Exhibit II-1). The 2012 projections for the counties appear to be more reasonable estimates of future conditions as they appear to be consistent with the annual rate increases in recent years in authorized new residential construction. The 2012 estimate for Laurel is below the city's estimates of actual housing units in 2007 and should be considered a significant undercount of likely future housing supplies in Laurel.

Exhibit II-4: Housing inventory—projected

Jurisdiction	*Housing units, total, 2009 (1)*	*Housing units, total, 2012 (2)*	*Housing units, total, 2015 (1)*
Anne Arundel County	192,692	215,685	204,803
Howard County	101,763	111,619	113,922
City of Laurel	N.A.	10,716	N.A.

Notes: 1. Data from Maryland Department of Planning 2009 and 2015.
2. Data from Decision Data for 2012.

The Howard County Department of Planning and Zoning generates projections of future housing supply by sub-county area. Year-to-year projections of new residential construction vary significantly within sub-county areas and for the county as a whole. In 2007, the county reported an increase of 1,470 housing units, the smallest increase in the period from 2007 through 2015. The largest annual increase is projected to be in 2009 when 1,956 units are estimated to be built. The number of new housing units is expected to decline each year following that predicted 2009 peak. Over the entire 9-year period covered by these projections, the average annual increase is 1,811 housing units, which represents approximately a 10 percent increase from the annual increases of 2002 through 2006. Detailed data on Howard County's projected annual increases in residential construction are listed in Exhibit II-5. The data for 2006 are the total existing housing units for that year.

Exhibit II-5: Howard County projections of new residential construction

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Elkridge	12,758	250	255	253	250	200	180	180	214	180
Columbia	39,029	63	213	113	173	220	158	158	104	110
Southeast	13,421	302	302	342	302	302	320	320	320	320
Rural West	12,907	250	250	250	250	250	250	250	250	250
Ellicott City	21,563	348	348	348	353	348	358	358	358	358
Senior East	1,606	257	277	267	275	263	251	254	258	223
Route 1	157		292	383	309	286	350	269	290	265
Total	101,441	1,470	1,937	1,956	1,912	1,869	1,867	1,789	1,794	1,706

Note: The data for 2006 are the total existing housing units for that year.
Source: Howard County Department of Planning and Zoning

The projected total housing stock for Howard County based on the planning department's estimates of future residential construction is summarized in Exhibit II-6. These projections indicate a future supply of housing in Howard County that is larger than the projections of either the Maryland Department of Planning or Decision Data, the proprietary data service. Given the county's close proximity to the local housing market, these projections are considered the most reasonable estimates of future housing supply.

Exhibit II-6: Howard County projections of total housing stock

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Elkridge	12,758	13,008	13,263	13,516	13,766	13,966	14,146	14,326	14,540	14,720
Columbia	39,029	39,092	39,305	39,418	39,591	39,811	39,969	40,127	40,231	40,341
Southeast	13,421	13,723	14,025	14,367	14,669	14,971	15,291	15,611	15,931	16,251
Rural West	12,907	13,157	13,407	13,657	13,907	14,157	14,407	14,657	14,907	15,157
Ellicott City	21,563	21,911	22,259	22,607	22,960	23,308	23,666	24,024	24,382	24,740
Senior East	1,606	1,863	2,140	2,407	2,682	2,945	3,196	3,450	3,708	3,931
Route 1	157	157	449	832	1,141	1,427	1,777	2,046	2,336	2,601
Total	101,441	102,911	104,848	106,804	108,716	110,585	112,452	114,241	116,035	117,741

Source: Howard County Department of Planning and Zoning

The Baltimore Metropolitan Council's recent projections of housing units in Howard County included a distribution by housing type. When applied to the projections of total housing stock compiled by the county's Department of Planning and Zoning, these percentage distributions generate the projected number of housing units by type as presented in Exhibit II-7.

These numbers show a clear trend in relative increases in apartments (both rental units and condominiums) and in age-restricted (AR) housing. The latter represents a small fraction of all county housing—fewer than 1,400 total units in 2005, but is expected to grow to almost 5,200 in 2015, an increase of 271 percent.

These trends reflect the more recent county experience in new construction. In fiscal year 2007, 40 percent of new units were single-family detached housing, 36 percent were single-family attached housing, and the remaining 23 percent were apartments. Not only did this fiscal year produce the smallest number of new units built in the county in the previous 5 years, but also the smallest percentage of single-family attached housing units. Over 30 percent of the housing built in fiscal year 2007 was age-restricted, mostly single-family attached units and apartments. The pipeline of approved housing in Howard County is primarily townhouse and condominium units.

These trends toward age-restricted housing and townhouses and apartments reverse longstanding county trends associated with the construction of primarily single-family detached housing; they may well have an impact on the county's ability to satisfy BRAC-related housing demand. Age-restricted housing will be unresponsive to most BRAC-related demand while the development of townhouses and apartments which are generally less expensive than single-family detached housing may broaden the appeal of the county's housing to BRAC households.

Exhibit II-7: Howard County projections of total housing stock by housing type

*Type of housing **	*2005*	*% of total*	*2010*	*% of total*	*2015*	*% of total*
SFD	55,042	54.9%	57,625	53.0%	60,624	51.5%
SFA	20,319	20.3%	22,113	20.3%	24,184	20.5%
APT	21,940	21.9%	23,598	21.7%	26,154	22.2%
MH	1,559	1.6%	1,602	1.5%	1,605	1.4%
AR- SFD	28	0.0%	126	0.1%	311	0.3%
AR-SFA	367	0.4%	1,411	1.3%	1,907	1.6%
AR-APT	999	1.0%	2,241	2.1%	2,956	2.5%

Note: * SFD = single-family detached. SFA = single-family attached. APT = apartment. MH = mobile homes. AR = age-restricted. Sources: Howard County Department of Planning and Zoning, Baltimore Metropolitan Council, Sage

The City of Laurel maintains estimates of future new housing construction by type of housing. These estimates of new construction are available through 2015 and are shown in Exhibit II-8. Year-to-year additions to Laurel's housing stock vary substantially depending upon the number of multifamily units being constructed. Peak years for new construction are 2010 and 2011.

Exhibit II-8: City of Laurel projections of new residential construction

Type of housing	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
SF & Two family	2,490	35	39	33	15				
Townhouse	2,302	20	40	65	65	50	50		350
Multi-family	6,752	456	25	550	490	50	400		
Total	11,544	511	104	648	570	100	450	-	350

Note: The data for 2007 are the total existing housing units for that year.
Source: City of Laurel

The total projected housing stock for the City of Laurel is shown in Exhibit II-9. The total number of housing units increases from 11,544 in 2007 to 14,277 in 2015. As shown in the exhibit, the majority of these housing units are in multifamily structures. Townhouses constitute roughly 20 percent of housing units. Single-family and two-family units also constitute about one in five housing units in Laurel. By 2015, single-family and two-family housing will be the least common type of housing in the city.

Exhibit II-9: City of Laurel projections of total housing stock

Type of housing	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
SF & Two family	2,490	2,525	2,564	2,597	2,612	2,612	2,612	2,612	2,612
Townhouse	2,302	2,322	2,362	2,427	2,492	2,542	2,592	2,592	2,942
Multi-family	6,752	7,208	7,233	7,783	8,273	8,323	8,723	8,723	8,723
Total	11,544	12,055	12,159	12,807	13,377	13,477	13,927	13,927	14,277
Source: City of Laurel									

The projection of the total housing stock in Anne Arundel County is based on the Round 7B forecast developed by the Anne Arundel County Department of Planning and Zoning. These projections include data on single-family detached, single-family attached, and multifamily housing units. These projections are made for six individual fiscal analysis zones within the county. Exhibit II-10 summarizes these projections by fiscal analysis zone for the period from 2006 through 2015. These projections show a steady increase in the housing stock from a level of over 194,000 housing units in 2006 to almost 211,000 units in 2015.

Exhibit II-10: Anne Arundel County projections of total housing stock

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Annapolis	15,447	15,617	15,788	15,958	16,128	16,146	16,164	16,183	16,201	16,219
East	62,529	62,832	63,134	63,437	63,752	64,084	64,429	64,773	65,118	65,355
North	55,766	56,306	56,847	57,387	57,775	58,417	58,907	59,398	59,888	60,368
South	12,904	12,958	13,011	13,065	13,122	13,181	13,243	13,306	13,368	13,443
West	45,269	46,167	47,066	47,964	48,954	49,547	50,231	50,916	51,600	52,761
Ft. Meade	2,517	2,533	2,550	2,566	2,583	2,615	2,647	2,678	2,710	2,742
Total	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
Sources: Anne Arundel County Department of Planning and Zoning, Sage										

The future housing stock of Anne Arundel County can also be disaggregated into housing type for each of the sub-county areas. Exhibit II-11 presents the estimated total number of housing units in each sub-county area as well as the number of single-family detached, single-family attached, and multifamily housing units. The distribution of housing types is expected to change very little over time. Almost two of three county housing units are now and are expected to remain single-family detached units with the remaining units split fairly evenly between single-family attached and multifamily units.

Exhibit II-11: Anne Arundel County projections of total housing stock by sub-county area by housing type

*Sub-county area and housing type **	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Annapolis	15,447	15,617	15,788	15,958	16,128	16,146	16,164	16,183	16,201	16,219
• SFD	6,055	6,122	6,189	6,256	6,322	6,330	6,337	6,344	6,351	6,358
• SFA	3,090	3,124	3,158	3,192	3,226	3,230	3,233	3,237	3,241	3,244
• MF	6,302	6,371	6,441	6,510	6,580	6,587	6,594	6,602	6,609	6,617
East	62,529	62,832	63,134	63,437	63,752	64,084	64,429	64,773	65,118	65,355
• SFD	50,530	50,775	51,019	51,264	51,519	51,787	52,065	52,344	52,622	52,814
• SFA	6,909	6,942	6,976	7,009	7,043	7,081	7,119	7,157	7,195	7,221
• MF	5,090	5,115	5,140	5,164	5,190	5,217	5,245	5,273	5,301	5,320
North	55,766	56,306	56,847	57,387	57,775	58,417	58,907	59,398	59,888	60,368
• SFD	34,076	34,406	34,736	35,066	35,303	35,696	35,996	36,295	36,595	36,888
• SFA	9,009	9,096	9,184	9,271	9,333	9,437	9,516	9,596	9,675	9,752
• MF	12,681	12,804	12,927	13,050	13,137	13,284	13,395	13,507	13,618	13,728
South	12,904	12,958	13,011	13,065	13,122	13,181	13,243	13,306	13,368	13,443
• SFD	12,610	12,662	12,714	12,767	12,823	12,880	12,941	13,002	13,063	13,137
• SFA	115	115	115	116	116	117	118	118	119	119
• MF	180	181	181	182	183	184	185	185	186	187
West	45,269	46,167	47,066	47,964	48,954	49,547	50,231	50,916	51,600	52,761
• SFD	24,057	24,535	25,013	25,490	26,016	26,331	26,695	27,058	27,422	28,039
• SFA	13,418	13,684	13,951	14,217	14,510	14,686	14,889	15,092	15,294	15,638
• MF	7,793	7,948	8,103	8,257	8,428	8,530	8,648	8,766	8,883	9,083
Ft. Meade	2,517	2,533	2,550	2,566	2,583	2,615	2,647	2,678	2,710	2,742
• SFD	231	233	234	236	237	240	243	246	249	252
• SFA	1,348	1,357	1,366	1,375	1,384	1,401	1,418	1,435	1,452	1,469
• MF	937	944	950	956	962	974	986	998	1,010	1,021
Total	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
• SFD	127,560	128,733	129,906	131,078	132,220	133,264	134,277	135,289	136,302	137,488
• SFA	33,888	34,318	34,749	35,179	35,613	35,951	36,292	36,634	36,975	37,444
• MF	32,984	33,362	33,741	34,120	34,480	34,776	35,053	35,330	35,608	35,956
Distribution of total housing stock by housing type										
• SFD	65.6%	65.5%	65.5%	65.4%	65.4%	65.3%	65.3%	65.3%	65.3%	65.2%
• SFA	17.4%	17.5%	17.5%	17.6%	17.6%	17.6%	17.6%	17.7%	17.7%	17.8%
• MF	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%

Note: * SFD = single-family detached. SFA = single-family attached. MF = multifamily.
Sources: Anne Arundel County Department of Planning and Zoning, Sage

Exhibit II-12 summarizes projections of the total housing stock in Anne Arundel County, Howard County, and the City of Laurel. Of the three jurisdictions, Anne Arundel County has the largest housing stock with approximately 200,000 units currently in place. The county's total housing stock is expected to increase by over 5 percent by 2015 to almost 211,000 units. Howard County, with almost 107,000 units in its current housing stock, is expected to add almost 11,000 units by 2015, an increase of over 10 percent. The City of Laurel currently has over 12,000 units of housing and will add over 2,000 units by the end of 2015, an increase of over 17 percent.

Exhibit II-12: Summary of projections of total housing stock

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Anne Arundel County	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
Howard County	101,441	102,911	104,848	106,804	108,716	110,585	112,452	114,241	116,035	117,741
City of Laurel	N.A.	11,544	12,055	12,159	12,807	13,377	13,477	13,927	13,927	14,277
Sources: Howard County Department of Planning and Zoning, City of Laurel, Maryland Department of Planning, Sage										

Other Relevant Housing Markets

As was discussed in the demand study, a proportion of the BRAC-related housing demand will be beyond the boundaries of the immediate study area. That said, roughly two-thirds of FGGM BRAC-related aggregate housing demand will be concentrated in the primary study area. The other one-third will be satisfied in other jurisdictions, mostly in Maryland. The study team presumes that given the vastness of this area, which includes much of Prince George's County, all of Montgomery County, Baltimore County, Baltimore City, Harford County, Northern Virginia, the District of Columbia, and Maryland's Eastern Shore. This demand will be easily satisfied by available supply.

III. Current housing market

The current housing market is undergoing changes that are unprecedented. This downturn follows a housing market expansion that was similarly unprecedented. The significance of current conditions is that they may tend to act as a constraint on future housing supply.

Recent trends in housing sales

Over the past decade housing sales in Anne Arundel County, Howard County, and Prince George's County tended to increase from year to year until 2005. After 2005 housing sales have consistently fallen (Exhibit III-1). Data for Prince George's County are included as a proxy measure for the City of Laurel's housing market. Analogous data for Laurel are not available.

Exhibit III-1: Housing sales 1999-2008

Year	*Anne Arundel County*	*Howard County*	*Prince George's County*
1999	7,110	3,929	N.A.
2000	6,989	4,206	9,609
2001	7,961	4,492	11,270
2002	8,060	4,690	12,119
2003	8,739	4,765	13,455
2004	9,405	4,993	15,237
2005	9,347	4,866	15,067
2006	7,857	4,057	13,116
2007	6,502	3,467	7,568
Through October 2008	4,079	2,237	3,991
Source: Maryland Association of Realtors			

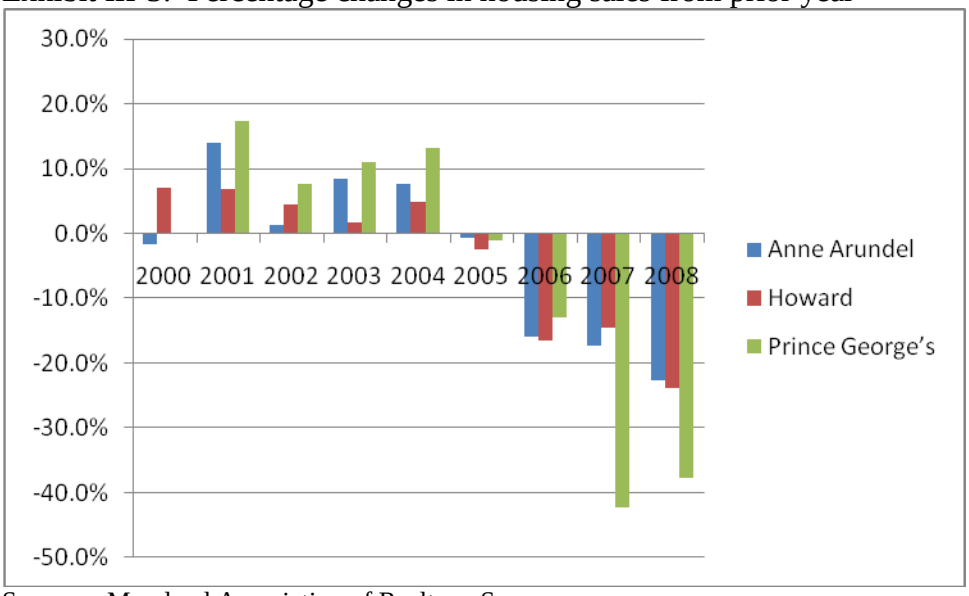
Year-to-year percentage changes in the number of housing units sold are presented in Exhibit III-2. The modest decrease in sales in 2005 relative to 2004 is followed by much more precipitous declines in year-to-year sales in 2006, 2007, and 2008. The values for 2008 represent the change in housing sales for the period of January to October 2008 compared to January to October 2007.

Exhibit III-2: Changes in housing sales from prior year

Year	*Anne Arundel County*	*Howard County*	*Prince George's County*
2000	-1.7%	7.1%	N.A.
2001	13.9%	6.8%	17.3%
2002	1.2%	4.4%	7.5%
2003	8.4%	1.6%	11.0%
2004	7.6%	4.8%	13.2%
2005	-0.6%	-2.5%	-1.1%
2006	-15.9%	-16.6%	-12.9%
2007	-17.2%	-14.5%	-42.3%
Through October 2008 (1)	-22.6%	-23.8%	-37.7%
Note: 1. Change in sales for October 2008 compares sales for first 10 months of 2008 with first 10 months of 2007. Sources: Maryland Association of Realtors, Sage			

These year-to-year changes in housing sales for the three jurisdictions are displayed graphically in Exhibit III-3. This chart dramatically shows the reversal of trends between the early years of this decade and the last few years.

Exhibit III-3: Percentage changes in housing sales from prior year



Sources: Maryland Association of Realtors, Sage

The median value for housing over the last decade is presented in Exhibit III-4. In all three counties these values steadily increased from 1999 to 2006. From 2006 to 2007, median values fell slightly in Anne Arundel County and Prince George's County while increasing very modestly in Howard County. Current prices in all three jurisdictions are significantly below the median values for 2007.

Exhibit III-4: Median value of housing for sale 1999-2008

Year	*Anne Arundel County*	*Howard County*	*Prince George's County*
1999	$150,000	$174,900	N.A.
2000	$156,900	$176,500	$135,000
2001	$163,000	$190,000	$140,000
2002	$189,500	$224,900	$157,874
2003	$221,000	$252,500	$183,000
2004	$269,900	$315,000	$226,900
2005	$325,000	$375,000	$296,000
2006	$344,000	$385,000	$330,000
2007	$340,000	$390,000	$320,000
Through October 2008	$320,000	$355,000	$260,000
Source: Maryland Association of Realtors			

Trends in year-to-year changes in median housing values can be seen in Exhibit III-5. The run-up in values in the early part of this decade is dramatic with all three jurisdictions showing double-digit increases in value for the period 2002 through 2005. For Prince George's County

this trend of annual double-digit increase in value continued into 2006. Modest decreases in value in 2007 are followed by much more dramatic decreases in value in 2008.

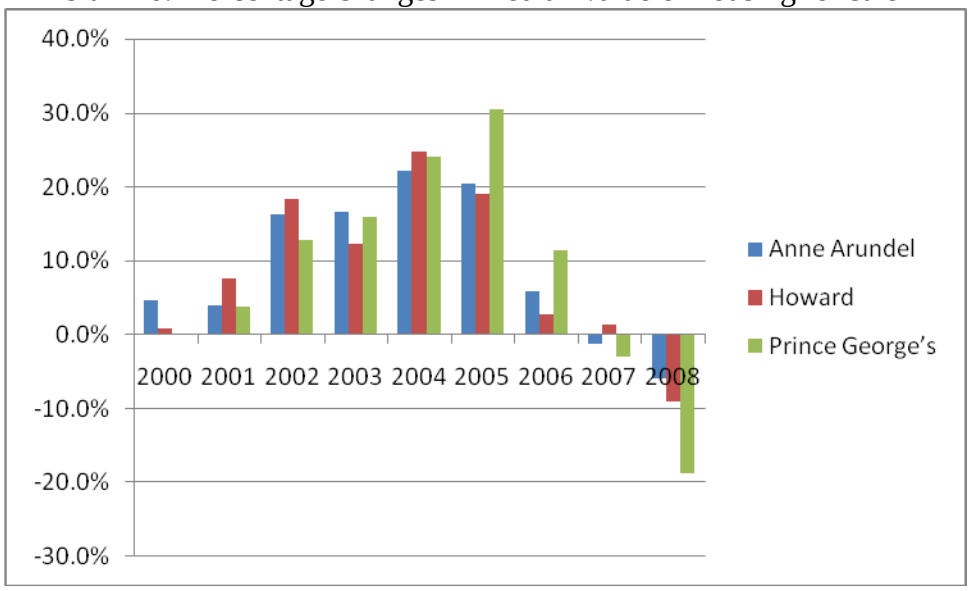
Exhibit III-5: Change in median value of housing for sale

Year	*Anne Arundel County*	*Howard County*	*Prince George's County*
2000	4.6%	0.9%	N.A.
2001	3.9%	7.6%	3.7%
2002	16.3%	18.4%	12.8%
2003	16.6%	12.3%	15.9%
2004	22.1%	24.8%	24.0%
2005	20.4%	19.0%	30.5%
2006	5.8%	2.7%	11.5%
2007	-1.2%	1.3%	-3.0%
Through October 2008 (1)	-5.9%	-9.0%	-18.8%

Note: 1. Change in sales for October 2008 compares sales for first 10 months of 2008 with first 10 months of 2007.
Sources: Maryland Association of Realtors, Sage

A chart of the year-to-year changes in the median value of housing for sale in the three jurisdictions clearly shows the reversal in values and the bursting of the housing bubble in the last two years (Exhibit III-6).

Exhibit III-6: Percentage changes in median value of housing for sale



Sources: Maryland Association of Realtors, Sage

In terms of volume of housing sales and the value of housing for sale, the market in Anne Arundel, Howard, and Prince George's Counties has clearly had a reversal of fortunes. This sluggishness in the housing market can also be seen in trends in the active inventory of houses for sale.

Active inventory is defined as the number of homes available for sale on the market at any given time. The Maryland Association of Realtors maintains monthly statistics on the active inventory

for each jurisdiction in Maryland. There are seasonal swings or cycles in any housing market; spring and summer tend to be more active times than the dead of winter. Therefore, market conditions in any one month may not reflect overall conditions for that year. Nevertheless, looking at the same month over a period of years provides a longer-term picture of overall changes in the housing market.

Exhibit III-7 provides statistics on housing sales and the active inventory of houses for sale in the month of October for each year from 1999 through 2008. As was true with annual sales, housing sales in October increased consistently from October 1999 through October 2004 or October 2005 and then leveled off before declining precipitously in October 2007 and October 2008.

Exhibit III-7: Housing sales and active inventory in October over time

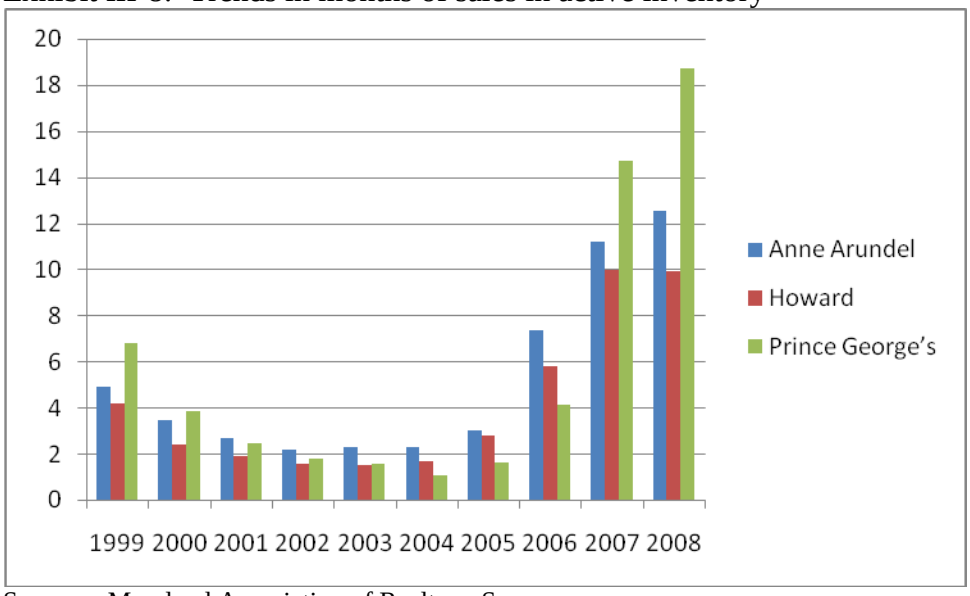
October of	*Units sold*			*Active inventory*		
	Anne Arundel County	Howard County	Prince George's County	Anne Arundel County	Howard County	Prince George's County
1999	550	297	716	2,697	1,236	4,878
2000	596	345	911	2,050	825	3,505
2001	637	351	967	1,708	656	2,391
2002	691	404	1,110	1,519	632	1,997
2003	711	397	1,287	1,617	589	2,040
2004	759	420	1,420	1,738	698	1,531
2005	794	368	1,383	2,395	1,022	2,220
2006	568	305	1,050	4,189	1,773	4,339
2007	401	204	471	4,484	2,037	6,928
2008	348	191	408	4,357	1,896	7,631
Source: Maryland Association of Realtors						

Trends in the active inventory were more complex. The active inventory tended to decrease from October 1999 to October 2002 or October 2003. From October 2005 to October 2008, active inventories grew substantially, almost doubling in Anne Arundel and Howard County and more than tripling in Prince George's County. Prince George's County is home to arguably the most unbalanced housing market in Maryland in terms of the lack of congruence between available supply and existing demand. This massive inventory could not only limit the expansion of housing stock in Prince George's County and in the City of Laurel, but also could reduce the amount of new construction in Howard and Anne Arundel counties.

One way of understanding active inventory is comparing it to the volume of sales and determining how long it would take to sell all units in the active inventory. Exhibit III-8 charts the number of months it would take to sell the active inventory available in October of each year from 1999 to 2008. These values are determined by dividing the active inventory values in Exhibit III-7 by the corresponding housing sales also shown in that exhibit. The trends are dramatic. In October 1999 it would have taken four to six months to sell the active inventory in the three counties. Over the next six years, from October 2000 to October 2005 it would have typically taken about two months to sell the active inventory. Then, in October 2006, it would have taken from four to over six months to sell the active inventory; in October 2007 it would

have taken as much as a year or more. By October 2008, the active inventory ranged from the equivalent of 10 months of housing sales in Howard County to over 18 months of sales in Prince George's County.

Exhibit III-8: Trends in months of sales in active inventory



Sources: Maryland Association of Realtors, Sage

This dramatic change in the length of time required to sell all the homes currently on the market may actually understate the difficult conditions that characterize this market. Although some data are anecdotal, there is evidence that a number of homeowners who would like to sell their homes are reluctant to place them on the market. The sluggishness and depressed prices that characterize the current housing market are well-known and presumably act as constraints on those who would otherwise choose to sell their homes. To the extent that this is true, the measured active inventory undercounts the size of the current housing market. These unsold units represent a shadow inventory that is impossible to quantify but possesses the potential to limit future construction activity.

IV. Two scenarios of future housing supply

One reasonable consequence of the size of the active inventory may be a reduction in new construction. If the current active inventory represents a year or more of housing sales, there is little incentive for builders and developers to create new homes that would enter a market already overburdened with unsold housing.

This apparent lack of incentive for new construction suggests two scenarios for future housing supply. The high case assumes that new construction would proceed according to current projections. The low case assumes that the large current inventory of unsold homes would discourage new construction in the near term (2009 and 2010) while the active inventory is slowly reduced to more typical levels.

Exhibit IV-1 follows the projections for housing stock shown above. These projections assume no impacts on new residential construction from the current turmoil in the housing market, specifically the large number of unsold homes that are on the market (i.e. the active inventory). Under this high case, Anne Arundel County adds almost 4,000 new units in 2009 and 2010; Howard County adds almost 3,900 units in that period, while the increase for the City of Laurel is about 750 units.

Exhibit IV-1: Summary of projections of total housing stock: high case

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Anne Arundel County	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
Howard County	101,441	102,911	104,848	106,804	108,716	110,585	112,452	114,241	116,035	117,741
City of Laurel	N.A.	11,544	12,055	12,159	12,807	13,377	13,477	13,927	13,927	14,277
Sources: Howard County Department of Planning and Zoning, City of Laurel, Maryland Department of Planning, Sage										

Given current housing market conditions in 2009 and early 2010, however, the overall housing stock in Anne Arundel County, Howard County, or the City of Laurel may expand at much slower rates than is suggested by the projections in Exhibit IV-1. Instead of a continued relatively robust expansion of the supply of housing, the market may experience a sharp reduction in new residential construction as builders and developers try to endure an extended period of inactivity while the active inventory is reduced to more typical levels.

Sage assumes that under a low case projection new construction would be reduced 80 percent in 2009 and 40 percent in 2010. These reductions are from the levels shown in Exhibit IV-1. Consequently instead of adding almost 4,000 new housing units in 2009 and 2010, Anne Arundel County would see not quite 1,600 new units added in those two years. For Howard County, the reductions in new construction would be from almost 3,900 units in the high case to just over 1,500 units in this low case. For the City of Laurel, the roughly 750 new additions to the housing stock projected under the high case would decrease to about 400 units in the low case. Exhibit IV-2 summarizes the low case housing projections. These projections assume that by 2011 new housing construction returns to the levels projected in the high case. Because of the slowdown in new construction under this low case, however, by 2011, the total projected

housing stock includes almost 2,400 fewer units in Anne Arundel County, over 2,300 fewer units in Howard County, and over 300 fewer units in the City of Laurel. The low case scenario maintains these reductions in the total housing stock through 2015.

Exhibit IV-2: Summary of projections of total housing stock: low case

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Anne Arundel County	194,432	196,414	198,395	198,791	199,954	201,630	203,262	204,893	206,525	208,528
Howard County	101,441	102,911	104,848	105,239	106,386	108,255	110,122	111,911	113,705	115,411
City of Laurel	N.A.	11,544	12,055	12,076	12,465	13,035	13,135	13,585	13,585	13,935
Sources: Howard County Department of Planning and Zoning, City of Laurel, Maryland Department of Planning, Sage										

Chapter 3: Stratification of Fort Meade Area Housing

Key Findings:

Despite the ongoing downturn in housing and the associated boost in active housing inventory, the study area remains largely unprepared for the impending influx of BRAC-related families that will require workforce housing.

In both Howard and Anne Arundel counties, the demand for housing priced under $200,000 will be either greater than available supply as measured by recent annual sales or will account for a substantial majority of such housing when BRAC impacts begin to be felt in earnest in 2010. It is anticipated that the situation will further deteriorate thereafter.

In the City of Laurel, however, the issue of workforce owner-occupied housing is not nearly as pressing.

With respect to all other price points, available supply appears to be adequate. This has much to do with the ongoing housing downturn, which has cut home sales volume not quite in half in the course of just three years.

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List of Exhibits

I. Introduction

Purposes and objectives

This report stratifies housing demand and housing supply, primarily by price, but also by type of housing and whether housing is owner occupied or renter occupied. The intent of the report is to understand more precisely how the demand for housing created by BRAC in Anne Arundel and Howard counties and the City of Laurel corresponds to the housing that is likely to be available. In addition to looking at the stratification housing supply and availability at the county level, this report also addresses the stratification of housing for planning areas within the two counties.

Another potentially confounding factor is the future trajectory of the federal budget. Specifically, recent announcements from the White House have suggested that defense contracting may be carefully scrutinized for potential cost savings. Any reduction in defense contractor funds may affect the degree to which agencies moving to FGGM use contractors to support their missions and, as a result, bring jobs to Central Maryland.

II. Stratification of demand

This report is concerned with stratifying both the demand for and the supply of housing in Anne Arundel and Howard counties and the City of Laurel. The first step is to look at the demand side of housing in the three jurisdictions.

Exhibits II-1 and II-2 provide the total net increase in housing demand that is expected initially and in the long run. The initial demand shown in Exhibit II-1 is forecasted to occur primarily in 2010. This initial demand is substantially affected by the fact that many of the relocated jobs are currently located in relatively nearby Northern Virginia. This proximity and the fact that many current job holders are apparently used to long daily commutes results in an estimate that almost two of five job holders will choose to commute from their current homes to FGGM when their jobs are relocated. As discussed later in this report, estimated demand for housing as shown in the following exhibits also takes into account the relatively more expensive housing in Anne Arundel and Howard counties compared to most Central Maryland jurisdictions. The impact of this more expensive housing is to reduce the estimated number of lower-income households who are part of overall BRAC-related demand that are expected to seek housing in Anne Arundel and Howard counties and to raise demand by lower income households in the City of Laurel and other Central Maryland jurisdictions.[17]

Exhibit II-1: Net increase in housing demand by jurisdiction due to BRAC: initial demand

Jurisdiction	*Estimated net housing demand (households)*		
	Mid-case	Low case	High case
Anne Arundel County	2,122	1,908	2,335
Howard County	1,135	1,021	1,250
Laurel (Prince George's County)	72	65	79
Other areas (1)	2,691	2,421	2,962
Total (2)	6,021	5,415	6,627

Notes: 1. Other areas include jurisdictions throughout Maryland as well as Virginia, Pennsylvania, the District of Columbia, West Virginia, and Delaware.
2. Totals may not add due to rounding.
Source: Sage

In the longer run it is expected that long-distance commuters will retire, change jobs, or perhaps tire of their daily commutes. As a result, a "steady state" of demand is expected to eventually emerge when BRAC related housing demand is based on all jobs associated with BRAC impacts at FGGM and the typical commuting behavior of workers in Central Maryland. At such a time, housing demand will be primarily in Central Maryland, but also to a minor extent in Washington, D.C., more distant Maryland counties, and surrounding states. This analysis assumes such a steady state is reached in 2015 although the process of retirement and job turnover may take longer, particularly given the current economic turmoil and the relatively high rates of unemployment. The estimated steady-state demand includes the initial demand.

[17] Montgomery County which like Anne Arundel and Howard counties has relatively expensive housing is projected to have less appeal for many lower income households and to essentially push these households into more affordable jurisdictions.

Exhibit II-2: Net increase in housing demand by jurisdiction due to BRAC: steady state

Jurisdiction	*Estimated net housing demand (households)*		
	Mid-case	Low case	High case
Anne Arundel County	3,451	3,096	3,806
Howard County	1,847	1,657	2,037
Laurel (Prince George's County)	117	105	130
Other areas (1)	4,378	3,927	4,828
Total (2)	9,793	8,785	10,801

Notes: 1. Other areas include jurisdictions throughout Maryland as well as Virginia, Pennsylvania, the District of Columbia, West Virginia, and Delaware.
2. Totals may not add due to rounding.
Source: Sage

Given the uncertainties associated with several factors that influence the number of jobs that will be relocated or created as a result of BRAC, the net increase in housing demand has been previously presented as a range of values. Although it is still prudent to consider new housing demand as a range, this report focuses on the mid-case estimates of new housing demand. This focus on the mid-case derives primarily from an interest in limiting the number of variables being considered in this stratification report.

Distribution of housing demand by income level

Income, especially household income, is considered the principal variable of interest in stratifying housing demand. The first step in stratifying that demand is an examination of the likely income associated with jobs that will be relocated because of BRAC.

For the roughly 5,700 jobs that will be relocating, there is relatively detailed information on pay associated with each job. In a previous report, the expected pay of civilian and military workers for each of the major agencies—Adjudication, Media, and DISA—moving to FGGM was provided.[18] That information is compiled in Exhibit II- 3, which lists the number of workers for each civilian (i.e. GS grades) or military (i.e. ES and O grades) pay grade or group of pay grades and the pay per job for those workers. For some groups of workers relevant pay grades cover a broad range while in other cases the number of workers for a specific pay grade is available. For most of the groups of workers, the range of pay grades is relatively narrow. Consequently this information provides a reasonably detailed and disaggregated picture of the income of these BRAC-related workers.

[18] Science Applications International Corporation, "BRAC activities affecting Aberdeen Proving Ground, Andrews Air Force Base, Bethesda Naval Hospital, and Fort Meade in the State of Maryland," Maryland Department of Business and Economic Development, March 31, 2006.

Exhibit II- 3: Pay associated with new, on-base BRAC jobs at FGGM

*Pay level **			*Number of jobs*			*Pay per job*	*Total jobs*	
GS grades	ES grades	O grades	Adjudi-cation	Media	DISA			
1-6				183		$28,854	183	3.2%
4-7					82	$35,625	82	1.4%
	1-7			88		$40,612	88	1.5%
5-10			31			$43,287	31	0.5%
					123	$50,949	123	2.2%
7-11				54		$51,183	54	0.9%
11					164	$61,510	164	2.9%
	8-9	1-2		26		$64,047	26	0.5%
12					656	$73,720	656	11.5%
11-13			900			$74,298	900	15.7%
12-13				151		$80,692	151	2.6%
		3-4		73		$82,523	73	1.3%
13					1,475	$87,664	1,475	25.8%
14					942	$103,594	942	16.5%
14-15				62		$112,725	62	1.1%
		5-6		30		$114,090	30	0.5%
15		6	20			$121,856	20	0.3%
15					615	$121,856	615	10.8%
16-18/SES				1	41	$151,856	42	0.7%
		7-8		1		$157,954	1	0.0%
Total			951	669	4,097		5,717	100.0%

Note: *GS pay is Step 5 rate; military pay is base plus subsistence and housing allowances.
Sources: SAIC, Sage

This exhibit provides the most detailed information available on pay of workers expected to relocate to FGGM. This information also allows for distribution of income for these workers. As is clear in the exhibit these on-base workers are relatively highly compensated with over a quarter of them expected to earn almost $90,000 and one-sixth to earn almost $104,000. On the other hand less than 7 percent of these workers are expected to earn under $50,000.

This information on wages of on-base workers provides a basis for creating estimates of the income distribution of workers associated with the contractor tail and indirect and induced employment created by BRAC. Workers in the contractor tail are expected to be compensated at rates essentially equal to those of the workers listed in Exhibit II-3.[19] The pay for indirect and induced workers, however, is expected to be lower than the pay for the direct workers (i.e. the

[19] Because the work of contractors in the contractor tail is considered to be roughly equivalent to the work of on-base employees in terms of its ability to create economic impacts, this analysis and previous Sage analyses of BRAC impacts regarding FGGM have defined on-base and contractor tail jobs as part of the "direct" impact of BRAC. Indirect jobs are a part of the extended business-to-business supply chain that is supported by the work done by these direct workers. Induced impacts are created by the consumer and household spending of the direct and indirect workers.

on-base and contractor tail workers). On average, indirect workers are expected to earn 76 percent and induced workers are expected to earn 58 percent of the income of direct workers.[20]

For this analysis it is assumed that the distribution of income for indirect and induced workers is similar to that of the distribution of income for on-base workers with the provision that the compensation of indirect and induced workers would be substantially less. Using this assumption it is possible to construct a table of pay levels associated with all direct, indirect, and induced workers. The 20 pay levels in this table correspond to those in Exhibit II-3 and pay for each direct job is taken directly from that exhibit. Corresponding pay for each indirect and induced job is calculated using the ratios of average pay for those types of jobs relative to direct jobs.

In considering demand for housing, it is important to evaluate household income rather than the wages of individuals. In its analyses of BRAC housing issues, the study team has assumed that household income equals on average 130 percent of the wages of BRAC related workers.[21] Using this assumption household income associated with each of the pay levels can be calculated. Exhibit II-4 lists pay levels for each of the 20 pay levels for each type of job and the associated household income for each type of job at each pay level. As shown the range of household incomes is very broad from not quite $22,000 for the lowest paid workers to over $200,000 for a household of the highest-paid worker.

[20] Based on analysis of likely jobs of these workers and pay levels in Central Maryland. Sage Policy Group, Inc., "Aberdeen Proving Ground BRAC impacts on seven jurisdictions," September 2007.

[21] Based on Census data, there are an estimated 1.6 jobs per household for non-retired households in Maryland. The estimate of household income as 130 percent of BRAC worker wages assumes the BRAC worker is the primary earner and that other household workers earn substantially less than the BRAC worker. These assumptions are generally conservative and may underestimate the housing purchasing power of BRAC-related households.

Exhibit II-4: Pay levels and associated household income for BRAC-related workers

Pay level	*Pay for job*			*Associated household income*		
	Direct job	Indirect job	Induced job	Direct job	Indirect job	Induced job
1	$28,854	$21,872	$16,829	$37,510	$28,434	$21,878
2	$35,625	$27,005	$20,779	$46,313	$35,106	$27,012
3	$40,612	$30,785	$23,687	$52,796	$40,021	$30,793
4	$43,287	$32,813	$25,247	$56,273	$42,657	$32,822
5	$50,949	$38,621	$29,716	$66,234	$50,207	$38,631
6	$51,183	$38,798	$29,853	$66,538	$50,438	$38,809
7	$61,510	$46,627	$35,876	$79,963	$60,615	$46,639
8	$64,047	$48,550	$37,356	$83,261	$63,115	$48,563
9	$73,720	$55,882	$42,998	$95,836	$72,647	$55,897
10	$74,298	$56,320	$43,335	$96,587	$73,216	$56,335
11	$80,692	$61,167	$47,064	$104,900	$79,517	$61,183
12	$82,523	$62,555	$48,132	$107,280	$81,322	$62,572
13	$87,664	$66,452	$51,131	$113,963	$86,388	$66,470
14	$103,594	$78,528	$60,422	$134,672	$102,086	$78,549
15	$112,725	$85,449	$65,748	$146,543	$111,084	$85,472
16	$114,090	$86,484	$66,544	$148,317	$112,429	$86,507
17	$121,856	$92,371	$71,073	$158,413	$120,082	$92,395
18	$121,856	$92,371	$71,073	$158,413	$120,082	$92,395
19	$151,856	$115,112	$88,571	$197,413	$149,645	$115,143
20	$157,954	$119,734	$92,128	$205,340	$155,655	$119,766
Average	$85,436	$64,763	$49,831	$111,066	$84,192	$64,780
Sources: SAIC, Sage						

Using the distribution of workers associated with each pay level, the distribution of income for BRAC-related households can be grouped into brackets. For example, the initial demand for BRAC housing totals 6,021 households including 3,448 direct households, 746 indirect households, and 1,827 induced households. The lowest pay level for induced households is approximately $22,000 and is the only pay level less than $25,000. This income level applies to 3.2 percent of these 1,827 induced households or 58 households.

Exhibit II-5 distributes all the households associated with net new demand for housing into income brackets commonly used by the U.S. Census so that comparisons can be made between BRAC-related households and all households in Central Maryland. The exhibit also quantifies the initial demand for housing and the steady-state demand for housing related to each of these income brackets. As shown, the largest number of households is associated with the $100,000 up to $150,000 income bracket. Only slightly smaller is the number of households in the $75,000 up to $100,000 bracket. Over 85 percent of all BRAC related housing demand will be generated by households earning $50,000 to $150,000.

Exhibit II-5: Distribution of net new BRAC-related housing demand by household income

Household income bracket	*Total households*		*Share of total*
	Initial demand	Steady state	
Less than $10,000	0	0	0.0%
$10,000 to $14,999	0	0	0.0%
$15,000 to $24,999	58	95	1.0%
$25,000 to $34,999	88	144	1.5%
$35,000 to $49,999	303	493	5.0%
$50,000 to $74,999	1,470	2,392	24.4%
$75,000 to $99,999	1,808	2,940	30.0%
$100,000 to $149,999	1,885	3,065	31.3%
$150,000 to $199,999	408	663	6.8%
$200,000 or more	1	1	0.0%
Total	6,021	9,793	100.0%
Source: Sage			

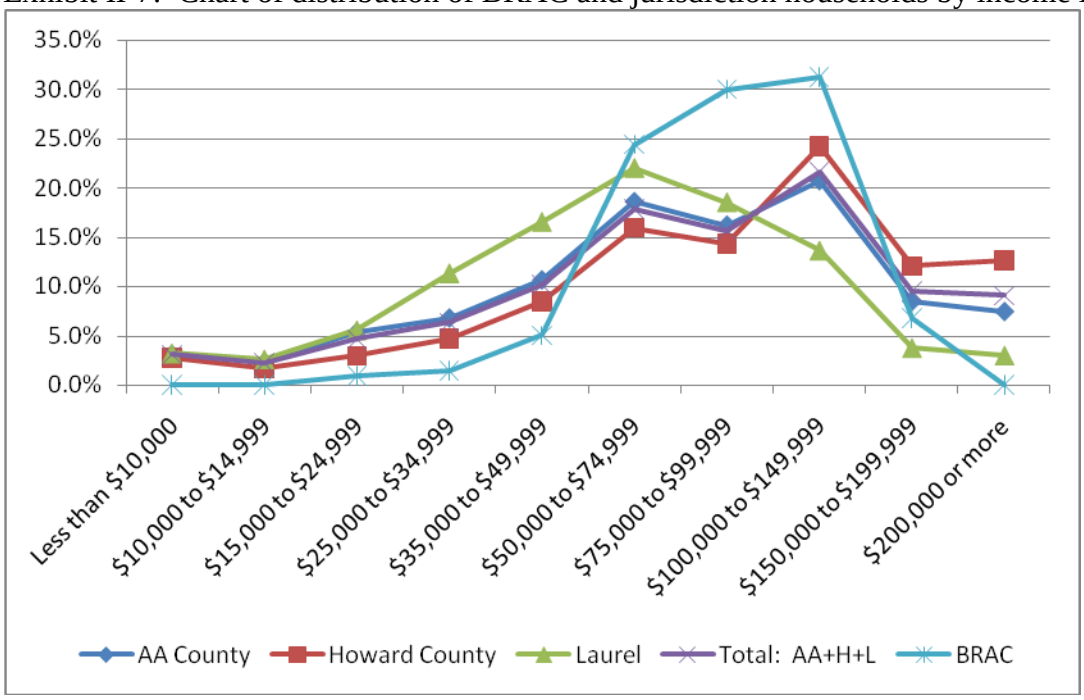
In comparison to the income distribution of all existing households in Anne Arundel and Howard counties and the City of Laurel, the income distribution of BRAC-related households has substantially fewer households earning less than $50,000 and also fewer households earning more than $150,000. Detailed information is provided in Exhibit II-6. The income brackets used in this table are those used by the U.S. Census so that a comparison of BRAC-related income distribution can be directly compared with all households in Anne Arundel and Howard counties and the City of Laurel.

Exhibit II-6: Distribution of BRAC households compared to the three jurisdictions

Household income bracket	*Anne Arundel County*	*Howard County*	*Laurel*	*Total: AA+H+L*	*BRAC*
Less than $10,000	3.1%	2.8%	3.2%	3.0%	0.0%
$10,000 to $14,999	2.4%	1.7%	2.6%	2.2%	0.0%
$15,000 to $24,999	5.4%	3.0%	5.5%	4.6%	1.0%
$25,000 to $34,999	6.8%	4.7%	11.3%	6.3%	1.5%
$35,000 to $49,999	10.7%	8.5%	16.5%	10.2%	5.0%
$50,000 to $74,999	18.6%	15.9%	22.0%	17.8%	24.4%
$75,000 to $99,999	16.2%	14.3%	18.5%	15.7%	30.0%
$100,000 to $149,999	20.7%	24.2%	13.6%	21.6%	31.3%
$150,000 to $199,999	8.5%	12.1%	3.7%	9.5%	6.8%
$200,000 or more	7.5%	12.6%	3.0%	9.0%	0.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Sources: U.S. Bureau of the Census, 2005-2007 American Community Survey 3-Year Estimates, Sage					

When converted to a chart, the distribution of income for BRAC households relative to those in the three jurisdictions clearly shows a greater concentration of income in the $50,000 to $150,000 range, as shown in Exhibit II-7. As with the prior two exhibits, the income brackets in Exhibit II-7 are household income and present information on the basis of income brackets commonly used by the U.S. Census.

Exhibit II-7: Chart of distribution of BRAC and jurisdiction households by income level



As discussed in the prior report on housing demand, Anne Arundel and Howard counties are home to some of the most expensive housing in Maryland. This is significant because some of the housing demand created by the BRAC relocation of jobs to FGGM will be from lower income households—2.5 percent of total housing demand, for example, will be from households estimated to have under $35,000 in annual income, another 5 percent of demand will be from households with annual incomes between $35,000 and $50,000.

Most of these lower income households are associated with the indirect and induced jobs supported by BRAC. Indirect workers are employed in firms that supply goods and services to, and are therefore dependent upon, the agencies and businesses that employ the direct BRAC workers. These indirect jobs cover a broad spectrum of activities that are inputs to the direct BRAC activities, including office supplies, professional services, utilities, and so on. This first set of suppliers will spend part of their BRAC-derived revenues on the goods and services they require to operate. This second set of suppliers will in turn spend part of their BRAC-related revenue on the goods and services they require. This cascading set of suppliers constitutes the indirect impacts of BRAC. When all direct and indirect workers spend their incomes they create an additional set of impacts that are considered the induced impacts. These can be broadly characterized as goods and services in the consumer-oriented sectors of the economy such as housing, retail, and services.

Compared to the direct BRAC jobs, there is more uncertainty regarding where the households associated with the indirect and induced jobs will seek housing. Logically, many of the first set of indirect suppliers may be located reasonably close to FGGM. Other things being equal, most agencies and businesses will rely on nearby businesses for office supplies and computer services. Other suppliers (e.g., local/regional utilities) are less likely to depend on proximity to direct BRAC work places. The locations of the suppliers of suppliers are also less likely to be

concentrated around FGGM. Given that most people shop primarily near where they live, induced employment workplaces are most likely to be tied to the residential locations of direct and indirect workers and, thus, more widely dispersed in Anne Arundel and Howard counties as well as other counties in Central Maryland. Because indirect and induced workers will commute to these more widely dispersed work places, it is likely that these workers will seek housing in more diffuse housing locations.

It would be possible to estimate the location of housing demand for indirect and induced workers by creating a series of models that relate commuting patterns to the locations of indirect and induced workplaces. For the indirect workers this would focus on a series of centers of employment stretching from Baltimore City to Washington, D.C. For induced workers this would involve at least a series of models that addressed commuting patterns from the Maryland jurisdictions with significant numbers of direct BRAC workers.

Rather than expend significant resources in the creation of such a web of interrelated models, this analysis made a simplifying assumption that indirect and induced workers as a group would have a greater tendency to seek housing in lower priced jurisdictions and not seek housing in higher priced jurisdictions (i.e. Anne Arundel, Howard, and Montgomery counties). Specifically, 20 percent of the indirect and induced workers who might otherwise seek housing in Anne Arundel and Howard counties are presumed to look elsewhere.[22] This housing demand, along with a similar share of workers who might otherwise seek housing in Montgomery County, was distributed among other Central Maryland jurisdictions on a prorated basis. When these factors are applied to the stratification of housing demand in the three jurisdictions of primary interest to this analysis, there is a slight adjustment in the distribution of household income with Anne Arundel and Howard counties shedding some lower income households and the City of Laurel, along with most other Central Maryland jurisdictions, gaining lower income households.

From a public policy perspective, this is far from optimal. Essentially, Sage concludes that lower-income workers will suffer much longer commutes than they would prefer. In order for shorter commutes to prevail, there would have to be significant effort and resources put forth by Anne Arundel and Howard counties in particular.

These analytical methods result in a distribution of BRAC-related household income in the three jurisdictions as shown in Exhibit II-8. This distribution of household income is made in relatively small dollar increments so that a more refined assessment of housing demand by price can be made. An additional $10,000 in income can make a considerable difference in housing purchasing power. For example, $10,000 in additional income equates to as much as an added $250 in monthly rent using standard definitions of affordability in rental housing (i.e. 30 percent of income devoted to rent).

[22] The lowest paid households among the indirect and induced households who constitute this 20 percent have estimated household incomes ranging from approximately $22,000 to $65,000. In the initial demand period, there are 325 such households and 174 households who would otherwise seek housing in Anne Arundel County and in Howard County, respectively. When the steady state is reached, the total number of affected households increases to 527 households for Anne Arundel County and 282 households for Howard County.

Exhibit II-8: Distribution of BRAC household income in the three jurisdictions

Household income bracket	*Anne Arundel and Howard counties*	*City of Laurel*
$20,000 to $29,000	1.6%	2.2%
$30,000 to $39,999	3.5%	3.7%
$40,000 to $49,999	2.0%	2.2%
$50,000 to $59,999	8.9%	11.3%
$60,000 to $69,999	10.2%	12.8%
$70,000 to $79,999	9.4%	11.8%
$80,000 to $89,999	3.7%	4.8%
$90,000 to $99,999	19.9%	17.3%
$100,000 to $124,999	22.0%	19.1%
$125,000 to $149,999	11.4%	9.0%
$150,000 to $174,999	6.9%	5.4%
$175,000 to $199,999	0.5%	0.4%
$200,000 or more	0.0%	0.0%
Total	100.0%	100.0%
Source: Sage		

When the percentage distributions shown in the prior exhibit are applied to the expected numbers of households seeking housing in the three jurisdictions, the distribution of housing demand by income can be quantified. For example, approximately 1.6 percent of the total number of households seeking housing in Anne Arundel County is estimated to have between $20,000 and $29,999 of household income. Given the total initial housing demand for Anne Arundel County from BRAC (i.e. 2,122 units of housing), an estimated 34 of these households would have an income of $20,000 to $29,999. This stratification of demand by price point is applied to the total housing demand for each of the three jurisdictions presented in Exhibits II-1 and II-2. That total housing demand already reflects adjustments for lower demand in Anne Arundel and Howard counties by indirect and induced workers' households and a resulting increase in demand in the City of Laurel by these indirect and induced workers' households.

Exhibit II-9 lists the number of households per income bracket. Housing demand is shown both in terms of initial demand and the so-called steady-state or long-run demand.

Exhibit II-9: Housing demand by household income bracket by jurisdiction

Household income bracket	*Initial demand*			*Steady state*		
	Anne Arundel	Howard	Laurel	Anne Arundel	Howard	Laurel
$20,000 to $29,000	34	18	2	55	29	3
$30,000 to $39,999	75	40	3	122	65	4
$40,000 to $49,999	43	23	2	69	37	3
$50,000 to $59,999	188	101	8	306	164	13
$60,000 to $69,999	216	115	9	351	188	15
$70,000 to $79,999	200	107	8	326	174	14
$80,000 to $89,999	78	42	3	127	68	6
$90,000 to $99,999	423	226	12	688	368	20
$100,000 to $124,999	466	249	14	759	406	22
$125,000 to $149,999	242	129	6	393	210	10
$150,000 to $174,999	147	79	4	239	128	6
$175,000 to $199,999	10	5	0	16	8	0
$200,000 or more	0	0	0	0	0	0
Total	2,122	1,135	72	3,451	1,847	117

Source: Sage

The housing purchasing power of these income tiers can be estimated by assuming that 25 percent of income is devoted to the principal and interest payments of a mortgage.[23] Affordable mortgages can be estimated assuming 30-year fixed loans at 6.5 percent for 90 percent of the price of housing for sale. Similarly, monthly rents can be estimated based on devoting a maximum of 30 percent of total household income to rent.[24] For each income bracket, the mid-point of the range is used to estimate housing values and monthly rents (e.g., $25,000 for the income bracket $20,000 to $29,000). Estimated housing values and monthly rents for each income bracket are presented in Exhibit II-10.

[23] Generally accepted government guidelines consider 30 percent of income as a maximum limit of affordability with no more than 35 percent of income devoted to housing payments and utility costs. Communications from Kurt Sommer, Maryland Department of Housing and Community Development, to Carl DeLorenzo, Sage Policy Group, Inc., October 24, 2008. According to the Bureau of Labor Statistics, the average American household spends 3.4 percent of income on property taxes. Insurance costs would also be considered part of income devoted to housing. With 25 percent of income devoted to mortgage payments, the analysis used here implicitly assumes close to 29 percent of income devoted to housing. BLS data also indicate the average U.S. household spends almost 5 percent of income on utilities, not including telephone services. This suggests that a household spending 25 percent of income on a mortgage is likely spending 34 percent of income on housing and utilities, almost the limit of affordability as defined by the U.S. Department of Housing and Urban Development. BLS data are from the Consumer Expenditure Survey, 2006.

[24] As noted earlier, BLS data indicate 5 percent of income on average is devoted to utilities. Thus spending 30 percent of income on rent assuming utilities were the renter's responsibility would equate to the 35 percent affordability limit for income devoted to housing and utilities.

Exhibit II-10: Housing purchasing power of BRAC households

Household income bracket	*Housing value*	*Monthly rent*
$20,000 to $29,000	$90,685	$625
$30,000 to $39,999	$126,959	$875
$40,000 to $49,999	$163,233	$1,125
$50,000 to $59,999	$199,508	$1,375
$60,000 to $69,999	$235,782	$1,625
$70,000 to $79,999	$272,056	$1,875
$80,000 to $89,999	$308,330	$2,125
$90,000 to $99,999	$344,604	$2,375
$100,000 to $124,999	$408,084	$2,813
$125,000 to $149,999	$498,769	$3,438
$150,000 to $174,999	$589,454	$4,063
$175,000 to $199,999	$680,139	$4,688
$200,000 or more	$725,482	$5,000
Source: Sage		

Finally, Exhibit II-11 compares this housing purchasing power with the number of households in each of these brackets, both for the initial housing demand and the steady state. For example, the initial housing demand in Anne Arundel County is expected to include 34 households seeking housing worth about $90,000 or housing with monthly rent of roughly $625. By the time a steady state is achieved, 55 BRAC-related households (including the initial 34 households) would be expected to be seeking housing in Anne Arundel County at those prices.

Exhibit II-11: Housing purchasing power and housing demand by BRAC households

Housing purchasing power		*Initial demand*			*Steady state*		
Housing value	Monthly rent	Anne Arundel	Howard	Laurel	Anne Arundel	Howard	Laurel
$90,685	$625	34	18	2	55	29	3
$126,959	$875	75	40	3	122	65	4
$163,233	$1,125	43	23	2	69	37	3
$199,508	$1,375	188	101	8	306	164	13
$235,782	$1,625	216	115	9	351	188	15
$272,056	$1,875	200	107	8	326	174	14
$308,330	$2,125	78	42	3	127	68	6
$344,604	$2,375	423	226	12	688	368	20
$408,084	$2,813	466	249	14	759	406	22
$498,769	$3,438	242	129	6	393	210	10
$589,454	$4,063	147	79	4	239	128	6
$680,139	$4,688	10	5	0	16	8	0
$725,482	$5,000	0	0	0	0	0	0
Total demand		2,122	1,135	72	3,451	1,847	117
Source: Sage							

III. Stratification of housing supply

The stratification of housing supply in the three jurisdictions is considered from several perspectives. An examination of the total housing stock provides the broadest perspective, while reviewing recent sales data and rental housing vacancy rates provides a more immediate understanding of the availability of housing.

For the two counties of interest, housing characteristics are also reviewed by sub-county areas. For Anne Arundel County, these sub-county regions are Fiscal Analysis Zones (FAZ) while in Howard County, the sub-county areas are ZIP codes.

Examining these sub-county areas offers advantages, but must also be considered with some caveats. The advantages include a more refined understanding of how the distribution of different prices or types of housing varies within the counties. This can be useful in examining issues such as the availability of less expensive housing. The data available at a sub-county level, however, is generally more limited in comparison to data available for counties.

Stratification of total housing stock by jurisdiction

The total housing stock in each county and in Laurel can be stratified either by housing value for owner-occupied units or by monthly rent for renter-occupied units. Exhibit III-1 provides data for owner-occupied housing from U.S. Census surveys over the period from 2005 to 2007. As indicated, Howard County has the most expensive owner-occupied housing followed by Anne Arundel County. Indeed, the median (i.e. typical) value of housing in Howard County for the 2005 to 2007 period was an estimated 24 percent higher than the median value of housing in Anne Arundel County and an estimated 61 percent higher than the median value of housing in Laurel.

Exhibit III-1: Value of owner-occupied units

Housing value	*Anne Arundel County*		*Howard County*		*Laurel*	
Less than $50,000	2,606	1.8%	1060	1.4%	13	0.2%
$50,000 to $99,999	2,186	1.5%	751	1.0%	54	1.0%
$100,000 to $149,999	4,180	2.9%	1,008	1.3%	294	5.6%
$150,000 to $199,999	8,559	5.9%	2,057	2.7%	603	11.5%
$200,000 to $299,999	32,550	22.4%	9,465	12.6%	2,007	38.4%
$300,000 to $499,999	54,619	37.5%	28,975	38.7%	1,943	37.1%
$500,000 to $999,999	34,529	23.7%	29,017	38.7%	270	5.2%
$1,000,000 or more	6,392	4.4%	2,561	3.4%	49	0.9%
Total	145,621	100.0%	74,894	100.0%	5,233	100.0%
Median (dollars)	$367,300		$456,400		$282,700	
Source: U.S. Bureau of the Census, 2005-2007 American Community Survey 3-Year Estimates						

Exhibit III-2 provides data for rental properties. Compared to owner-occupied housing, the price of rental housing is more consistent across the three jurisdictions. Median monthly rent in Howard County is less than $100 (or 6 percent) more than the median rent in Anne Arundel County and is $160 (or 14 percent) more than median rent in Laurel. The distribution of rental

properties for Laurel by monthly rent is not available from the U.S. Census. The median rent for the city is significantly below that of either of the counties, however. This suggests that rental properties in Laurel are more affordable than in either of the counties. Laurel also has a more even mix of rental and owner-occupied properties.

Exhibit III-2: Value of monthly rents for renter-occupied units, 2005-2007

Monthly rents	*Anne Arundel County*		*Howard County*		*Laurel*	
Less than $200	1,206	2.7%	312	1.3%	N.A.	N.A.
$200 to $299	974	2.2%	334	1.4%		
$300 to $499	1,221	2.8%	594	2.6%		
$500 to $749	2,777	6.3%	1,075	4.6%		
$750 to $999	7,593	17.2%	2,865	12.3%		
$1,000 to $1,499	18,031	40.8%	12,119	52.2%		
$1,500 or more	9,848	22.3%	5,064	21.8%		
No cash rent	2,557	5.8%	836	3.6%		
Total	44,207	100.0%	23,199	100.0%	4,691	100.0%
Median (dollars)	$1,176		$1,249		$1,036	
Source: U.S. Bureau of the Census, 2005-2007 American Community Survey 3-Year Estimates						

Given the absence of recent U.S. Census data on the distribution of rental property in Laurel by monthly rent, the study team has turned to an alternative source, City-data.com, which uses Census data and other sources to estimate this distribution for 2007. As the Census data suggest, the distribution of rental units by price indicates a greater proportion of lower priced housing in the city than in either Anne Arundel or Howard counties. Indeed according to these data, over half of all rental units had monthly rents below $1,000 as shown in Exhibit III-3.

Exhibit III-3: Value of monthly rents for renter-occupied units, Laurel, 2007

Monthly rents	Number of units	Share of total
Less than $500	136	2.9%
$500 to $749	1,333	28.8%
$750 to $999	1,879	40.6%
$1,000 to $1,499	1,102	23.8%
$1,500 or more	111	2.4%
No cash rent	68	1.5%
Total	4,629	100.0%
Sources: City-data.com, Sage		

Based on the number of occupied housing units listed in Exhibits III-1 and III-2, the distribution of rental versus owned housing can be compared across the three jurisdictions. As shown in Exhibit III-4, roughly three of four occupied housing units in the two counties are owner-occupied units. Alternatively, in the City of Laurel there is an almost even split between rental and owned housing.

Exhibit III-4: Distribution and number of occupied rental and owned housing units, 2007

Stratification of housing sales by jurisdiction

The characteristics of the entire housing inventory of each jurisdiction provide the most comprehensive perspective on the stratification of supply. Nevertheless, data on recent sales of housing may be a clearer indicator of the characteristics of available housing. Available data on housing sales can provide detailed information on housing prices, broad characteristics of housing that is sold, and other key factors.

Data on housing sales are available from different sources. The Metropolitan Regional Information System (MRIS) has data regarding sales made through real estate agents and includes detailed information on price, number of bedrooms, and whether units were condominiums or cooperatives. MRIS data are available for jurisdictions and ZIP codes and are relatively recent (e.g., on a monthly basis data are available through February 2009 as of early April 2009). The Maryland Department of Planning (MDP) also compiles data on housing sales. While data are not as recent (e.g., summary data for 2008 will not be available until June 2009), the data cover all sales—importantly including newly constructed housing—and provide information on housing type (e.g., single-family or townhouse). Moreover, MDP data can be configured to conform to the FAZ areas of Anne Arundel County. The advantages offered by MDP data are considerable and those data have been used in the discussion of recent housing sales.

Exhibit III-5 summarizes this information for the 7,945 housing units sold in Anne Arundel County in 2007. Housing is characterized by type and by price. The most common price point for housing sold in 2007 in the county was in the range of $250,000-$300,000. Almost three of five housing units sold in the county were priced between $200,000 and $400,000. Less than 6 percent of all housing units sold were priced under $200,000 while 3 percent were sold for $1 million or more. Just over 20 percent of sold units were priced between $400,000 and $600,000. The remaining 12 percent of housing sold in Anne Arundel County in 2007 were priced between $400,000 and $1 million.

Exhibit III-5: Anne Arundel County housing sales, 2007

Price class	*Single family*	*Townhouse*	*Condo*	*Other*	*Total sales*	
Under $100,000	10	14	1	0	25	0.3%
$100,000-$149,999	32	61	4	0	97	1.2%
$150,000-$199,999	102	144	77	0	323	4.1%
$200,000-$249,999	349	331	155	1	836	10.5%
$250,000-$299,999	601	754	160	5	1,520	19.1%
$300,000-$349,999	717	542	69	1	1,329	16.7%
$350,000-$399,000	590	344	26	1	961	12.1%
$400,000-$449,999	384	199	38	2	623	7.8%
$450,000-$499,999	303	86	17	1	407	5.1%
$500,000-$599,999	569	55	12	0	636	8.0%
$600,000-$699,999	396	23	15	0	434	5.5%
$700,000-$799,999	240	4	20	0	264	3.3%
$800,000-$899,999	140	2	18	0	160	2.0%
$900,000-$999,999	78	3	8	0	89	1.1%
$1,000,000-2,499,999	204	13	8	0	225	2.8%
$2,500,000-4,999,999	16	0	0	0	16	0.2%
$5,000,000 & Over	0	0	0	0	0	0.0%
Totals	4,731	2,575	628	11	7,945	100.0%
Sources: MDP, Sage						

Exhibit III-6 provides similar information for the 4,256 housing units sold in Howard County in 2007. Consistent with the higher median value for housing in Howard County in comparison to Anne Arundel County, the distribution of housing sales generally shows a larger number of higher priced sales in Howard County. The bulk of housing sold in 2007 (i.e., 42 percent) was in the range of $250,000 to $400,000. Less than 3 percent of all units were priced under $200,000 and almost the same percentage was priced over $1 million. More than one in four houses was priced at $400,000 to $600,000. Almost one in five houses sold in 2007 were priced between $600,000 and $1 million. In short, the typical home in Howard County is quite expensive.

Exhibit III-6: Howard County housing sales, 2007

Price class	*Single family*	*Townhouse*	*Condo*	*Other*	*Total sales*	
Under $100,000	1	1	1	1	4	0.1%
$100,000-$149,999	3	1	11	4	19	0.4%
$150,000-$199,999	2	4	95	1	102	2.4%
$200,000-$249,999	15	86	189	1	291	6.8%
$250,000-$299,999	46	297	158	4	505	11.9%
$300,000-$349,999	76	477	94	3	650	15.3%
$350,000-$399,000	193	394	35	0	622	14.6%
$400,000-$449,999	219	118	18	0	355	8.3%
$450,000-$499,999	212	94	4	1	311	7.3%
$500,000-$599,999	375	111	5	0	491	11.5%
$600,000-$699,999	352	32	2	0	386	9.1%
$700,000-$799,999	190	14	3	0	207	4.9%
$800,000-$899,999	129	4	1	0	134	3.1%
$900,000-$999,999	59	2	0	0	61	1.4%
$1,000,000-2,499,999	115	2	0	0	117	2.7%
$2,500,000-4,999,999	1	0	0	0	1	0.0%
$5,000,000 & Over	0	0	0	0	0	0.0%
Totals	1,988	1,637	616	15	4,256	100.0%
Sources: MDP, Sage						

Housing sales data for the City of Laurel for 2007 are listed in Exhibit III-7. These data confirm the picture of Laurel as the most affordable of the three jurisdictions of interest. The most common price range for housing in Laurel was between $200,000 and $250,000, accounting for almost 22 percent of all sales. Almost 73 percent of the housing sold was priced between $200,000 and $400,000. Not quite 11 percent of housing sales were for units priced under $200,000, all but one of these units priced between $150,000 and $200,000. One in six units was sold for prices between $400,000 and $900,000. No units were sold for prices over $900,000.

Exhibit III-7: City of Laurel housing sales, 2007

Price class	*Single family*	*Townhouse*	*Condo*	*Other*	*Total sales*	
Under $100,000	0	0	0	0	0	0.0%
$100,000-$149,999	0	0	1	0	1	0.2%
$150,000-$199,999	0	0	45	0	45	10.4%
$200,000-$249,999	3	6	85	0	94	21.8%
$250,000-$299,999	11	34	44	0	89	20.6%
$300,000-$349,999	21	54	13	0	88	20.4%
$350,000-$399,000	23	20	0	0	43	10.0%
$400,000-$449,999	19	1	0	0	20	4.6%
$450,000-$499,999	5	1	0	0	6	1.4%
$500,000-$599,999	18	4	0	1	23	5.3%
$600,000-$699,999	12	0	0	0	12	2.8%
$700,000-$799,999	8	0	0	0	8	1.9%
$800,000-$899,999	2	0	0	0	2	0.5%
$900,000-$999,999	0	0	0	0	0	0.0%
$1,000,000-2,499,999	0	0	0	0	0	0.0%
$2,500,000-4,999,999	0	0	0	0	0	0.0%
$5,000,000 & Over	0	0	0	0	0	0.0%
Totals	122	120	188	1	431	100.0%
Sources: MDP, Sage						

Stratification of rental housing vacancies by jurisdiction

Vacancy rates provide a measure of rental housing availability analogous to sales data for owner occupied housing. There are, however, more limited data for rental vacancies and these data do not provide as clear a picture of vacancies by monthly rent as the data on housing sales provide for housing of different prices.

Exhibit III-8 provides data regarding vacancy rates in the three jurisdictions and for Prince George's County from a variety of sources that can be documented and are considered reliable. For each jurisdiction the U.S. Census provides a jurisdiction-wide value that is applicable to all rental housing in each jurisdiction for the 2005-2007 period. Other vacancy rates apply to more restricted types of rental housing from just 50 units of public housing in Howard County to 24,525 apartments in apartment complexes in Anne Arundel County. There is no breakdown of rental values or prices for these vacancy rates although some rates clearly apply to low-income units while others apply to higher income (i.e. Class A) units.

Exhibit III-8: Data on rental vacancy rates

Jurisdiction	*Vacancy rate*	*No. of applicable rental units*	*Comments & time period*	*Source*
Anne Arundel County	5.7 percent	~46,900 units	All rental housing, 2005-2007	U.S. Census
	4.2 percent	~46,900 units	All rental housing, 2005	U.S. Census
	4.4 percent	24,525 units	All apartment complexes, 2007	2007 Apartment Study for Anne Arundel County, Maryland, October 2007.
	2.0 percent to 8.0 percent	24,525 units	Apartment complexes in individual ZIP codes, 2007	
	2.0 percent to 16.4 percent	24,525 units	Apartment complexes by year constructed. Except for the 16.4 percent rate for new complexes, little correlation between age and vacancy rate, 2007	
	0.0 percent	2,238 units	Public housing units in the county. These units have waiting lists	
	10.3 percent/ 2.9 percent	4,583 units	Overall/stabilized Class A rental garden apartments; stabilized rate excludes actively marketing projects, December 2006	Delta Associates, Inc. Year-end 2006 report: Mid-Atlantic Class A Apartment & Condominium Markets, December 31, 2006
	11.5 percent/ 2.1 percent	4,583 units	Overall/stabilized Class A rental garden apartments; stabilized rate excludes actively marketing projects, December 2005.	
	3.1 percent	1,027 units	Assisted units that DHCD oversees, 2008	Maryland Department of Housing and Community Development
	1.6 percent	1,003 units	Assisted units that DHCD oversees, 2007	

Exhibit III-8: Data on rental vacancy rates (continued)

Jurisdiction	*Vacancy rate*	*No. of applicable rental units*	*Comments*	*Source*
Howard County	8.2 percent	~25,300 units	All rental housing. 2005-2007	U.S. Census
	3.3 percent	15,892 units	Market-rate multifamily rental housing. 2005	Howard County Consolidated Plan, FY2006 - FY2010, May 19, 2006
	0.3 percent	~15,650 units	Market-rate multifamily rental housing. 2000	
	6.5 percent	4,717 units	Market-rate scattered site rental housing. 2005	
	0.0 percent	50 units	Public housing. 2005	
	0.7 percent	2,554 units	Government assisted housing. Section 8 housing waiting list is 6 to 8 years. 2005	
	2.2 percent/ 2.2 percent	4,451 units	Overall/stabilized Class A rental garden apartments, Columbia. December 2006	Delta Associates, Inc. Year-end 2006 report: Mid-Atlantic Class A Apartment & Condominium Markets, December 31, 2006
	5.4 percent/ 2.4 percent	4,451 units	Overall/stabilized Class A rental garden apartments, Columbia. Stabilized rate excludes actively marketing projects. December 2005	
	2.9 percent	1,102 units	Assisted units that DHCD oversees, 2008	Maryland Department of Housing and Community Development
	3.0 percent	1,102 units	Assisted units that DHCD oversees, 2007	

Exhibit III-8: Data on rental vacancy rates (continued)

Jurisdiction	*Vacancy rate*	*No. of applicable rental units*	*Comments*	*Source*
City of Laurel	5.6 percent	~5,000 units	All rental housing. 2005-2007	U.S. Census
Prince George's County	4.7 percent	5,740 units	Assisted units that DHCD oversees, 2008	Maryland Department of Housing and Community Development
	5.4 percent	5,740 units	Assisted units that DHCD oversees, 2007	

The vacancy rate data in Exhibit III-8 do not paint an easily grasped picture of rental housing availability in the three jurisdictions. Nevertheless, some observations can be made:

- The highest vacancy rates, those above 10 percent, are found only in Anne Arundel County and are associated with relatively new apartment complexes that are marketed to relatively affluent renters. For example, the 16.4 percent vacancy rate for apartment complexes applies to those built from 2004 to the date of the survey in 2007. These apartments tend to be loaded with amenities that increase rental prices. The effort to rent all units for the first time in these newer complexes can also take many months and it appears that the highest vacancy rates occur in these periods of the initial marketing of newer, more expensive rental housing;
- For similar reasons, the "overall" rates for Class A garden apartments in Anne Arundel County and Columbia, which include newer complexes still engaged in the initial phase of marketing and filling all rental units, tend to be much higher than the "stabilized" rates that apply to Class A rental complexes that have completed that initial rental marketing effort. Stabilized rates for this more expensive housing tend to be quite low, under 3 percent;
- Vacancy rates for rental housing for lower-income households are uniformly low. Units assisted by the Maryland Department of Housing and Community Development in Anne Arundel and Howard counties were 3 percent or lower; the county's public housing had no vacancies according to a 2007 survey. Only in Prince George's County (a proxy measure for Laurel) did vacancy rates for this type of housing ever exceed 5 percent although the most recent rate was 4.7 percent. A 2005 survey of government-assisted housing in Howard County estimated a vacancy rate of less than 1 percent, while there were no vacancies in the county's public housing;
- In recent surveys larger market-rate apartment complexes in the counties have had vacancy rates ranging from 3.3 percent in Howard County to 4.4 percent in Anne Arundel County. It is worth noting that in the discussion of the 2005 survey of rental housing in Howard County it was noted that in 2000 the vacancy rate was only 0.3 percent for market-rate multifamily housing;
- The countywide vacancy rates reported by the U.S. Census tend to be high. The U.S. Census rate for Howard County (8.2 percent) is higher than any other rate that could be found for that jurisdiction. Only newer apartment complexes in Anne Arundel County appeared to have higher rates than the rate reported by the U.S. Census for the county. On the other hand, the U.S. Census rates represent 3-year averages, while the other rates

are more likely rates at given points in time that may or may not reflect more general conditions;
- The only rate available specifically for Laurel is the U.S. Census rate; and
- Vacancy rates can change significantly from year to year and from place to place. The latter point is borne out by the 2007 survey of Anne Arundel County which tracked vacancy rates by ZIP code and found they ranged from 2 percent in Arnold to 8 percent in Severn. Higher rates tended to reflect the presence of newer apartment complexes still in the initial stages of marketing.

Despite the lack of clear and comprehensive data linking vacancy rates to prices of rental housing, it is possible to make estimates of these rates for each jurisdiction. The rates shown in Exhibit III-8 can be generally assigned to higher priced rental housing and lower priced rental housing. The broad group of middle market housing is more difficult to separate out in these data. For purposes of this analysis, higher priced housing is defined as those charging monthly rents above $1,500 while lower priced housing is defined as those units charging less than $1,000 monthly rent. Rental housing priced between $1,000 and $1,500 is considered the middle market. These price brackets are chosen to conform to U.S. Census data.

The simplest case is the City of Laurel for which only one source of data is available, the U.S. Census estimate of a vacancy rate of 5.6 percent. The tightening of the government assisted housing market in Prince George's County suggests that the U.S. Census rate may be high. Accordingly, Sage estimates that a 5 percent vacancy rate applies to all rental housing in the City of Laurel.

Vacancies in Howard County show some consistencies within what are presumably the low, middle, and high brackets of rental prices. DHCD-assisted units have experienced rates ranging from 2.4 percent to 3.0 percent in recent years. In 2005 a larger group of government-assisted housing had a vacancy rate of 0.7 percent. Sage estimates an overall rate for lower-priced rental housing at 2.0 percent. Rates for Class A garden apartments, which account for approximately one in five rental units in the county are used as an indicator of high rental unit vacancies. Documented overall rates for these Class A apartments in recent years have ranged from 5.4 percent to 2.2 percent. This analysis uses the midpoint of this range—3.8 percent—for the high priced rental housing bracket. The vacancy rate for the middle market rental housing is based on the weighted average rate of 4.0 percent for market-rate rental housing vacancy rates from the current county consolidated plan. The majority of this housing was multifamily units with a vacancy rate of 3.3 percent while 23 percent was scattered site rental housing with a vacancy rate of 6.5 percent.

Rental vacancy rates in Anne Arundel County by rental price are the least clear, but can be estimated from data in Exhibit III-8. Recent data on DHCD-assisted housing shows a range of vacancy rates from 1.6 percent to 4.0 percent. The county's 2007 apartment complex survey found the least expensive housing to be that built in the 1970s with vacancy rates of 2.9 percent for the 6,289 units built from 1970-1974 and 2.4 percent for units built from 1975-1979. For this analysis Sage assumes a vacancy rate of 3.0 percent for lower priced rental housing. Class A garden apartments in the county have seen overall vacancy rates above 10 percent. Another perspective on high priced rental units is available in the county's 2007 apartment complex

survey which found that the highest rents (i.e. more than $1,500 for the average 3-bedroom unit) were charged at complexes built after 1990 and at complexes built before 1960. As shown in Exhibit III-9 the weighted average vacancy rate for these complexes was 7.5 percent. For the remaining middle market rental housing Sage assumes a 4.0 percent vacancy rate which results in an overall county rental housing vacancy rate of 4.4 percent, the same overall rate found in the 2007 county survey of apartment complexes.

Exhibit III-9: Vacancy rates in higher priced apartment complexes, Anne Arundel County, 2007

Year built	*Vacancy rate*	*No. of units*
Before 1960	3.1%	1,009
1990-1994	7.2%	1,522
1995-1999	2.0%	805
2000-2004	2.5%	1,901
After 2004	16.4%	2,182
Weighted average/total	7.5%	7,419
Sources: Anne Arundel County apartment survey, Sage		

Exhibit III-10 summarizes the estimated rental housing vacancy rates for each price level for each jurisdiction. All these rates are lower than the most recent U.S. Census estimates for the 2005 to 2007 period. The most glaring difference is for Howard County where the U.S. Census estimate was 8.2 percent. As all other sources found lower rates, usually much lower, the Sage estimated rates seem reasonable. For Anne Arundel County and the City of Laurel, Sage estimates are lower than those of the U.S. Census but are relatively close and also appear reasonable. It should also be noted that all of these vacancy rates are well below the national average of 7.8 percent for all rental housing as estimated by the U.S. Census.[25]

Exhibit III-10: Estimated rental vacancy rates by monthly rent

Monthly rent	*Anne Arundel County*	*Howard County*	*City of Laurel*
Less than $1,000	3.0%	2.5%	5.0%
$1,000 to $1,499	4.0%	4.0%	5.0%
$1,500 or more	7.5%	3.8%	5.0%
Weighted average	4.4%	3.6%	5.0%
Source: U.S. Census, Sage			

Using the rates shown in Exhibit III-10 estimated annual rental housing vacancies in each jurisdiction can be estimated. For the counties, this estimate assumes that the total number of rental units for each jurisdiction equals the U.S. Census estimate of the number of occupied rental units plus the estimated total number of vacant units using the vacancy rates in the table above. For Laurel, the estimate is based on the city-data estimate of occupied rental units plus the vacant units based on a 5.0 percent vacancy rate.

The resulting calculation provides an estimate of the number of housing units that would be expected to be available for renters over the course of a year. This is one factor in assessing the adequacy of the rental housing market to meet demand from BRAC and other sources. In Anne

[25] U.S. Census, American FactFinder, Selected Housing Characteristics: 2005-2007.

Arundel and Howard Counties, the bulk of rental housing vacancies would be expected in units priced at $1,000 or more. For Anne Arundel County, three out of four vacancies would rent for $1,000 or more and almost two of five would rent for $1,500 or more. In Howard County over four of five vacancies would be priced at $1,000 or more and almost one in four would be priced at $1,500 or more. Laurel clearly presents a different case. Over 70 percent of rental housing vacancies are estimated at monthly rents below $1,000; another 24 percent is priced between $1,000 and $1,500. Only 2.4 percent of Laurel vacancies are expected at monthly rents over $1,500.

Exhibit III-11: Estimated annual rental housing vacancies

Monthly rent	*Anne Arundel County*		*Howard County*		*City of Laurel*	
	No. of vacancies	Share of all vacancies	No. of vacancies	Share of all vacancies	No. of vacancies	Share of all vacancies
Less than $300	67	3.3%	17	1.9%	7	2.9%
$300 to $499	38	1.8%	15	1.8%		
$500 to $749	86	4.2%	28	3.2%	70	28.8%
$750 to $999	235	11.4%	73	8.5%	99	40.6%
$1,000 to $1,499	751	36.6%	505	58.8%	58	23.8%
$1,500 or more	798	38.9%	200	23.3%	6	2.4%
No cash rent	79	3.8%	21	2.5%	4	1.5%
Total	2,055	100.0%	859	100.0%	244	100.0%
Sources: U.S. Bureau of the Census, 2005-2007 American Community Survey 3-Year Estimates, Sage						

Stratification of housing inventory by planning area for Anne Arundel and Howard counties

The planning agencies of Anne Arundel and Howard counties subdivide each county into various planning areas. For this analysis, the principal purpose of reviewing the sub-county areas is to identify areas where demand is likely to be felt. In particular, the availability of affordable housing is not uniformly distributed across the counties.

Although the counties routinely gather housing and other planning related information on the basis of these planning areas, many data sources useful in stratifying the housing stock by value do not readily conform to the boundaries of the planning areas. The U.S. Census and various private data sources commonly provide data by ZIP code. This configuration is not easily translated into the sub-county planning areas.

The Maryland Department of Planning (MDP) database of all housing sales can be compiled on the basis of sub-county planning areas, ZIP codes, and other geographic units. Given this flexibility, these data have been used to provide an overview of housing values in the sub-county areas. For Anne Arundel County, these sub-county areas are Financial Analysis Zones (FAZ). In Howard County, the sub-county unit is the ZIP code.

The types of data presented at the jurisdictional level in Exhibits III-4, III-5, and III-6 have been compiled for the FAZs in Anne Arundel County and for ZIP codes in Howard County. Detailed tables for the sub-county areas similar to the jurisdictional tables are included in an appendix. These tables have detailed data regarding price levels for housing sales and housing type.

The most important criterion for stratifying housing in this analysis is price. While other characteristics can also be important to buyers or renters, the primary hurdle is affordability. Consequently, in evaluating housing stratification on a sub-county basis, the analysis concentrates on pricing data. On the following pages are exhibits that summarize the distribution of housing sales for each sub-county area as well as for each county as a whole. Exhibit III-12 provides data on the sub-county areas in Anne Arundel County while Exhibit III-13 shows data for Howard County. In each exhibit the distribution of the value of housing sold in 2007 is presented for five broad price brackets. These price brackets are generally associated with household income levels as noted below:

- Housing values less than $200,000: Housing that could typically be purchased by households earning up to approximately $60,000.
- Housing values from $200,000 to $299,999: Housing that could typically be purchased by households earning up to approximately $80,000.
- Housing values from $300,000 to $399,999: Housing that could typically be purchased by households earning up to approximately $100,000.
- Housing values from $400,000 to $599,999: Housing that could typically be purchased by households earning up to approximately $175,000.
- Housing values of $600,000 or more: Housing that could typically be purchased by households earning more than approximately $175,000.

Because rental price data are not readily available in formats that can be compiled into FAZs, this analysis assumes that the distribution of owner-occupied housing values is a proxy measure for the distribution rental housing by price. In other words it is assumed that the presence of higher priced housing for sale is directly correlated with the presence of higher priced rental housing and vice versa.

As shown in Exhibit III-12, the North FAZ of Anne Arundel County contains the highest concentration of lower priced housing, almost 70 percent of housing sold in 2007 was priced under $300,000. The West FAZ has the next largest concentration of lower priced housing with almost 70 percent of all housing sold in 2007 priced under $400,000. The remaining sub-county areas in Anne Arundel County were significantly more expensive and more expensive than the county as a whole, with more than half of all 2007 sales in those areas priced at over $400,000.

Exhibit III-12: Distribution of 2007 housing sales values by Financial Analysis Zone, Anne Arundel County

Sub-county area	*Sale price*				
	Less than $200,000	$200,000 - $299,999	$300,000 - $399,999	$400,000 - $599,999	$600,000 and more
Annapolis	4.9%	20.1%	23.1%	20.8%	31.2%
East	2.6%	18.7%	25.1%	27.9%	25.7%
North	12.7%	54.0%	25.7%	5.8%	1.9%
South	4.1%	18.7%	22.1%	25.1%	30.0%
West	3.1%	24.4%	38.3%	26.3%	7.9%
Anne Arundel County	5.6%	29.7%	28.8%	21.0%	15.0%
Sources: Maryland Department of Planning, Sage					

As shown in Exhibit III-13, there is substantial variation in the distribution of prices of houses sold in 2007 among ZIP codes in Howard County. Less expensive housing is concentrated in six ZIP codes (20763-Savage, 20794-Jessup, 21044-Columbia, 21045-Columbia, 21046-Columbia, and 21075-Elkridge). In each of these ZIP codes, the share of housing sales priced under $400,000 was significantly higher than the county average of approximately 50 percent. Alternatively, in 12 ZIP codes at least half of all sales in 2007 were for houses priced at $600,000 or more. These 12 ZIP codes are listed below.

- 20759-Fulton
- 20777-Highland
- 21029-Clarksville
- 21036-Dayton
- 21104-Marriottsville
- 21723-Cooksville
- 21737-Glenelg
- 21738-Glenwood
- 21771 Mount Airy
- 21784-Sykesville
- 21794-West Friendship
- 21797-Woodbine

The remaining ZIP codes fall between these lower and higher priced areas. They tend to have distributions closer to the countywide averages.

Exhibit III-13: Distribution of 2007 housing sales values by ZIP code, Howard County

Sub-county area	*Sale price*				
	Less than $200,000	$200,000 - $299,999	$300,000 - $399,999	$400,000 - $599,999	$600,000 and more
Zip 20723	0.0%	20.8%	27.2%	31.2%	20.8%
Zip 20759	0.0%	0.0%	1.9%	11.1%	87.0%
Zip 20763	6.3%	31.3%	50.0%	12.5%	0.0%
Zip 20777	0.0%	0.0%	0.0%	42.9%	57.1%
Zip 20794	0.0%	14.8%	62.3%	21.3%	1.6%
Zip 21029	0.0%	1.5%	11.4%	27.3%	59.8%
Zip 21036	0.0%	0.0%	0.0%	22.2%	77.8%
Zip 21042	0.4%	7.9%	9.4%	40.1%	42.2%
Zip 21043	0.5%	18.6%	33.2%	22.2%	25.6%
Zip 21044	7.3%	24.1%	28.7%	25.4%	14.4%
Zip 21045	8.9%	20.8%	41.8%	27.9%	0.7%
Zip 21046	0.0%	26.4%	38.7%	34.9%	0.0%
Zip 21075	2.2%	30.8%	43.4%	12.6%	11.0%
Zip 21076	5.6%	16.7%	5.6%	66.7%	5.6%
Zip 21104	0.0%	0.0%	5.3%	26.3%	68.4%
Zip 21163	0.0%	6.2%	23.4%	49.0%	21.4%
Zip 21723	0.0%	0.0%	0.0%	22.2%	77.8%
Zip 21737	0.0%	0.0%	0.0%	16.7%	83.3%
Zip 21738	0.0%	0.0%	0.0%	29.0%	71.0%
Zip 21771	0.0%	5.6%	11.1%	33.3%	50.0%
Zip 21784	0.0%	0.0%	8.3%	16.7%	75.0%
Zip 21794	0.0%	0.0%	0.0%	11.8%	88.2%
Zip 21797	0.0%	2.4%	9.5%	26.2%	61.9%
Howard County	2.9%	18.7%	29.9%	27.2%	21.3%
Sources: Maryland Department of Planning, Sage					

For those who prefer to view these data in the form of maps, please see the Appendix. There, the reader shall find a map summarizing housing price points for Anne Arundel County, Howard County and Laurel City. There is also a map that provides definitions of subcounty areas by zip code for Howard County and FAZ for Anne Arundel County.

IV. BRAC-related demand and recently available housing

A comparison of recent housing sales, rental vacancies, and BRAC-related housing demand begins to help identify potential constraints and issues related to housing supply. By reviewing housing availability, the potential impacts of BRAC can be considered with some caveats. As discussed above and below, the current housing market has been and is anything but typical. In addition and more importantly, BRAC is only one component of housing demand. *Additional demand can be expected from other sources and will be examined in the future report on housing constraints.*

Exhibit IV-1 repeats the earlier listing of housing sales and estimated annual rental vacancies in 2007 in Anne Arundel County by price (see Exhibits III-5 and III-11) and the county's projected initial and steady state demand for housing by BRAC-related households. The values listed under initial and steady state demand represent the number of BRAC households with housing purchasing power in the relevant price bracket. These values are taken from Exhibit II-11. For example, the analysis of BRAC households indicates that within the lowest pay level, 34 households would have purchasing power sufficient for a house worth about $90,000 or monthly rent of $300 to $689 during the period of initial demand and would prefer to live in Anne Arundel County. By the time a steady state is reached, 55 households seeking to reside in Anne Arundel County would have this much housing purchasing power.

Exhibit IV-1: Anne Arundel County housing availability and BRAC housing demand

Price class for owner-occupied housing	*Price class for rental housing*		*Total sales, 2007*	*Rental vacancies per year*	*BRAC demand*	
	Lower bound	Upper bound			Initial	Steady state
Under $100,000	$300	$689	25	124	34	55
$100,000-$149,999	$689	$1,033	97	235	75	122
$150,000-$199,999	$1,033	$1,377	323	376	231	375
$200,000-$249,999	$1,377	$1,722	836	376	216	351
$250,000-$299,999	$1,722	$2,066	1,520	798	200	326
$300,000-$349,999	$2,066	$2,410	1,329	-	501	815
$350,000-$399,000	$2,410	$2,755	961	-	-	-
$400,000-$449,999	$2,755	$3,099	623	-	466	759
$450,000-$499,999	$3,099	$3,444	407	-	242	393
$500,000-$599,999	$3,444	$4,132	636	-	147	239
$600,000 & Over	$4,132		1,188	-	-	-
Totals	$4,821	$5,510	7,945	1,908	2,112	3,435

Source: Sage

Under this analysis, 200 households in the initial demand period would be seeking housing in Anne Arundel County in the $250,000-$299,999 price bracket or monthly rents of roughly $1,000 to $1,700. At the time of the steady state of demand, this number would increase to 326 households.

Clearly the initial demand for housing by BRAC households would constitute a substantial share of all housing sales in Anne Arundel County at the current level of sales activity. Indeed for housing prices under $200,000, initial demand exceeds, even substantially exceeds, the level of sales in 2008. Steady-state demand is by definition even greater although that demand unfolds over several years.

Rental housing is an obvious alternative for many BRAC households, particularly those with lower incomes. Although BRAC demand would constitute a significant share of available rental housing and might be particularly strong in the $1,000 to $1,700 price bracket, there appears to be sufficient rental housing if BRAC is considered in isolation from other demand.

Exhibit IV-2 is a chart that graphically compares the availability of owner-occupied housing (i.e. home sales) and rental units (i.e. rental vacancies) by price and BRAC demand. Housing prices are shown for owner-occupied property but apply to analogous rental prices as listed in Exhibit IV-1. As shown, BRAC demand matches or exceeds home sales for the least expensive housing although rental vacancies exceed BRAC demand at these levels. As housing price levels rise, the availability of owned and rental housing availability increases relative to BRAC demand. Nevertheless, in the $400,000 to $499,999 range, BRAC demand is large relative to housing sales in 2007.

Exhibit IV-2: Chart of Anne Arundel County housing availability and BRAC housing demand

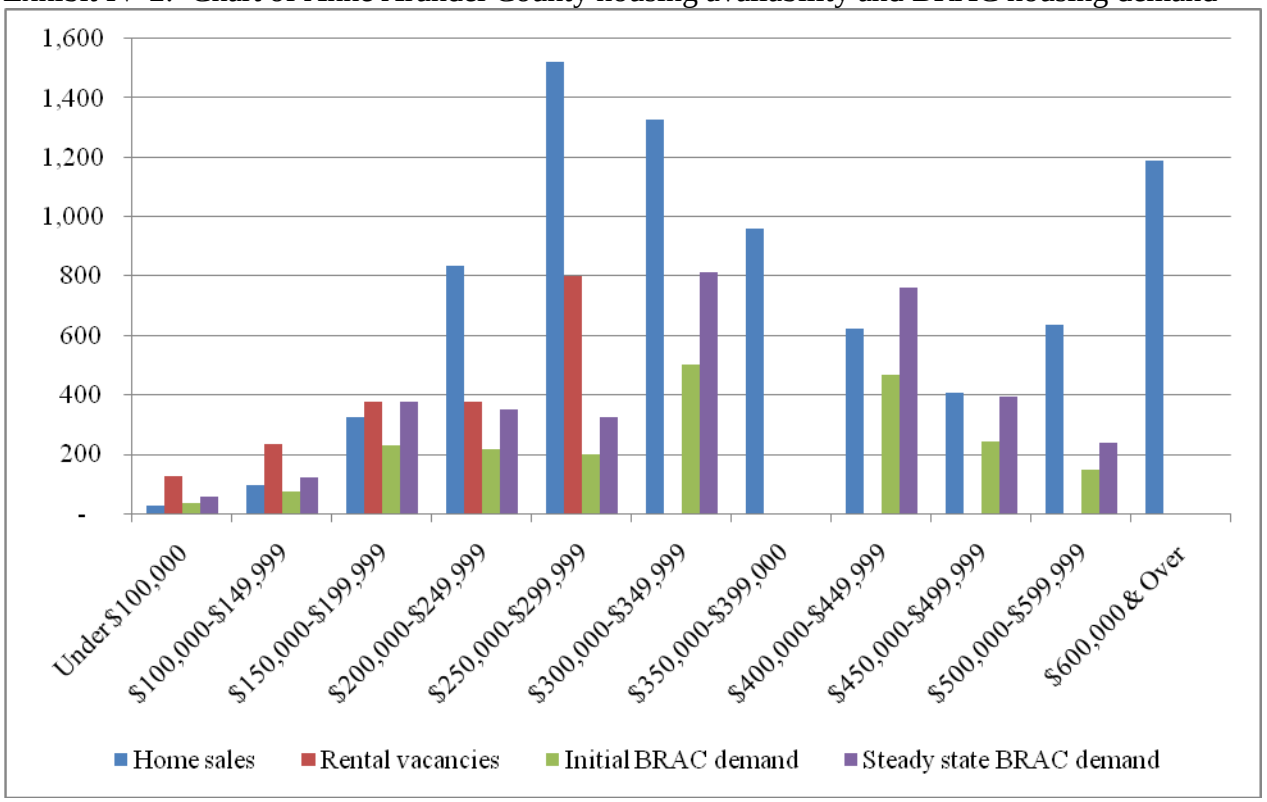


Exhibit IV-3 compares total housing sales and rental vacancies in 2007 in Howard County with initial demand and steady state demand by BRAC households who would prefer to live there. As is true for Anne Arundel County, initial demand constitutes a very large fraction of total sales in 2007. For housing priced under $200,000, demand greatly exceeds 2007 sales activity. Initial BRAC demand would also represent a majority of estimated vacant rental housing in 2007. For lower income BRAC households unable to find available housing to purchase, rental housing appears to be a much more accessible portion of the overall housing market. Still, initial BRAC demand is equal to roughly half of rental vacancies priced under $2000.

Exhibit IV-3: Howard County housing availability and BRAC housing demand

Price class for owner-occupied housing	*Price class for rental housing*		*Total sales, 2007*	*Rental vacancies per year*	*BRAC demand*	
	Lower bound	Upper bound			Initial	Steady state
Under $100,000	$300	$689	4	43	18	29
$100,000-$149,999	$689	$1,033	19	73	40	65
$150,000-$199,999	$1,033	$1,377	102	253	124	201
$200,000-$249,999	$1,377	$1,722	291	253	115	188
$250,000-$299,999	$1,722	$2,066	505	200	107	174
$300,000-$349,999	$2,066	$2,410	650	-	268	436
$350,000-$399,000	$2,410	$2,755	622	-	-	-
$400,000-$449,999	$2,755	$3,099	355	-	249	406
$450,000-$499,999	$3,099	$3,444	311	-	129	210
$500,000-$599,999	$3,444	$4,132	491	-	79	128
$600,000 & Over	$4,132		906	-	-	-
Totals	$4,821	$5,510	4,256	821	1,130	1,839
Source: Sage						

The comparison of BRAC demand to housing availability in Howard County is graphically presented in Exhibit IV-4. Again the relatively large demands that BRAC would place on lower priced housing is clear.

Exhibit IV-4: Chart of Howard County housing availability and BRAC housing demand

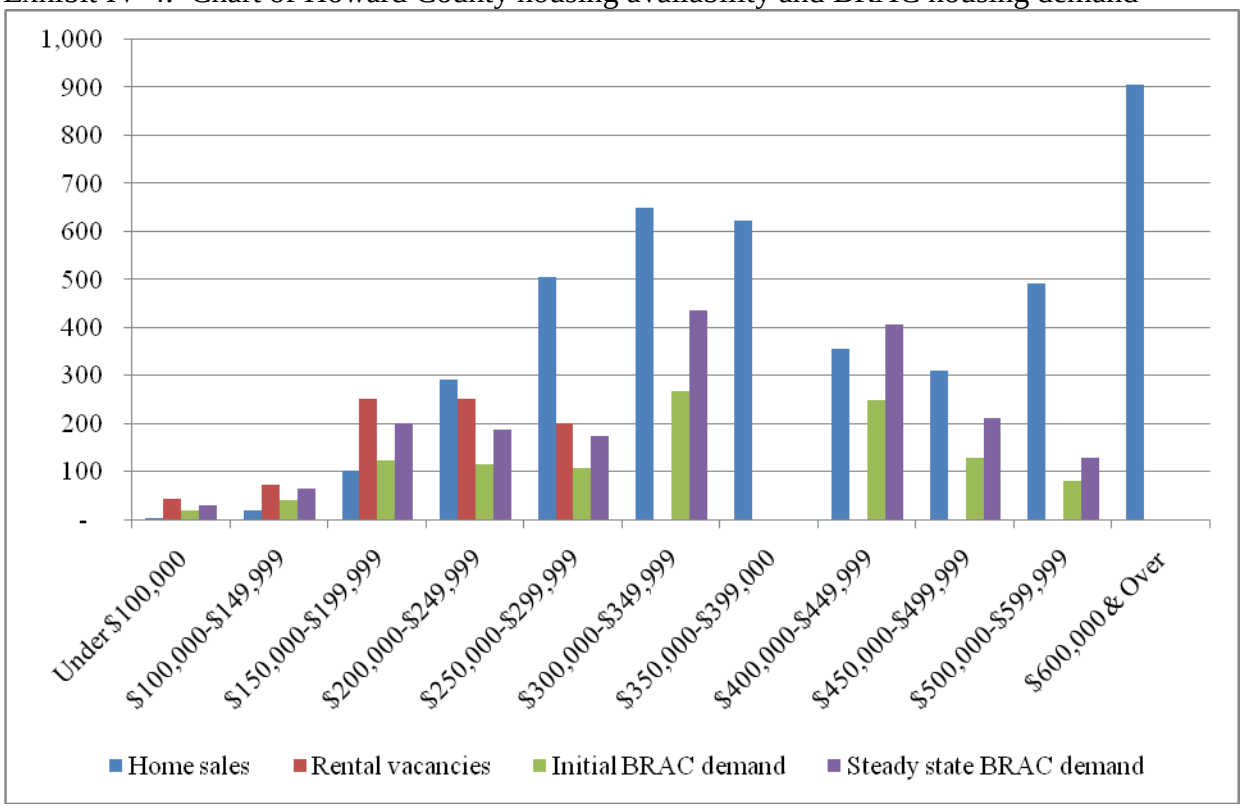


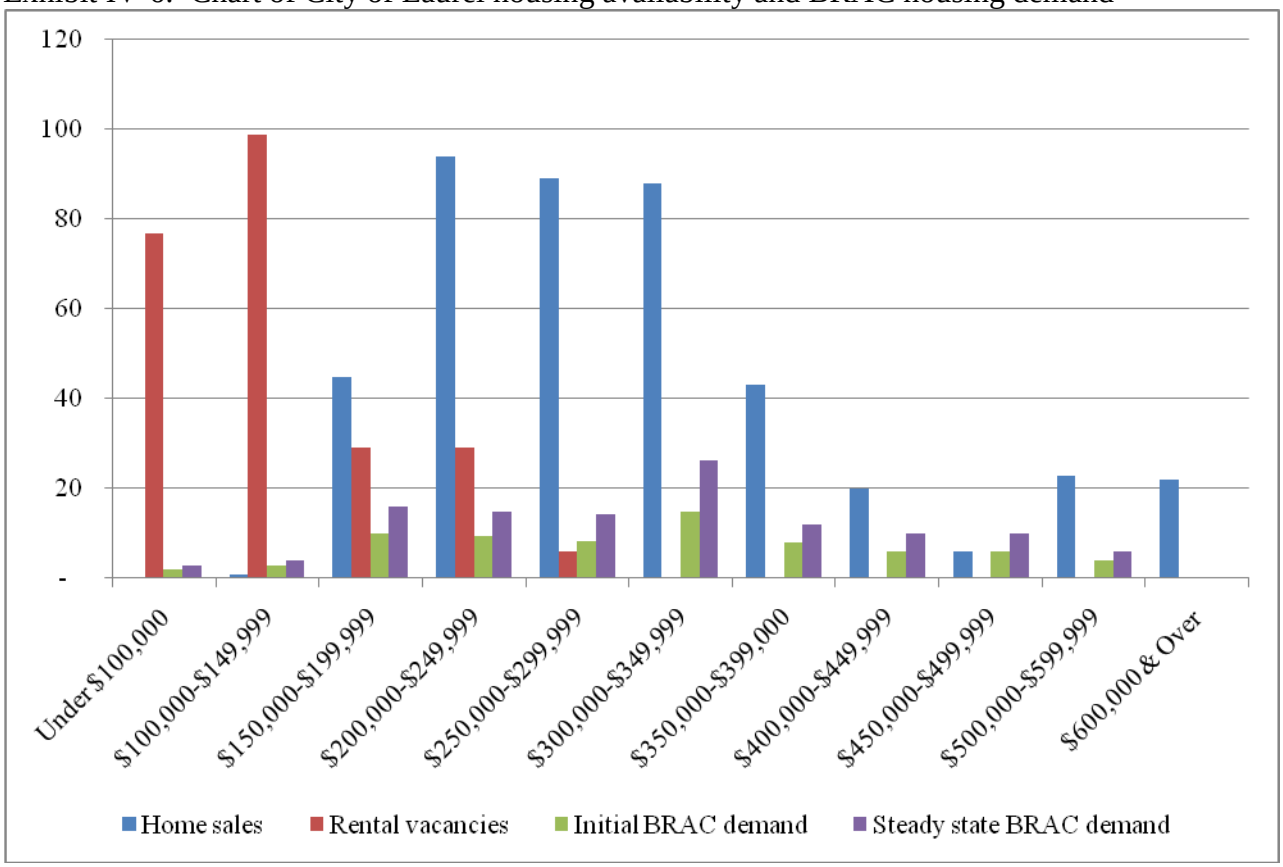
Exhibit IV-5 summarizes housing sales and rental vacancies for 2007 in the City of Laurel in comparison to BRAC-related housing demand. As with the counties, initial demand by households seeking housing in Laurel equals a significant share of all housing sales in 2007. Unlike the comparisons in the counties, initial demand does not overwhelm recent sales activity in Laurel except for the lowest priced housing. Although there is some excess demand relative to sales activity, initial demand is frequently well below recent sales activity in individual price brackets. In 2007 there were no sales of housing valued at under $100,000 and only one in the $100,000 to $150,000 bracket; the initial demand was for two and three housing units in those brackets, respectively. On the other hand, initial demand for 10 housing units in the $150,000 to $200,000 range was well below the total of 45 housing units that were sold at that price in 2007. The rental market in Laurel appears to be much more accessible to BRAC households than the rental markets in either Anne Arundel or Howard counties. Initial BRAC demand is about 30 percent of the estimated number of rental vacancies in 2008, a much smaller fraction than in the counties. Given the stratification of rental housing, there appears to be substantial available rentals for prices below roughly $1,700 per month.

Exhibit IV-5: City of Laurel housing availability and BRAC housing demand

Price class for owner-occupied housing	*Price class for rental housing*		*Total sales, 2007*	*Rental vacancies per year*	*BRAC demand*	
	Lower bound	Lower bound			Initial	Steady state
Under $100,000	$300	$689	-	77	2	3
$100,000-$149,999	$689	$1,033	1	99	3	4
$150,000-$199,999	$1,033	$1,377	45	29	10	16
$200,000-$249,999	$1,377	$1,722	94	29	9	15
$250,000-$299,999	$1,722	$2,066	89	6	8	14
$300,000-$349,999	$2,066	$2,410	88	-	15	26
$350,000-$399,000	$2,410	$2,755	43	-	8	12
$400,000-$449,999	$2,755	$3,099	20	-	6	10
$450,000-$499,999	$3,099	$3,444	6	-	6	10
$500,000-$599,999	$3,444	$4,132	23	-	4	6
$600,000 & Over	$4,132		22	-	-	-
Totals	$4,821	$5,510	431	240	72	117
Source: Sage						

Exhibit IV-6 charts BRAC demand and housing availability for Laurel. As the chart shows, housing availability at lower price levels is much greater than expected BRAC demand unlike the conditions in either county. This relatively greater availability of housing also holds at higher price levels.

Exhibit IV-6: Chart of City of Laurel housing availability and BRAC housing demand



Part of the context of the current housing market is a precipitous drop in sales activity. As shown in Exhibit IV-7, housing sales in 2008 were at the lowest level in the last 10 years in Anne Arundel and Howard counties. To reach the average level of sales over the past decade, sales activity in the last year would have to increase by 67 percent in Anne Arundel County and by 58 percent in Howard County. In 2010, when the initial demand for BRAC housing in Central Maryland is expected to begin, it may be reasonable to assume that housing sales activity would be approaching long-term average levels. If so, this would tend to make housing more available for BRAC households.

Exhibit IV-7: Housing sales 1999-2008

Year	*Anne Arundel County*	*Howard County*
1999	7,110	3,929
2000	6,989	4,206
2001	7,961	4,492
2002	8,060	4,690
2003	8,739	4,765
2004	9,405	4,993
2005	9,347	4,866
2006	7,857	4,057
2007	6,502	3,467
2008	4,582	2,667
Average	7,655	4,213
Average/2008 sales	167%	158%
Source: Maryland Association of Realtors		

The dramatic slowdown in the housing sales as well as the turmoil in the mortgage market has had the effect of increasing the active inventory of unsold housing. In the earlier analysis of housing supply, the long-term trends in the active inventory were reviewed. Exhibit IV-8 updates the information provided in the supply report with the latest numbers for the active inventory in Anne Arundel, Howard, and Prince George's counties. While the active inventory is somewhat smaller than it was in October 2008, it still approaches the total sales of housing in Anne Arundel and Howard counties last year. In other words there is an unusually high volume of housing on the market that effectively expands the availability of housing.

Exhibit IV-8: Housing sales and active inventory in October over time

Month	*Units sold*			*Active inventory*		
	Anne Arundel County	Howard County	Prince George's County	Anne Arundel County	Howard County	Prince George's County
Oct. 2006	568	305	1,050	4,189	1,773	4,339
Oct. 2007	401	204	471	4,484	2,037	6,928
Oct. 2008	348	191	408	4,357	1,896	7,631
Jan. 2009	205	119	306	3,791	1,594	6,917
Source: Maryland Association of Realtors						

Chapter 4: Forecasted Growth in Demand and Supply & Strategies for Affordable Housing

Key Findings:

Unconstrained demand may not be satisfied by available supply, particular once one accounts for the cost of available housing. The implication is that some people who would prefer to live in the study area may ultimately choose to live beyond the boundaries of the area due to considerations of affordability.

According to study team estimates, in both counties, there will not be enough available housing inventory to accommodate all those who would be expected to seek housing there, nor will there be sufficient housing to permit smooth functioning of the marketplace. Many households will then live beyond the study area's limits due to the lack of available inventory.

The study team also concludes that workforce/affordable housing will remain an issue in the study area for many BRAC-related households in the two counties, though not necessarily in the City of Laurel. A substantial factor in the continued need for affordable housing is the expectation that job growth in the counties will outpace growth in the number of housing units in the counties. Part of this is also due to expectations of the continued growth in the share of the market allocated to age-restricted housing.

Both Anne Arundel and Howard counties need to accelerate the formation of new housing opportunities if BRAC effects are to be appropriately accommodated.

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List of Exhibits

I. Introduction

Purposes and objectives

BRAC planning continues to occur in the midst of one of the most severe housing downturns in memory. Housing prices continue to decline while the pace of sales has turned glacial since September 2008, when financial markets simply froze. The ongoing credit crisis has compounded housing uncertainties because of the ongoing reluctance of lenders to approve loans that would previously have been readily approved. Financing for new development has similarly grown more difficult.

The ultimate location of BRAC-related jobs represents another source of uncertainty. There is evidence that most of the contractors that will work for the FGGM agencies relocating through the BRAC process will want to locate as close as possible to FGGM and may even have office space on base. Less clear are the locations of the indirect and induced jobs associated with BRAC at FGGM. The location of jobs is a highly influential factor in determining the location of unconstrained housing demand, which in turn relates to questions of housing supply. Over the next few years, it will become more obvious where these various types of jobs will be located, clarifying issues of housing demand and supply, and allowing policymakers to react according to circumstances.

II. Growth in Households and Housing Demand

Housing demand is created by households. Thus, the future growth of households is the best indicator of overall housing demand. While BRAC-related demand will be an important component of demand over the next 5 to 10 years, it is not the only source of new households.

Alternative estimates of future households and housing demand

Although the forecasts of total households as compiled by area demographers, planners, and other experts are seemingly the most authoritative source of data for understanding overall demand for housing, they are and have been for many years tied to local government policy on the expansion of the housing stock within jurisdictions. These growth policies focus on what are considered desirable volumes of new construction as determined by local decision-makers.[26] As a result there is a tendency to define the growth in households (i.e. the person or persons, often families, who occupy an individual housing unit) in local jurisdictions in a manner that is inseparable from the regulated growth in the housing stock (i.e. the total number of housing units or dwelling units in a jurisdiction).

This forecasting process, however, can ignore the increase in households that occurs as a result of increases in employment. Fundamentally, increases in employment are one of the principal drivers of increases in households. Indeed, the interest in studying the impacts of BRAC is derived from the belief that increases in employment at locations in Maryland will increase the number of households who will seek housing in the vicinity of the locations where BRAC jobs will be sited. In other words, people will likely wish to live near where they work.

The number of households that might seek housing in Anne Arundel or Howard counties because of the jobs located in those jurisdictions can be considered the unconstrained demand for housing. Sage equalizes the ratio of jobs to residences to proxy for what this report refers to as "unconstrained demand". The value of equalizing the ratio is to account for those individuals who would wish to live in a specific jurisdiction but cannot because of the lofty price points characteristic of that jurisdiction.

The growth policies of these jurisdictions that regulate new construction can be considered an important constraint on that demand, reflecting, implicitly or explicitly, local growth and housing policies. The intent of the analysis at this point is to estimate future housing demand that is not constrained by the volume of new construction that is permitted by local authorities and might, therefore, be a more comprehensive measure of housing demand in the two counties.

To estimate the total housing demand that is likely to emerge in the time frame when BRAC impacts will occur, total employment in Anne Arundel and Howard counties and its relationship to households in the two counties has been examined in the context of the entire Baltimore region. The assumption is that an increase in jobs in a jurisdiction will tend to create an increase

[26] This connection between the forecast of households and local policies governing the expansion of the housing stock has been confirmed in several conversations with planning officials for Anne Arundel and Howard counties and the state planning department that have been held during the course of this study.

in the demand for housing in that same jurisdiction. Implicit in this assumption is the belief that people generally wish to live near their work thereby reducing their commutes.

The Baltimore Metropolitan Council (BMC) publishes forecasts of population, households, and employment that are compiled from the estimates of the six jurisdictions that make up the BMC – Anne Arundel, Baltimore, Carroll, Harford, and Howard counties, and Baltimore City. (See Appendix for the most recent forecast data for all BMC jurisdictions.) Exhibit II-1 presents these forecasts for Anne Arundel and Howard counties and totals for the six BMC jurisdictions in the Baltimore region.[27] In addition to the population, households, and employment figures, the exhibit includes the ratios for population per household and jobs per household. It should be noted that the employment shown in the BMC forecasts refers to jobs located in each jurisdiction, not the jobs held by residents of that jurisdiction. For example, the forecast estimates that there will be 339,012 jobs in Anne Arundel County in 2010. Many of the people who hold these jobs will live in Anne Arundel County, but others will commute to those jobs from other jurisdictions.

Exhibit II-1: Round 7a forecasts for Anne Arundel and Howard counties and the Baltimore region

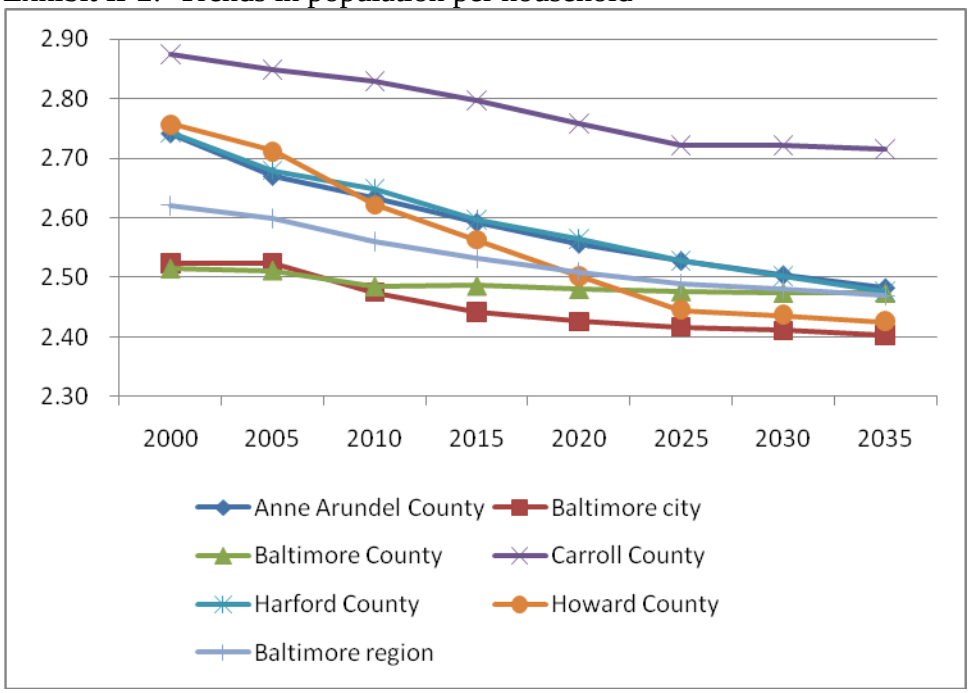
	2000	2005	2010	2015	2020	2025	2030	2035
Anne Arundel County								
Population	489,656	513,700	532,790	546,517	556,579	565,594	574,265	581,609
HHs	178,670	192,450	202,314	210,888	217,782	223,822	229,368	234,335
Jobs	297,000	318,435	339,012	361,961	384,441	403,190	418,775	433,501
Pop/HH	2.74	2.67	2.63	2.59	2.56	2.53	2.50	2.48
Jobs/HH	1.66	1.65	1.68	1.72	1.77	1.80	1.83	1.85
Howard County								
Population	250,800	272,000	287,700	301,800	312,900	318,400	324,100	327,600
HHs	90,950	100,300	109,729	117,734	125,047	130,200	132,998	135,067
Jobs	160,000	176,800	196,382	214,854	231,167	247,358	260,244	264,539
Pop/HH	2.76	2.71	2.62	2.56	2.50	2.45	2.44	2.43
Jobs/HH	1.76	1.76	1.79	1.82	1.85	1.90	1.96	1.96
Baltimore region								
Population	2,515,389	2,634,600	2,737,290	2,816,917	2,862,779	2,895,894	2,927,565	2,949,309
HHs	959,663	1,013,750	1,069,243	1,112,222	1,140,829	1,163,422	1,180,766	1,194,302
Jobs	1,534,400	1,615,735	1,711,094	1,792,115	1,856,808	1,909,848	1,948,119	1,971,140
Pop/HH	2.62	2.60	2.56	2.53	2.51	2.49	2.48	2.47
Jobs/HH	1.60	1.59	1.60	1.61	1.63	1.64	1.65	1.65
Source: Baltimore Metropolitan Council								

The exhibit above shows that there will be growth both at the regional level and in Anne Arundel and Howard counties for the entire period. Looking at the ratios of population per households and jobs per household, there is relative stability and slowly evolving change in trends over time for the region as a whole, but more significant change in the two counties particularly in the number of jobs per household.

[27] The data for Anne Arundel and Howard counties are for Round 7B and were obtained directly from the counties. The Baltimore region totals reflect 7B forecasts for Anne Arundel and Howard counties and Round 7A data for the other jurisdictions because the 7B forecasts have not been published yet by BMC.

Exhibit II-2 focuses on the trends in the population per household for all jurisdictions which participate in the BMC. As shown, the long-term trend is for smaller households with all BMC jurisdictions except Carroll County converging over time to households with 2.4 to 2.5 persons.[28] This long-term trend to smaller households reflects tendencies towards smaller families, more single person households, and other demographic trends that have been in evidence for many years. In terms of housing demand, smaller households means a greater need for housing as even a constant population will generate more households over time.

Exhibit II-2: Trends in population per household



Source: Baltimore Metropolitan Council

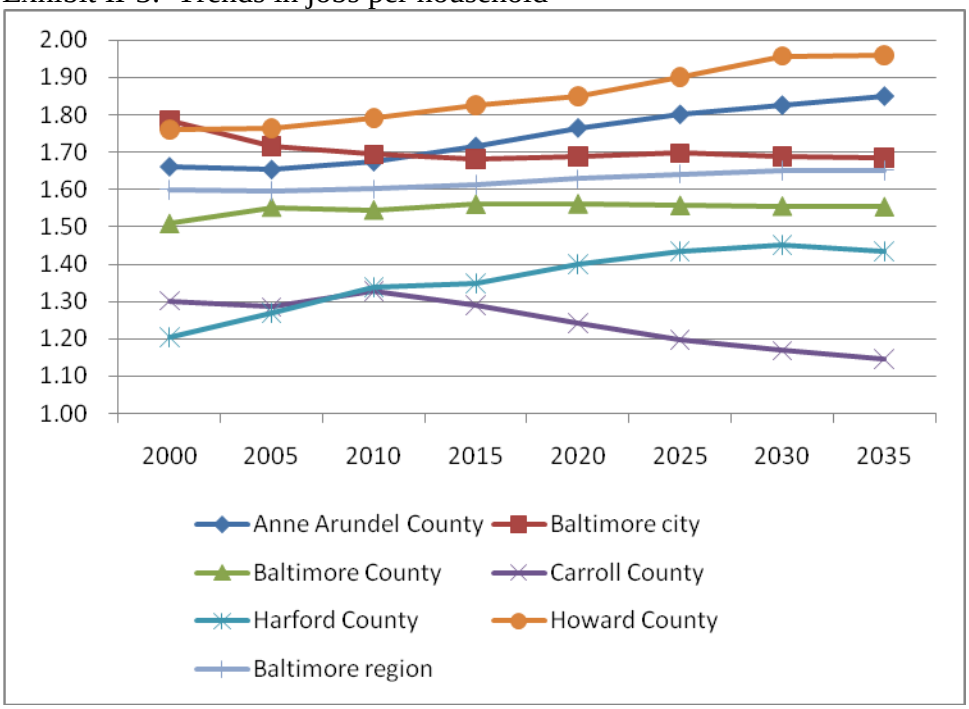
Exhibit II-3 shows trends in jobs per household over time for the BMC jurisdictions. Unlike trends in household size, the trends in jobs per household vary considerably across the jurisdictions. For the region as a whole, the number of jobs per household is consistent, rising only slightly from 1.60 in 2000 to 1.65 in 2035. This number of jobs per household for the Baltimore region is essentially the same value as for Maryland as a whole. What this suggests is that on a regional level, growth in the number of jobs will lead to a relatively predictable and constant increase in households and therefore a constant increase in the demand for housing. Over the next 30 years, every time another 1.60 or 1.65 jobs is created, the region will need another housing unit for the increased household that the job growth represents.

For the two counties the long-term trend in jobs per household is distinctly different and clearly departing from the regional averages and any other of the region's jurisdictions. For Anne

[28] Because the population forecasts include those living in group quarters (e.g. skilled nursing facilities) and this population may be increasing more rapidly than the general population, the forecast of household size may actually overstate the likely number of persons per household in the future. See Appendix for definition of group quarters.

Arundel County, this value in 2000 (1.66) is slightly higher than the regional value, but then increases to a value in 2035 (1.85) that is well above the regional average. Howard County starts at a value in 2000 (1.76) well above the regional average and then increases to the highest value in the region in 2035 (1.96) or a value 19 percent greater than the regional average.

Exhibit II-3: Trends in jobs per household



Source: Baltimore Metropolitan Council

The trends in jobs per household in the BMC jurisdictions clearly indicate that Anne Arundel and Howard counties will increasingly become the site of employment growth in the region. Indeed, from 2000 to 2035 job growth in Anne Arundel and Howard counties, at 46 percent and 65 percent respectively, is well above the regional forecast of 28 percent job growth. The high number of jobs per household also suggests that these counties are not expanding their housing stocks in concert with the increase in jobs. From 2000 to 2035, according to the BMC data, Anne Arundel County is forecast to increase households (defined essentially as housing stock) 31 percent as opposed to the 46 percent increase in jobs, while Howard County is forecast to see a 49 percent increase in households/housing stock compared to a 65 percent increase in jobs.

The expected increase in jobs per household is also remarkable given the location of Anne Arundel and Howard counties between Washington, D.C. and Baltimore and their traditional role as bedroom communities for those two major employment centers. Those who commute from these counties to either Washington, D.C. or Baltimore lower the jobs per household ratio in the counties. Presumably the counties will continue to attract these types of commuters in the future and are still expected to see significant increases in jobs per household relative to all other jurisdictions in the Baltimore region.

The most obvious consequence of this imbalance between employment growth and household/housing stock growth is an increase in the number of workers who will commute to

Anne Arundel and Howard counties from other jurisdictions. While many now commute to their jobs in these counties (and every other county in the Baltimore region), the forecast of much faster job growth than housing stock growth in these counties will make it more difficult for those filling future jobs in either county to find relatively nearby housing.

This imbalance between jobs and housing also raises the question of how many households would actually prefer to live in either county so that they could be near work. The answer to this question can be considered the unconstrained demand for housing in Anne Arundel and Howard counties. This demand is in contrast to the demand that will occur given the constraints placed on housing supply primarily by local growth policies that limit the number of new housing units that can be approved for construction in either county. These growth policies and constraints have been in place for decades and have shaped development, housing patterns, commuting behavior and other conditions in Central Maryland (and many other parts of the country).

The difficulty in creating an estimate of unconstrained housing demand is that there are few, if any, precedents and no settled methods for quantifying this type of demand. The study team accepts that any such estimate is subject to uncertainty. Nevertheless, there is general acceptance that housing policies that limit the volume of new construction create problems such as reduced housing availability, increased housing prices, longer commutes, and greater traffic congestion. The method for estimating unconstrained housing demand used in this analysis is based on the relationship between jobs in a jurisdiction and households in that jurisdiction. Jurisdictions with high ratios of jobs to households are assumed to be employment centers which tend to encourage the importation of workers from other jurisdictions (in other words, encourage commuting into the jurisdiction) while those jurisdictions with low ratios of jobs to households are assumed to be "bedroom communities" that tend to export workers to jobs in other jurisdictions.

In estimating unconstrained housing demand, the analysis looks at the number of households in a jurisdiction if the ratio of jobs to households were closer to overall regional averages. For jurisdictions like Anne Arundel and Howard counties, the calculation of unconstrained demand in effect raises the number of households in these jurisdictions above the projected levels. The unconstrained demand indicates that the number of housing units in each county would need to increase above expected levels if these jurisdictions were to be able to meet unconstrained demand for housing.

One method to estimate the housing demand in Anne Arundel and Howard counties from these future workers who will find work in these counties is to examine the distribution of housing in the region if the number of jobs per household in each jurisdiction equaled the regional average. This calculation can be seen as a high estimate of unconstrained demand as it equalizes jobs per household across the region, in effect changing trends that have been established for many years. This methodology balances the location of work and the location of housing across the region by shifting housing demand from areas like Carroll County which has a relatively low number of jobs per household to areas like Howard County which has a relatively high number of jobs per household. Currently Carroll County tends to be an area where many commute to work in other jurisdictions whereas Howard County tends to be the opposite, that is, an area where many commute from other jurisdictions to find work. Another way of considering this methodology is to imagine conditions that allowed everyone to walk to work (i.e. where everyone worked very

close to where they lived). Under these conditions, the number of jobs per household would be equalized across the region.

Given that there are regional imbalances in the number of jobs per household, defining unconstrained housing demand using this methodology will result in estimated housing demand that is greater than housing supply in areas with relatively high levels of employment and will result in estimates of excess housing supply in areas with relatively low levels of employment. Having more households seeking housing than available housing under this methodology indicates shortfalls in housing supply and strongly suggests that new construction has not kept pace with unconstrained housing demand.

Using this methodology, we can consider that in 2010, the Baltimore region is forecast to have 1.60 jobs per household while Anne Arundel County will have 1.68 jobs per household and Howard County will have an estimated 1.79 jobs per household. By 2035, the regional average is expected to be 1.65 jobs per household compared to 1.85 jobs for Anne Arundel County and 1.96 jobs for Howard County. As noted above, this implies that future housing supply in these counties will not expand as quickly as will employment in the counties, resulting in housing shortages relative to unconstrained housing demand.

A second estimate of unconstrained demand uses the ratio of jobs per household in Anne Arundel and Howard counties that was present in the year 2000. As these ratios are lower than the projected ratios for each county, but higher than the regional average, this calculation provides a lower estimate of unconstrained demand than does the method described above. Essentially this method extends the growth constraints and commuting patterns of 2000 into the future.

Exhibit II-4 presents estimates of the number of households in Anne Arundel and Howard counties using the two methods for calculating unconstrained demand described above. For example, in 2010, Anne Arundel County is forecast to have 339,012 jobs (see Exhibit II-1). If there were the regional average of 1.60 jobs per household that year instead of the forecasted 1.68 jobs per household, the county would have an estimated 211,489 households, rather than the 202,314 households forecast for that year. If the 2000 ratio of 1.66 jobs per household were the case, there would be 203,944 households in Anne Arundel County in 2010. In 2010, the unconstrained demand for Howard County would range from a high of 122,511 households to a low of 111,631 households rather than the forecasted 109,729 households. The estimates in Exhibit II-4 can be considered an estimate of unconstrained housing demand for the counties, that is, the number of households that, because of a desire to live near work locations, would prefer to live in the counties if sufficient housing were available. Because employment projections for Laurel are not available, it was not possible to estimate unconstrained housing demand for that city. Given the projections of an adequate, even abundant, supply of housing in Laurel, however, there is no reason to expect housing shortages that are forecast for Anne Arundel and Howard counties. In other words, the availability of housing in Laurel should not be a problem in the period when BRAC impacts at FGGM are likely to occur. Exhibit II-4 also presents the mid-point of the two estimates of unconstrained demand.

Exhibit II-4: Alternative estimates of future households (unconstrained housing demand)

Jurisdiction	2000	2005	2010	2015	2020	2025	2030	2035
Number of households--high estimate								
Anne Arundel County	174,388	199,808	211,489	223,589	234,185	243,000	250,561	258,977
Howard County	93,946	110,936	122,511	132,719	140,817	149,081	155,709	158,038
Number of households--low estimate								
Anne Arundel County	178,670	191,565	203,944	217,749	231,273	242,552	251,928	260,787
Howard County	90,950	100,500	111,631	122,131	131,404	140,608	147,932	150,374
Number of households--mid-point estimate								
Anne Arundel County	176,529	195,686	207,717	220,669	232,729	242,776	251,244	259,882
Howard County	92,448	105,718	117,071	127,425	136,111	144,844	151,821	154,206
Source: Sage								

Exhibit II-5 also compares the mid-point estimates of unconstrained housing demand to the estimates in the BMC forecast. In 2000, this mid-point alternative estimate of 176,529 households in Anne Arundel County was 2,141 below the actual number of households in the county that year. In every other case, however, the alternative estimating method calculates more households in the counties than are counted in the BMC forecast. Thus, for 2010, the alternative method for estimating households calculates over 5,400 more households in Anne Arundel County than are estimated in the BMC forecast and calculates over 7,300 more households in Howard County than the estimate in the BMC forecast. In 2015, when the steady state of demand related to BRAC at FGGM is expected, unconstrained demand in excess of the BMC forecast approaches 10,000 households in each county. As the exhibit shows, these disparities between the alternative method of estimating households and the BMC forecast steadily grow in magnitude over the entire period of the BMC forecast.

Exhibit II-5: Unconstrained housing demand versus BMC forecast

Jurisdiction	2000	2005	2010	2015	2020	2025	2030	2035
Number of households--mid-point estimate								
Anne Arundel County	176,529	195,686	207,717	220,669	232,729	242,776	251,244	259,882
Howard County	92,448	105,718	117,071	127,425	136,111	144,844	151,821	154,206
Number of households--BMC forecast								
Anne Arundel County	178,670	192,450	202,314	210,888	217,782	223,822	229,368	234,335
Howard County	90,950	100,300	109,729	117,734	125,047	130,200	132,998	135,067
Alternative household forecast--mid-point less BMC household forecast								
Anne Arundel County	(2,141)	3,236	5,403	9,781	14,947	18,954	21,876	25,547
Howard County	1,498	5,418	7,342	9,691	11,064	14,644	18,823	19,139
Source: Baltimore Metropolitan Council, Sage								

The implication of the numbers in Exhibit II-5 is that there are many households who would prefer to live in Anne Arundel and Howard counties but cannot because there is not enough housing. In economic terms the demand for housing indicated by the alternative estimating

procedure exceeds the supply. When demand exceeds supply, prices tend to increase. This would tend to explain the relatively high prices for housing in Anne Arundel and Howard counties.

Exhibit II-6 summarizes the estimates and forecasts of households in the three jurisdictions in 2005, 2010, and 2015. Forecasts for Anne Arundel and Howard counties use the alternative estimates described above. The forecast for Laurel is from the Round 7.1 forecast compiled by the Washington Metropolitan Council of Governments. All of these forecasts include estimates of the impacts of BRAC. From 2005 to 2010, growth is significant in all jurisdictions with Laurel growing over 14 percent, Anne Arundel County experiencing an increase of over 12,000 households, and Howard County experiencing an over 10 percent increase in the number of households. Growth in the 2010 to 2015 period is predicted to be only slightly less vigorous in percentage terms. The Laurel and Howard County growth rates drop significantly while Anne Arundel County's growth rate barely increases.

Exhibit II-6: Forecasted growth in households

Jurisdiction	*2005*	*2010*	*2015*	*Change: 2005-2010*		*Change: 2010-2015*	
				Number	Percent	Number	Percent
Anne Arundel County	195,686	207,717	220,669	12,030	6.1%	12,953	6.2%
Howard County	105,718	117,071	127,425	11,353	10.7%	10,354	8.8%
City of Laurel	10,527	12,055	12,995	1,528	14.5%	940	7.8%
Total	311,931	336,842	361,089	24,911	8.0%	24,247	7.2%
Sources: City of Laurel, Sage.							

BRAC in the context of overall housing demand

BRAC-related demand for housing is expected to unfold largely between 2010 when the jobs are relocated to FGGM and 2015 when the full impacts of those relocated jobs are assumed to finally be realized. This delay in the realization of the full effect is a function of the assumption that many jobholders whose work location will change from Northern Virginia to FGGM will choose to commute from their present homes rather than relocate closer to FGGM. As these long-distance commuters retire or change jobs, it is expected that new job holders will choose to live in areas more typical of FGGM workers and Central Maryland.

As discussed in Chapter 1, the initial housing demand in the three jurisdictions is estimated at over 3,300 households. Another almost 2,100 households are expected as demand reaches the so-called steady state which is estimated to occur by 2015. These estimates represent the mid-case estimates. Because of uncertainties associated with the ultimate number of jobs associated with BRAC at FGGM, particularly jobs created by businesses that are part of the so-called contractor tail, the demand analysis provided a range of estimates of housing demand. The mid-case estimate, that is, the most likely scenario, is used for this analysis. BRAC demand may of course be greater or less than the estimates presented here; and, as a result, the corresponding impacts on the housing market in the three jurisdictions may be somewhat greater or somewhat less than discussed here. Exhibit II-7 provides details regarding BRAC-related housing demand.

Exhibit II-7: Net increase in housing demand by jurisdiction due to BRAC (mid-case)

Jurisdiction	*Estimated mid-case net housing demand (households)*		
	Initial—2010	Additional after initial	Total steady state—2015
Anne Arundel County	2,122	1,329	3,451
Howard County	1,135	712	1,847
City of Laurel	72	45	117
Total	3,329	2,086	5,415
Source: Sage			

Although there are many other sources of household growth and new housing demand in Central Maryland, BRAC will be a significant contributor. Of the total estimated growth in households between 2005 and 2010, BRAC will be responsible for over one in six of these households in Anne Arundel County and one in 10 households in Howard County. For the City of Laurel, BRAC will account for less than 5 percent of expected demand. In the following five year period, BRAC will be a less significant factor, but will still account for over one in 12 households who would prefer to live in the three jurisdictions as shown in Exhibit II-8. As a contributor to growth in households, BRAC will continue to be most significant in Anne Arundel County.

Exhibit II-8: BRAC demand as share of total household growth

Jurisdiction	*Change: 2005-2010*			*Change: 2010-2015*		
	Total households	Initial BRAC households	BRAC as share of total	Total households	Additional BRAC households	BRAC as share of total
Anne Arundel County	12,030	2,122	17.6%	12,953	1,329	10.3%
Howard County	11,353	1,135	10.0%	10,354	712	6.9%
City of Laurel	1,528	72	4.7%	940	45	4.8%
Total	24,911	3,329	13.4%	24,247	2,086	8.6%
Source: Sage						

The forecasted growth in households in Anne Arundel County is not and will not in the future be uniformly spread across the jurisdiction. Although the alternative estimate of households does not make sub-county estimates, the distribution of these households is highly likely to follow the distribution of households predicted by the county's planning office. The county's forecast indicates that three areas—East, North, and West—account for over 80 percent of all households. There will be some minor shifts in the share of households across these sub-county areas between 2005 and 2015, these changes are not expected to change the distribution of households in the county in any meaningful way. Exhibit II-9 lists the county's forecast of the distribution of households in each of the six Fiscal Analysis Zones (FAZ) within Anne Arundel County for 2005, 2010, and 2015.

Exhibit II-9: Distribution of Anne Arundel County households by FAZ

FAZ	*2005*	*2010*	*2015*
Annapolis	7.9%	8.0%	7.7%
East	32.3%	31.5%	31.0%
Fort Meade	1.3%	1.3%	1.3%
North	28.7%	28.6%	28.6%
South	6.7%	6.5%	6.4%
West	23.1%	24.2%	25.0%
Total	100.0%	100.0%	100.0%
Sources: Anne Arundel County			

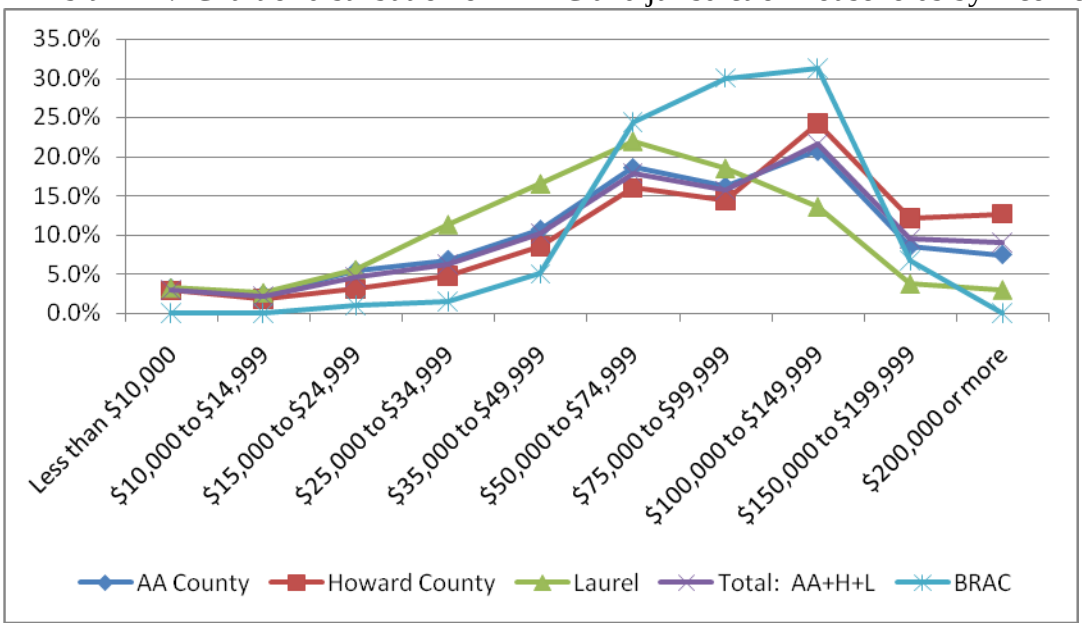
Exhibit II-10 presents the forecasted distribution of Howard County households disaggregated by ZIP code. This forecast addresses three years—2008, 2010, and 2015. The six ZIP codes are projected to have approximately 10 percent or more of the county's households in 2015 account for three quarters of the county's total households. The Laurel and Ellicott City ZIP codes are expected to maintain very similar shares of the county's households over this time period while the three Columbia ZIP codes are expected to lose a modest share of the county's households.

Exhibit II-10: Distribution of Howard County households by ZIP code

ZIP code	*2008*	*2010*	*2015*
20701 Annapolis Junction	0.0%	0.1%	0.4%
20723 Laurel	9.7%	9.9%	9.8%
20759 Fulton	0.9%	1.0%	1.6%
20763 Savage	0.9%	0.9%	0.8%
20777 Highland	1.0%	1.0%	1.0%
20794 Jessup	2.3%	2.5%	2.7%
20833 Brookeville	0.0%	0.0%	0.0%
21029 Clarksville	3.4%	3.3%	3.2%
21036 Dayton	0.6%	0.6%	0.6%
21042 Ellicott City	12.4%	12.5%	12.9%
21043 Ellicott City	14.5%	14.5%	14.4%
21044 Columbia	16.5%	16.0%	15.5%
21045 Columbia	14.3%	13.9%	12.9%
21046 Columbia	5.9%	5.7%	5.4%
21075 Elkridge	9.0%	9.3%	10.2%
21076 Hanover	0.5%	0.5%	0.6%
21104 Marriottsville	0.6%	0.6%	0.9%
21163 Woodstock	1.5%	1.6%	1.6%
21723 Cooksville	0.3%	0.3%	0.3%
21737 Glenelg	0.4%	0.4%	0.5%
21738 Glenwood	1.0%	1.0%	1.0%
21765 Lisbon	1.0%	1.0%	1.0%
21784 Sykesville	0.7%	0.7%	0.7%
21794 West Friendship	0.7%	0.7%	0.7%
21797 Woodbine	1.8%	1.7%	1.7%
Total	100.0%	100.0%	100.0%
Sources: Howard County			

The stratification analysis in Chapter 3 found that BRAC households tended to have relatively high incomes concentrated in a range from $50,000 to $150,000. In comparison to the income distribution of the three jurisdictions of interest, there is a higher proportion of BRAC households in the $50,000 to $150,000 range and generally a lower proportion of households with incomes below or above this range. Exhibit II-11, which was included in Chapter 3, charts the distribution of BRAC household income in comparison to household incomes in the three jurisdictions.

Exhibit II-11: Chart of distribution of BRAC and jurisdiction households by income level



Source: Sage

The future trends in household income in the three jurisdictions will be an important factor for trends in the housing market. Decision Data, a proprietary source of demographic information, estimates and projects household income and household income distribution by ZIP code. The most recent estimates and projections cover the years 2008 and 2013. These most recent projections suggest a relatively modest increase in household income over that period of time. In current (nominal) dollars (i.e., those reflecting the effects of inflation), household income is projected to increase from 13 percent to 18 percent in the three jurisdictions from 2008 to 2013.

The study team has converted these projections to constant dollars to facilitate comparisons with current household incomes and current housing prices. Exhibit II-12 summarizes estimated average household income in the three jurisdictions for 2008, 2013, and 2015.[29] As shown, real incomes are expected to increase at a rate of 1 percent per year. By 2015 when all BRAC-related housing impacts are projected to occur, Howard County is expected to have an average household income in excess of $130,000. Average household income in Laurel will be over $91,000, while average household income in Anne Arundel County will reach almost $108,000.

[29] See Appendix for discussion of trends in personal income and methods for estimating household personal income in the three jurisdictions.

Exhibit II-12: Forecasted average household income, 2008, 2013, and 2015 (constant dollars)

Jurisdiction	*2008*	*2013*	*2015*	*Change 2008-2013*		*Change 2013-2015*	
				Number	Percent	Number	Percent
Anne Arundel County	$100,465	$105,589	$107,712	$5,124	5.1%	$2,123	2.0%
Howard County	$122,032	$128,257	$130,835	$6,225	5.1%	$2,578	2.0%
City of Laurel	$85,342	$89,695	$91,498	$4,353	5.1%	$1,803	2.0%
Sources: Decision Data, Bureau of Economic Analysis, Sage							

Average household income is generally higher than median income. As a result, some prefer median income as a measure of more typical household affluence. Exhibit II-13 lists the Decision Data projections of median household income for the three jurisdictions. As with the projections of average household income, these have been converted to constant dollars, based on the estimated increase in real dollar values at 1 percent per annum.

Exhibit II-13: Forecasted median household income, 2008, 2013, and 2015 (constant dollars)

Jurisdiction	*2008*	*2013*	*2015*	*Change 2008-2013*		*Change 2013-2015*	
				Number	Percent	Number	Percent
Anne Arundel County	$77,166	$81,102	$82,732	$3,936	5.1%	$1,630	2.0%
Howard County	$94,732	$99,564	$101,566	$4,832	5.1%	$2,001	2.0%
City of Laurel	$60,853	$63,957	$65,243	$3,104	5.1%	$1,286	2.0%
Sources: Decision Data, Bureau of Economic Analysis, Sage							

In general the future distribution of income in the three jurisdictions will see a shift towards more higher-income households. The Decision Data income distributions for 2008 and 2013 can be compared to show these shifts. Because it was not possible to adjust the number of households in individual income brackets on the basis of constant dollars, the following comparisons are made on the basis of current dollars. This exaggerates the distinctions that would be made on the basis of constant dollar comparisons. Nevertheless, there is a very consistent trend across all jurisdictions of the shift towards more affluent households. Although each jurisdiction has its unique characteristics, all three jurisdictions show fewer households in lower income brackets and more households in higher income brackets. The reductions in the number of lower income households tend to be modest, while the increases in higher income households tend to be somewhat more pronounced. Despite these changes, the most obvious trend is for the overall income distribution in each jurisdiction to remain broadly consistent from 2008 to 2013.

Exhibit II-14 compares the number of households in Anne Arundel County in each income bracket. The total number of households is based on the alternative estimate of future households shown in Exhibit II-4. As shown, all but one bracket below $75,000 are expected to lose households while all brackets above this income level are expected to gain households between 2008 and 2013. It is important to realize that these comparisons are in current dollars that are not adjusted for inflation and exaggerate differences that would be shown if the comparisons were based on real changes in the value of the dollar.

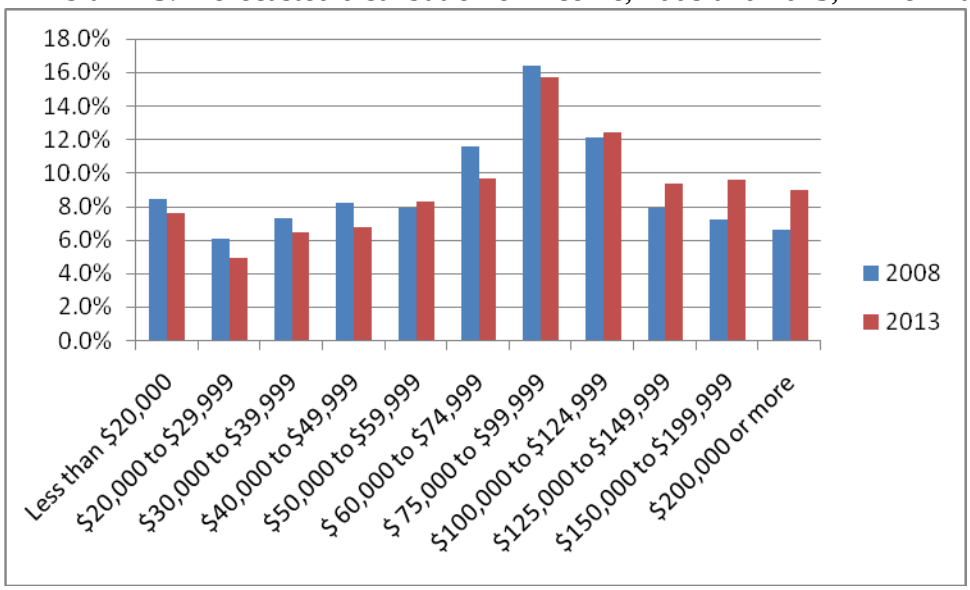
Exhibit II-14: Comparison of households by income bracket, Anne Arundel County

Income bracket	*2008*	*2013*	*Change 2008-2013*	
Less than $20,000	17,494	16,762	(732)	-4.2%
$20,000 to $29,999	12,679	10,901	(1,778)	-14.0%
$30,000 to $39,999	15,092	14,214	(877)	-5.8%
$40,000 to $49,999	17,095	14,862	(2,234)	-13.1%
$50,000 to $59,999	16,473	18,166	1,694	10.3%
$ 60,000 to $74,999	23,936	21,159	(2,777)	-11.6%
$ 75,000 to $99,999	33,875	34,362	486	1.4%
$100,000 to $124,999	25,019	27,153	2,134	8.5%
$125,000 to $149,999	16,477	20,481	4,004	24.3%
$150,000 to $199,999	14,972	21,059	6,087	40.7%
$200,000 or more	13,705	19,631	5,925	43.2%
Total	206,817	218,749	11,932	5.8%

Sources: Decision Data, Sage.

Exhibit II-15 charts the distribution of household income in Anne Arundel County in 2008 and 2013 using the data found in the prior exhibit. As shown, the changes in the distribution echo the finding that lower income brackets have smaller shares of the total while higher income brackets gain shares of the total.

Exhibit II-15: Forecasted distribution of income, 2008 and 2013, Anne Arundel County



Sources: Decision Data, Sage

Exhibit II-16 compares the number of households in each income bracket in Howard County. As is true in Anne Arundel County, all but one bracket below $125,000 are expected to lose households. All brackets above $125,000 are projected to have more households in 2013 than in 2008.

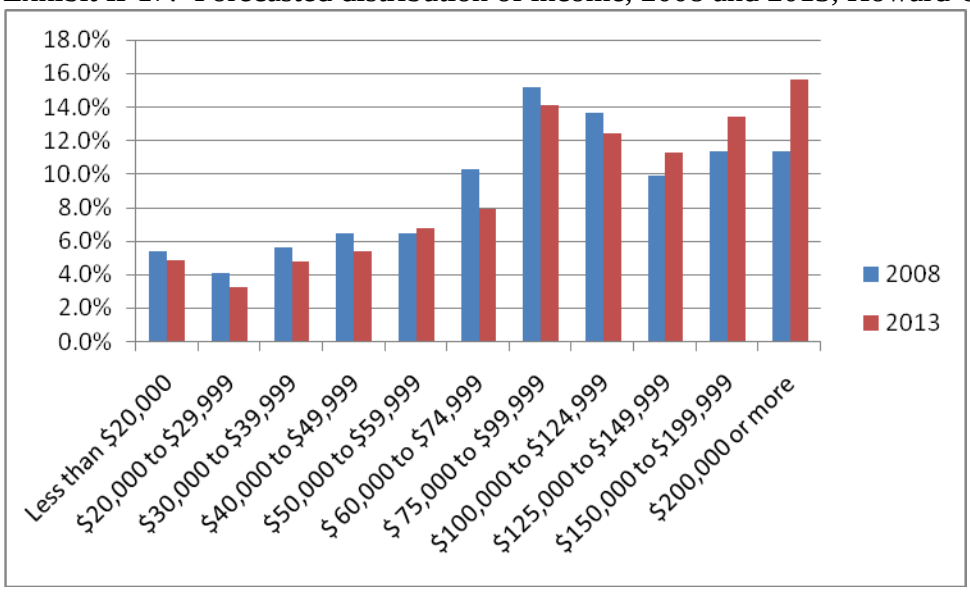
Exhibit II-16: Comparison of households by income bracket, Howard County

Income bracket	*2008*	*2013*	*Change 2008-2013*	
Less than $20,000	6,399	6,275	(125)	-1.9%
$20,000 to $29,999	4,892	4,175	(717)	-14.7%
$30,000 to $39,999	6,627	6,221	(406)	-6.1%
$40,000 to $49,999	7,597	6,971	(627)	-8.2%
$50,000 to $59,999	7,654	8,688	1,035	13.5%
$ 60,000 to $74,999	12,135	10,236	(1,899)	-15.6%
$ 75,000 to $99,999	17,903	18,115	212	1.2%
$100,000 to $124,999	16,133	16,032	(101)	-0.6%
$125,000 to $149,999	11,674	14,549	2,874	24.6%
$150,000 to $199,999	13,435	17,278	3,843	28.6%
$200,000 or more	13,430	20,096	6,665	49.6%
Total	117,881	128,636	10,755	9.1%

Sources: Decision Data, Sage.

The distribution of income in Howard County is charted in Exhibit II-17. The share of all households in every income bracket below $125,000 decreases from 2008 to 2013 while all higher income brackets gain in their shares of county households over the same period. Again, this shift to higher incomes is based on current dollars and exaggerates the impacts that would be shown if values were adjusted for inflation.

Exhibit II-17: Forecasted distribution of income, 2008 and 2013, Howard County



Sources: Decision Data, Sage

A comparison of the number of households in each income bracket in the City of Laurel in 2008 and 2013 is shown in Exhibit II-18. Similarly to the counties, lower income brackets lose households over time, in this case, all brackets below $50,000 are expected to lose households from 2008 to 2013. All brackets above $50,000 are projected to have more households in 2013 than in 2008.

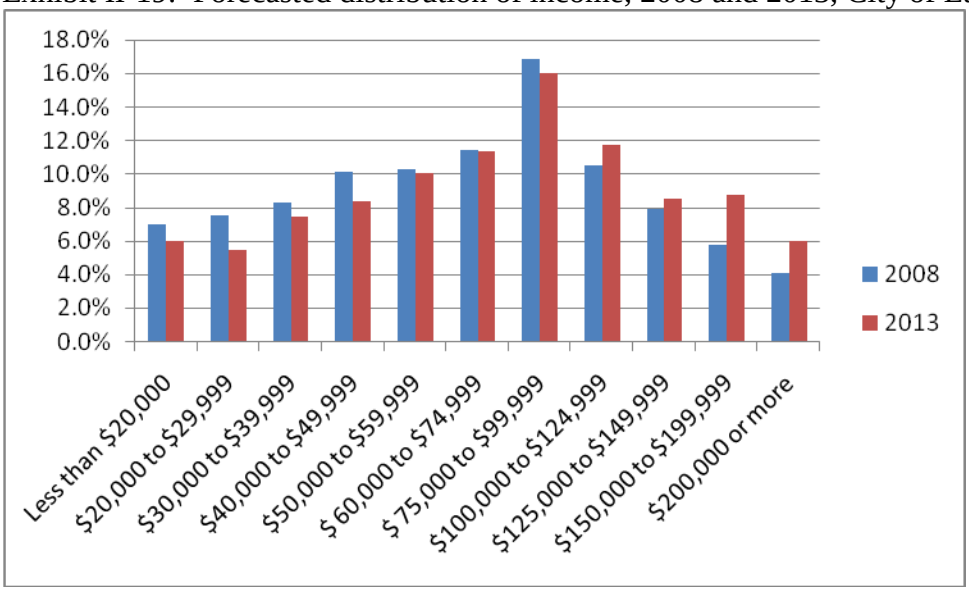
Exhibit II-18: Comparison of households by income bracket, City of Laurel

Income bracket	*2008*	*2013*	*Change 2008-2013*	
Less than $20,000	800	761	(39)	-4.9%
$20,000 to $29,999	861	692	(169)	-19.6%
$30,000 to $39,999	950	939	(11)	-1.1%
$40,000 to $49,999	1,160	1,063	(97)	-8.4%
$50,000 to $59,999	1,180	1,273	93	7.9%
$ 60,000 to $74,999	1,312	1,437	125	9.5%
$ 75,000 to $99,999	1,928	2,025	97	5.1%
$100,000 to $124,999	1,207	1,484	277	22.9%
$125,000 to $149,999	907	1,078	171	18.8%
$150,000 to $199,999	667	1,110	443	66.5%
$200,000 or more	471	756	285	60.7%
Total	11,444	12,619	1,175	10.3%

Sources: Decision Data, Sage.

A comparison of the distribution of household income in Laurel in 2008 and 2013 is illustrated in Exhibit II-19. All brackets below $50,000 have smaller shares in 2013 than in 2008 while those above that value gain shares.

Exhibit II-19: Forecasted distribution of income, 2008 and 2013, City of Laurel



Sources: Decision Data, Sage

For the housing market, the implication of these trends in income distribution is for relatively little dramatic change. The most significant trend is likely the growth in the proportion of higher income households with sufficient income to afford more expensive housing and support new construction, which tends to focus on the upper end of the housing market. Very modest decreases in the number and proportion of lower income households may suggest marginal increases in the housing purchasing power of these households. Either of these changes, however, is at the margins of the marketplace.

Overall income trends suggest that the economic characteristics of the housing market (particularly household income levels and distribution) in the three jurisdictions is unlikely to change very much from the perspective of those seeking housing. The fact that household income is projected to increase at only very modest real rates over the next several years reinforces the sense that trends in income will not substantially affect the demand side of the housing market in that period.

III. Growth in housing stock

In Chapter 2, projections of the total housing stock in each of the jurisdictions through the year 2015 were presented. These projections also addressed sub-county areas for Anne Arundel and Howard counties and looked at changes in the housing stock by housing type for all jurisdictions.

Exhibit III-1 presents estimates of the total housing stock (i.e. all housing units) for each jurisdiction for each year from 2006 to 2015. The projections for all jurisdictions are based upon information provided by the planning agencies of each of those jurisdictions. As discussed in more detail in the next section, these projections are based on the likely approval of new construction made by officials of each jurisdiction. In other words, these projections are constrained by the growth and housing policies of each jurisdiction.

Exhibit III-1: Summary of projections of total housing stock

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Anne Arundel County	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
Howard County	101,441	102,911	104,848	106,804	108,716	110,585	112,452	114,241	116,035	117,741
City of Laurel	N.A.	11,544	12,055	12,159	12,807	13,377	13,477	13,927	13,927	14,277
Sources: Howard County Department of Planning and Zoning, City of Laurel, Sage										

The disaggregation of Anne Arundel County projections by FAZ is shown in Exhibit III-2.[30] The bulk of the county's housing stock is in three sub county areas—the East, North, and West FAZs. These three areas account for well over 80 percent of the housing stock in Anne Arundel County.

Exhibit III-2: Anne Arundel County projections of total housing stock

FAZ	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Annapolis	15,447	15,617	15,788	15,958	16,128	16,146	16,164	16,183	16,201	16,219
East	62,529	62,832	63,134	63,437	63,752	64,084	64,429	64,773	65,118	65,355
North	55,766	56,306	56,847	57,387	57,775	58,417	58,907	59,398	59,888	60,368
South	12,904	12,958	13,011	13,065	13,122	13,181	13,243	13,306	13,368	13,443
West	45,269	46,167	47,066	47,964	48,954	49,547	50,231	50,916	51,600	52,761
Ft. Meade	2,517	2,533	2,550	2,566	2,583	2,615	2,647	2,678	2,710	2,742
Total	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
Sources: Anne Arundel County Department of Planning and Zoning, Sage										

Exhibit III-3 provides additional information regarding Anne Arundel County housing stock by these sub-county areas. Housing types included in this table are single-family detached (SFD), single-family attached (SFA)—often townhouses, and multifamily (MF), which includes apartment complexes and many condominiums. On a countywide basis, this distribution of housing type is predicted to be very consistent from 2006 through 2015. Over that period of time, the proportion of single-family detached housing units decreases from 65.6 percent to 64.7 percent, while the proportion of single-family attached housing rises from 17.4 percent to 17.5 percent. Multifamily units increase from 17 percent to 17.8 percent of the total housing stock throughout this period. As with the distribution in Exhibit III-2, this distribution is based on projected households.

[30] This distribution of housing stock is based on the total housing stock shown in Exhibit III-1 and the distribution of households within the county as calculated by the Anne Arundel County Department of Planning and Zoning.

Exhibit III-3: Anne Arundel County projections of housing stock by area and housing type

*Sub-county area and housing type **	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Annapolis	15,447	15,617	15,788	15,958	16,128	16,146	16,164	16,183	16,201	16,219
SFD	6,055	6,122	6,189	6,256	6,322	6,330	6,337	6,344	6,351	6,358
SFA	3,090	3,124	3,158	3,192	3,226	3,230	3,233	3,237	3,241	3,244
MF	6,302	6,371	6,441	6,510	6,580	6,587	6,594	6,602	6,609	6,617
East	62,529	62,832	63,134	63,437	63,752	64,084	64,429	64,773	65,118	65,355
SFD	50,530	50,775	51,019	51,264	51,519	51,787	52,065	52,344	52,622	52,814
SFA	6,909	6,942	6,976	7,009	7,043	7,081	7,119	7,157	7,195	7,221
MF	5,090	5,115	5,140	5,164	5,190	5,217	5,245	5,273	5,301	5,320
North	55,766	56,306	56,847	57,387	57,775	58,417	58,907	59,398	59,888	60,368
SFD	34,076	34,406	34,736	35,066	35,303	35,696	35,996	36,295	36,595	36,888
SFA	9,009	9,096	9,184	9,271	9,333	9,437	9,516	9,596	9,675	9,752
MF	12,681	12,804	12,927	13,050	13,137	13,284	13,395	13,507	13,618	13,728
South	12,904	12,958	13,011	13,065	13,122	13,181	13,243	13,306	13,368	13,443
SFD	12,610	12,662	12,714	12,767	12,823	12,880	12,941	13,002	13,063	13,137
SFA	115	115	115	116	116	117	118	118	119	119
MF	180	181	181	182	183	184	185	185	186	187
West	45,269	46,167	47,066	47,964	48,954	49,547	50,231	50,916	51,600	52,761
SFD	24,057	24,535	25,013	25,490	26,016	26,331	26,695	27,058	27,422	28,039
SFA	13,418	13,684	13,951	14,217	14,510	14,686	14,889	15,092	15,294	15,638
MF	7,793	7,948	8,103	8,257	8,428	8,530	8,648	8,766	8,883	9,083
Ft. Meade	2,517	2,533	2,550	2,566	2,583	2,615	2,647	2,678	2,710	2,742
SFD	231	233	234	236	237	240	243	246	249	252
SFA	1,348	1,357	1,366	1,375	1,384	1,401	1,418	1,435	1,452	1,469
MF	937	944	950	956	962	974	986	998	1,010	1,021
Total	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888
SFD	127,560	128,733	129,906	131,078	132,220	133,264	134,277	135,289	136,302	137,488
SFA	33,888	34,318	34,749	35,179	35,613	35,951	36,292	36,634	36,975	37,444
MF	32,984	33,362	33,741	34,120	34,480	34,776	35,053	35,330	35,608	35,956
Distribution of total housing stock by housing type										
SFD	65.6%	65.5%	65.5%	65.4%	65.4%	65.3%	65.3%	65.3%	65.3%	65.2%
SFA	17.4%	17.5%	17.5%	17.6%	17.6%	17.6%	17.6%	17.7%	17.7%	17.8%
MF	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%	17.0%

Note. * SFD = single-family detached. SFA = single-family attached. MF = multifamily.
Sources. Anne Arundel County Department of Planning and Zoning, Sage

Sub-county area projections of Howard County's housing stock are presented in Exhibit III-4. Over half of the county's housing is located in either Columbia or Ellicott City although the share of total housing in these two areas declines significantly from 2006 to 2015. The Senior East and Route 1 areas are not geographically distinct, but are overlays of other areas, each devoted to a more specific housing or planning purpose.

Exhibit III-4: Howard County projections of total housing stock by sub county area

Location	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
Elkridge	12,758	13,008	13,263	13,516	13,766	13,966	14,146	14,326	14,540	14,720
Columbia	39,029	39,092	39,305	39,418	39,591	39,811	39,969	40,127	40,231	40,341
Southeast	13,421	13,723	14,025	14,367	14,669	14,971	15,291	15,611	15,931	16,251
Rural West	12,907	13,157	13,407	13,657	13,907	14,157	14,407	14,657	14,907	15,157
Ellicott City	21,563	21,911	22,259	22,607	22,960	23,308	23,666	24,024	24,382	24,740
Senior East	1,606	1,863	2,140	2,407	2,682	2,945	3,196	3,450	3,708	3,931
Route 1	157	157	449	832	1,141	1,427	1,777	2,046	2,336	2,601
Total	101,441	102,911	104,848	106,804	108,716	110,585	112,452	114,241	116,035	117,741

Source: Howard County Department of Planning and Zoning

Exhibit III-5 presents trends in the distribution of housing by type in Howard County. In addition to single-family detached (SFD), single-family attached (SFA), and apartment (APT) housing, these data include mobile homes (MH) and housing that is restricted to individuals who meet minimum age requirements. This age-restricted (AR) housing represents only a tiny share of the existing housing inventory, but this share will grow substantially by 2015 when the total number of age-restricted units will be almost four times the total of 2005. From 2005 to 2015, the number of single-family attached homes and apartments will increase at a rate somewhat faster than the total housing stock in Howard County. As a result, in the future single-family detached housing will represent a somewhat smaller share of all housing in the county.

Exhibit III-5: Howard County projections of total housing stock by housing type

*Type of housing **	*2005*	*Share of total*	*2010*	*Share of total*	*2015*	*Share of total*
SFD	55,042	54.9%	57,625	53.0%	60,624	51.5%
SFA	20,319	20.3%	22,113	20.3%	24,184	20.5%
APT	21,940	21.9%	23,598	21.7%	26,154	22.2%
MH	1,559	1.6%	1,602	1.5%	1,605	1.4%
AR- SFD	28	0.0%	126	0.1%	311	0.3%
AR-SFA	367	0.4%	1,411	1.3%	1,907	1.6%
AR-APT	999	1.0%	2,241	2.1%	2,956	2.5%

Note: * SFD = single-family detached. SFA = single-family attached. APT = apartment. MH = mobile homes. AR = age-restricted.
Sources: Howard County Department of Planning and Zoning, Baltimore Metropolitan Council, Sage

Projections of the housing inventory in the City of Laurel from 2007 to 2015 are shown in Exhibit III-6. Like Howard County, Laurel is expected to add townhouses and multifamily units at higher rates than single-family and two-family housing. By 2015 multifamily housing will account for 61 percent of all housing in the city, up from 58 percent in 2007. Single-family attached housing will decrease from 22 percent of all units in 2007 to 18 percent of the housing stock in 2015.

Exhibit III-6: City of Laurel projections of total housing stock

Type of housing	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
SF and two-family	2,490	2,525	2,564	2,597	2,612	2,612	2,612	2,612	2,612
Townhouse	2,302	2,322	2,362	2,427	2,492	2,542	2,592	2,592	2,942
Multi-family	6,752	7,208	7,233	7,783	8,273	8,323	8,723	8,723	8,723
Total	11,544	12,055	12,159	12,807	13,377	13,477	13,927	13,927	14,277
Source: City of Laurel									

Changes in the housing stock in the three jurisdictions over the next several years suggest generally modest changes from current conditions. The most significant changes may be the expansion of single-family attached and multifamily housing as shares of all housing in Howard County and Laurel. Because this type of housing is generally lower priced than single-family detached housing, this trend likely helps provide more affordable housing options in these jurisdictions. This is also possible in Anne Arundel County, however, single-family attached and multifamily housing as shares of that county's total housing stock are not expected to change significantly over the next several years.

IV. Unconstrained growth in households relative to growth in housing stock

By comparing total housing stock to the unconstrained demand for housing a comprehensive understanding of the availability of housing is possible. This comparison allows for a clearer perspective on potential housing shortages and overall housing affordability.

At a minimum, one housing unit must be available for every household. Realistically, the total number of housing units needs to exceed the total number of households to facilitate and accommodate those who are seeking housing. Traditionally, a vacancy rate for rental housing of 5 percent has been considered a benchmark. In other words, a 5 percent vacancy rate is associated with accommodating those households that seek rental housing, but is not so high that the finances of landlords become unviable.[31] As discussed in the report on housing stratification, rental vacancy rates in the counties have generally been below this 5 percent benchmark rate. In Laurel rental vacancies are estimated to be about 5 percent of all rental units. Vacancy rates for owner occupied housing are always significantly lower, typically about 2 percent. Recent U.S. Census estimates for these jurisdictions indicate that vacancy rates for owner occupied housing were below 2 percent.[32]

Based on the proportion of owner-occupied and rental housing in each of the jurisdictions, a weighted-average benchmark vacancy rate for all housing units can be created. This vacancy rate assumes that a 5 percent vacancy rate applies to all rental housing in the jurisdictions while a 2 percent rate applies to all owner-occupied housing. Overall, this benchmark vacancy rate is 2.7 percent for the counties and, because of its higher proportion of rental properties, 3.4 percent for the City of Laurel as shown in Exhibit IV-1.

Exhibit IV-1: Benchmark average vacancy rates for total housing stock by jurisdiction

	Anne Arundel County	*Howard County*	*Laurel*	*Total*
Owned housing	76.1%	75.8%	51.9%	75.2%
Rental housing	23.9%	24.2%	48.1%	24.8%
Total	100.0%	100.0%	100.0%	100.0%
Average vacancy rate	2.7%	2.7%	3.4%	2.8%
Source: Sage				

This benchmark vacancy rate can be used to analyze the availability of housing in the three jurisdictions. If both rental housing and owner-occupied housing were experiencing the benchmark vacancy rates, then the supply of housing would be reasonably readily available to those households seeking housing. For the two counties, the benchmark would be a housing stock or a total number of housing units equal to 102.7 percent of the households seeking housing. For the City of Laurel this benchmark would be housing units equal to 103.4 percent of the households seeking housing. If the ratio of housing stock to households falls below these benchmarks, then the housing market can be considered tight. In this case, supplies can be seen

[31] The most recent census data on vacancy rates indicates that 7.8 percent of all U.S. rental housing was vacant while 7.6 percent of all Maryland rental housing was vacant. Vacancies among all U.S. owner-occupied housing was 2.2 percent and in Maryland 1.5 percent. U.S. Census, 2005-2007 American Community Survey 3-Year Estimates.

[32] Vacancy rates for owner occupied housing for the period 2005-2007 are estimated at 0.9 percent for Anne Arundel County, 0.7 percent for Howard County, and 1.6 percent for Laurel. U.S. Census, 2005-2007 American Community Survey 3-Year Estimates.

as relatively low and pressure to increase prices would be presumed. If the ratio of housing stock to households were above these benchmarks, then the supply of housing could be considered adequate or even plentiful. In this case, little ability to raise prices would be assumed. Indeed in extreme cases, prices would be reduced as an incentive to buyers or renters.

Of course, as the current housing market has demonstrated, there are many factors that influence housing availability. If lenders retreat from the mortgage market, only the most creditworthy will qualify for loans. Uncertainty and fear can distort many basic market functions. Nevertheless, supply and demand are basic to any market. In housing, having a few more houses and apartments than households is critical to the smooth functioning of the marketplace and the ability for households to locate to economic opportunity-rich communities.

Exhibit IV-2 compares the forecasted housing stock (i.e. housing units) and forecasted number of households discussed above. The number of households is based on future employment levels and is defined as unconstrained housing demand. Using the benchmarks shown in the prior exhibit is unnecessary to evaluate the projected availability of housing. In Anne Arundel and Howard there will be fewer housing units than the number of households seeking or hoping to reside in the counties in 2010 and 2015. In neither county is the supply of housing close to the forecast of unconstrained demand. The closest either county comes to having housing units even equal to unconstrained demand is the forecast for Anne Arundel County in 2010 when the gap is over 9,000 housing units. Moreover, the shortfall of housing in the counties is projected to grow over time. In 2010, the unconstrained demand for housing in the counties will exceed the housing stock by 22,970 households while the shortfall in 2015 is projected at 27,679 households. On the other hand, Laurel is forecasted to have an adequate, even plentiful, supply of housing in 2010 and 2015. This relative abundance of housing in Laurel reduces the shortfall of the three jurisdictions as a whole, and tends to mask the shortfalls that are expected to accumulate in the counties.

Exhibit IV-2: Summary of forecasts of total housing stock versus total households/unconstrained demand

Jurisdiction	*2010*			*2015*		
	Housing stock	House-holds	Housing stock as share of total households	Housing stock	House-holds	Housing stock as share of total households
Anne Arundel County	202,314	211,489	95.7%	210,888	223,589	94.3%
Howard County	108,716	122,511	88.7%	117,741	132,719	88.7%
City of Laurel	12,807	12,055	106.2%	14,277	12,995	109.9%
Total	323,837	346,055	93.6%	342,906	369,303	92.9%
Source: Sage						

This finding of a housing market unable to meet unconstrained demand appears to be at odds with the findings in Chapter 3. That report, however, looked at BRAC demand in isolation, not as a part of overall, unconstrained housing demand as is discussed in this report. The stratification report analysis also used historic housing sales and rental vacancy rates and applied those rates to the total inventory of housing to estimate housing availability. For that report, rental vacancy rates were derived from various sources, typically from a period from 2005 to

2007. For this report, the benchmark 5 percent desired vacancy rate was utilized for rental housing, and 2 percent for owner-occupied housing.

More importantly, total demand for housing as defined in this report is estimated on the basis of employment and compares that to the total supply of housing as defined by the housing stock. These estimates of housing demand and supply are also forecast into the future. The difference between approaches explains the separate implications of analytical findings in the previous stratification report and this report.

Another perspective on total supply and demand can be derived from looking at longer-term trends in housing availability, defined as total housing stock and total households. Exhibit IV-3 compiles information regarding the housing stock and total households in each of the three jurisdictions starting in 2000 and going through 2015. Data for 2000 are taken from the U.S. Census and are presumably the most recent, reliable data on both housing stock and households. For all other data the sources are earlier exhibits in this report. In addition for 2010 and 2015, the housing demand created by BRAC is separately listed. This allows for an assessment of the impact of BRAC relative to other demands for housing.

Exhibit IV-3: Impact of BRAC on housing availability

Factor	*Anne Arundel County*	*Howard County*	*City of Laurel*
Housing stock, 2000	186,937	92,818	9,548
Total households, 2000	178,670	90,043	8,931
Housing stock as share of total households, 2000	104.6%	103.1%	106.9%
Housing stock, 2005-2007	194,432	101,441	11,544
Unconstrained housing demand, 2005-2007	195,686	105,718	9,924
Housing stock as share of unconstrained housing demand, 2005-2007	99.4%	96.0%	116.3%
Housing stock, 2010	202,314	108,716	12,807
Non-BRAC demand, 2010	205,595	115,936	11,981
BRAC housing demand, 2010	2,122	1,135	72
Unconstrained housing demand, 2010	207,717	117,071	12,053
Housing stock as share of unconstrained housing demand, 2010	97.4%	92.9%	106.3%
Housing stock, 2015	210,888	117,741	14,277
Non-BRAC demand, 2015	217,218	125,578	12,878
BRAC housing demand, 2015	3,451	1,847	117
Unconstrained housing demand, 2015	220,669	127,425	12,995
Housing stock as share of unconstrained housing demand, 2015	95.6%	92.4%	109.9%
Sources: U.S. Census, Anne Arundel County, Howard County, City of Laurel, Sage			

What the exhibit clearly shows is the impact of the estimated unconstrained housing demand in the counties. In 2000, there was an adequate or even plentiful supply of housing. In 2000, housing availability reflect actual conditions for both supply and demand. The analysis does not include an estimate of unconstrained demand in 2000, and the households residing in the counties reflect whatever constraints were then in place. For all subsequent years, the estimates

of households in the counties are forecasted unconstrained housing demand while the changes in the housing stock (i.e. number of housing units) reflect estimates of the regulated volume of new construction in the counties. Thus, the data for all years except 2000 provides comparisons between constrained supply and unconstrained demand. In the counties this comparison provides a consistent picture of a supply of housing unequal to unconstrained demand and a trend of expansion of the housing stock failing to keep pace with unconstrained demand. As a result, the housing supply steadily falls farther behind the growth in new households. As has often been the case, the data for the City of Laurel, reflect a different story with demand and supply in a more reasonable balance. Indeed, the expectations of a relative abundance of housing in Laurel suggests that Laurel will be an obvious source of housing for those who cannot find housing, particularly more affordable, housing in either of the counties.

Exhibits IV-4 through IV-6 provide charts of trends in housing availability for each jurisdiction. The impact of BRAC is separately shown for 2010 and 2015. For the counties, the charts tell similar stories: unconstrained demand substantially exceeds housing supply and while BRAC is a significant share of that new demand, unconstrained demand from non-BRAC households would overwhelm supply even without the impacts of BRAC. With its more plentiful housing stock, Laurel shows little problematic impact from BRAC demand.

Exhibit IV-4: Impact of BRAC on housing availability, Anne Arundel County

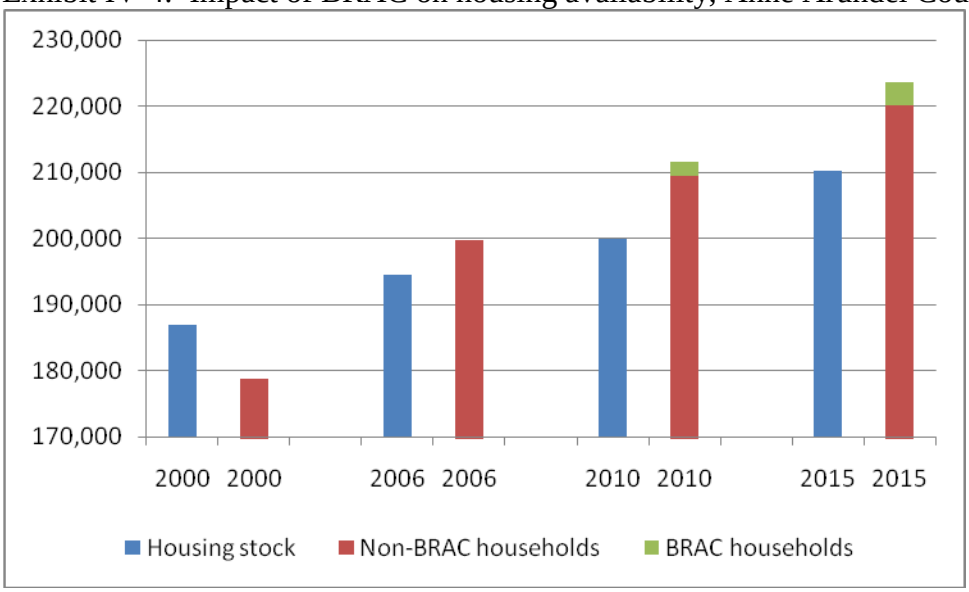


Exhibit IV-5: Impact of BRAC on housing availability, Howard County

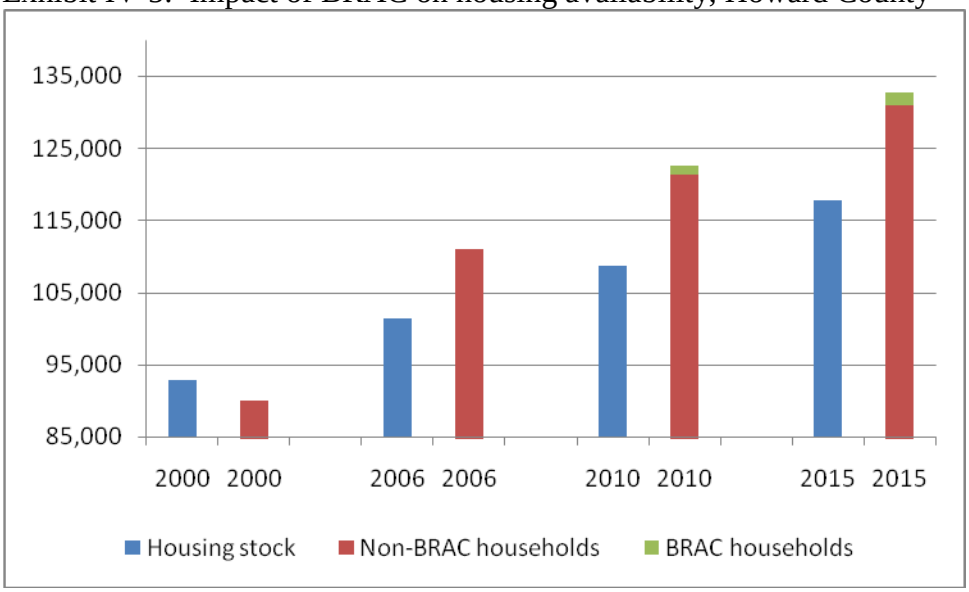
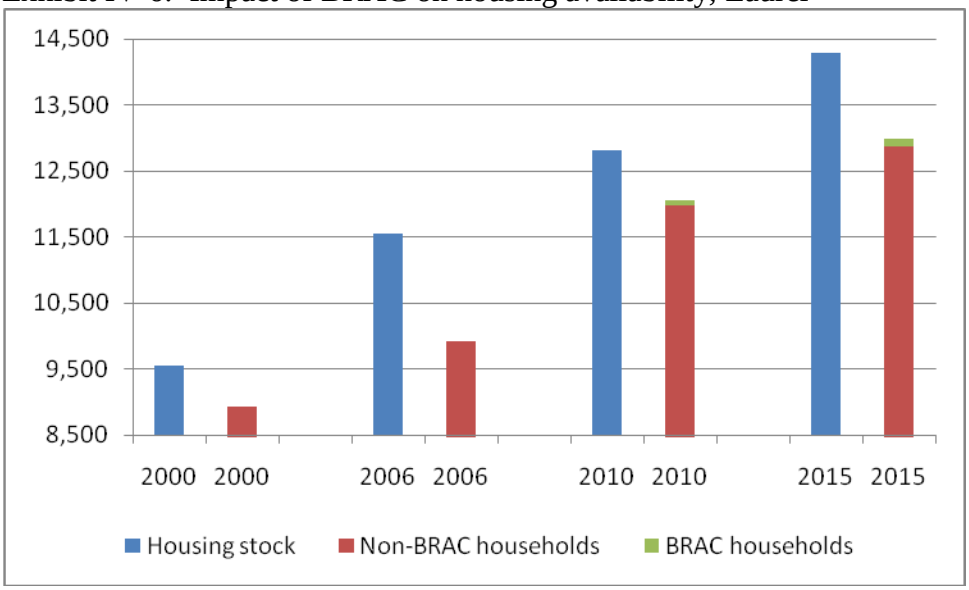


Exhibit IV-6: Impact of BRAC on housing availability, Laurel



Another perspective on trends in the availability of housing in the jurisdictions is provided by comparing changes in housing stock and changes in the number of households over time. Using data from Exhibit IV-3, net changes in housing stock and households can be calculated for the three periods included in that exhibit, namely, 2000 to 2005/7, 2005/7 to 2010, and 2010 to 2015.

These calculations are presented in Exhibit IV-7. What emerges from this exhibit is a general tendency for the housing stock to fail to keep up with growth in the number of households. For the period 2000 to 2005/7, the large increase in housing demand in Anne Arundel and Howard counties is a function of comparing actual households in 2000 to the estimate of unconstrained households in 2005/7. Subsequent comparisons of households in the counties are between two

estimates of unconstrained households. Nevertheless, for the counties, increases in the housing stock (i.e. added housing units from new construction) are uniformly smaller than the forecast of increases in unconstrained households. For Laurel, the picture is more mixed with housing stock usually, but not always, growing faster than the increase in the number of households. For the entire 2000 to 2015 period, Laurel has or is expected to add more housing than households.

Exhibit IV-7: Change in housing stock relative to growth in households, 2000 to 2015

Period of time	*Anne Arundel County*		*Howard County*		*City of Laurel*	
	Housing stock	House-holds	Housing stock	House-holds	Housing stock	House-holds
Net change 2000-2005/7	7,495	17,016	8,623	15,675	1,996	993
Net change 2005/7-2010	7,882	12,031	7,275	11,353	1,263	2,131
Net change 2010-2015	8,574	12,952	9,025	10,354	1,470	940
Total: 2000-2015	23,951	41,999	24,923	37,382	4,729	4,064
Total: 2005/7-2015	16,456	24,983	16,300	21,707	2,733	3,071

Policy implications – Counties will experience significant housing shortfalls

The policy implications of the data presented in Exhibit IV-7 seem very clear. Both Anne Arundel and Howard counties need to accelerate the formation of new housing opportunities if BRAC effects are to be appropriately accommodated.

Increases in the number of housing units in the counties have not kept pace or are not expected to keep pace with increases in the population seeking housing in these jurisdictions. This accounts for the tightening of these housing markets over time and suggests that markets will grow ever tighter during the period in which BRAC is expected to create new demand for housing in the jurisdictions. Tightening of the markets almost certainly will generate upward pressures on prices despite the current downturn in the housing market. Tightening may not even be the right term because the analysis strongly suggests that the number of families and other households, who would prefer to live in the counties because of the location of work for household residents, will easily and substantially exceed the supply of housing. Indeed it would appear that the downturn in the market and the associated slashing of new construction has been particularly ill-timed for households drawn to new BRAC jobs at FGGM and to other households linked to other new jobs in the counties.

Laurel presents an alternative picture. Although growth in households is expected to substantially exceed the increase in the housing stock in the period from 2005/7 to 2010, in the other periods increases in the housing stock outran or are projected to outrun increases in households. Over the entire period from 2000 to 2015, Laurel is expected to create more housing than it needs to address the increase in households and to maintain an adequate housing supply.

Upward pressure on prices will also presumably exacerbate the market for affordable housing. As noted in Chapter 3, historic vacancy rates for lower-priced housing are quite low. The trends outlined above suggest that these vacancy rates will only decrease in the future, making the search for affordable housing more difficult.

By considering benchmark vacancy rates, an adequate future housing supply for the counties can be estimated. Because the forecasted housing supply in Laurel should be at least adequate to meet future housing needs, it is unnecessary to estimate a benchmark housing supply for the city. Using the 2.7 percent vacancy rates for all housing shown in Exhibit IV-1, desirable housing supplies can be estimated. These desirable or "benchmark" numbers of housing units are estimated by assuming the need for one housing unit per forecasted household (i.e. for each unit of unconstrained housing demand) plus enough housing units to allow for the benchmark 2.7 percent vacancy rate. These benchmark estimates of housing units are compared to forecasted housing units in Exhibit IV-8. For both counties the shortfall is estimated at thousands of housing units representing at least 5.4 percent and as much as 11.1 percent of the forecasted housing stock in the counties in 2010 and 2015.

Exhibit IV-8: Comparison of benchmark and forecasted housing supply

Jurisdiction and year	*Estimated unconstrained demand*	*Housing units*			
		Benchmark	Forecasted	Shortfall	
				Number	Share of forecasted supply
Anne Arundel County					
2010	207,717	213,325	202,314	11,011	5.4%
2015	220,669	226,627	210,888	15,739	7.5%
Howard County					
2010	117,071	120,232	108,716	11,516	10.6%
2015	127,425	130,865	117,741	13,124	11.1%

What are the implications of the estimated shortfalls of housing? The overall conclusion is not that households will be camping in the parks of Anne Arundel and Howard counties. If the past is prologue to the future as it usually is, the imbalance calculated in Exhibit IV-8 will mean that households will find housing elsewhere—in Prince George's, Carroll, Baltimore, and other counties, and in Baltimore City. The City of Laurel is likely to be a magnet for many of these households, especially middle-income households that fit the characteristics of the available housing in Laurel. Excess demand will keep existing housing prices high in Anne Arundel and Howard counties and will encourage new construction at the high end of the market. Vacancy rates for all housing will be relatively low with rates for less expensive housing becoming particularly low. The availability of housing affordable to middle and lower income households in both counties will diminish with retail, service, and municipal workers likely feeling the brunt of this scarcity. Commutes to jobs in the counties will likely grow longer.

V. Strategies for affordable housing

Affordable housing has been a concern of the planning and housing community for decades. Since 1931 the National Housing Conference has been an advocate for affordable housing for all regardless of income.[33] Maryland has been a pioneer along this dimension. Inclusionary zoning was first implemented in Montgomery County, Maryland in 1974 requiring that 15 percent of new developments of over 50 housing units be affordable to low-income households in return for density increases of up to 20 percent.[34] Since that effort, hundreds of communities across the nation have adopted similar zoning ordinances. Dozens of other strategies have also been developed. Today, advocates have a broad range of alternatives to consider in promoting affordable housing. Exhibits V-1 through V-3 list strategies categorized as land-use strategies, financial strategies and other strategies.

Exhibit V-1: Land-Use Strategies for Affordable Housing

Planning for Affordable Housing
State Mandates and Guidance for Local Planning
State and City Comprehensive Development Initiatives
Assessments of Development Capacity
Land Assembly/Land Banks
Reusing Vacant or Abandoned Property for Affordable Housing
Transfer of Development Rights
Redevelopment of Brownfields
Zoning for Affordable Housing
Overlay Zoning Districts
Affordable Housing Districts
Inclusionary Zoning
Density Bonus Programs
Growth Centers and Corridors
Changes in Zoning to Encourage Affordable Housing
Accessory Dwelling Unit Ordinances
Increased Use of Manufactured Housing
Adaptive Reuse of Underutilized Buildings
Performance Zoning
Types of Development
Cluster Development
Infill Development
Mixed-Use Development
Planned Unit Development
Transit-Oriented Development
Affordable Housing Ordinances
Housing and Condominium Replacement Ordinances
No Net Loss Mandates

Source: Abt Associates

[33] National Housing Conference, Overview. www.nhc.org

[34] National Center for Smart Growth Research and Education , "Housing market impacts of inclusionary zoning," February 2008.

Exhibit V-2: Financial Strategies for Affordable Housing

- State Tax Credits
  - Tax Credits for Donations to Affordable Rental Housing Projects
  - State Tax Credits for Investments in Affordable Rental Housing
  - State Historic Tax Credits
  - Tax-Linked Bonuses
- Property Taxes
  - Property Tax Relief for Maintaining Affordable Rents
  - Property Tax Relief for Developing Affordable Rental Housing
  - Special Taxing Districts
  - Taxing Land and Buildings at Different Rates
- Other Taxes
  - Land Gain Taxes
  - Demolition Taxes
- Impact Fees
  - Impact Fee Waivers and Reductions
  - Graduated Impact Fee Schedules for Infill Development
- Regional Approaches to Financing Affordable Housing
  - State Incentives to Local Governments to Encourage Affordable Housing Development
  - Tax Base Sharing
- Other Sources of Financing
  - Housing Trust Funds
  - Housing-Linked Deposits
  - Linkage Fees
  - Tax Increment Financing
  - Profit-Sharing
  - General Obligation Bonds
  - "Double Bottom Line" Private Equity Funds
  - Use of Housing Finance Agency Reserves for Affordable Housing
  - Live Near Your Work Programs
  - Shared Equity

Source: Abt Associates

Support for affordable or workforce housing is widespread. In addition to governmental agencies at the federal, state, and local levels, advocates include the development community (e.g., National Association of Home Builders) and think tanks such as the Urban Land Institute (ULI). The advisory board for a research center at ULI devoted to affordable housing includes major builders, national lenders, and former housing and urban development secretaries.

With a long history of concern and across-the-board interest, there is an abundance of literature addressing a long list of strategies, policies, and best practices. Case studies and illustrative examples run the gamut from metropolitan-wide efforts in major urban regions to a relatively small project on Martha's Vineyard. Given the complexity of the process of creating housing, the intervention points described in this literature are many and varied. In short, much has been written on strategies, policies, and best practices for affordable, workforce housing.

Exhibit V-3: Other Strategies for Affordable Housing

- State Legislation
  - State-Level Fair Share Programs
  - State Programs to Preserve Manufactured Home Parks
- Informational Strategies
  - Centralized Data Systems on Affordable Housing
  - Media Campaigns for General Support of Affordable and High Density Housing
  - Advocacy Efforts to Reduce NIMBYism
  - Vacant Building Registry
  - Making Housing More Affordable by Reducing Utilities Consumption
  - Homeownership Education and Counseling
- Organizational Strategies
  - Task Forces on Affordable Housing
  - Workforce Housing Collaborations
  - Community Land Trusts
  - Creative Public-Private Collaborations
  - For Profit-Nonprofit Partnerships
  - Employer-Assisted Housing
- Reforming Development, Construction, and Building Codes
  - Building Code Changes to Promote Rehabilitation
  - Expedited Permitting Processes
  - Reforming Construction Standards and Building Codes

Source: Abt Associates

Success stories

Given the obvious need and the many efforts to create and support affordable housing, it is not surprising that successful projects and developments can be found across the country. With the array of strategies and tactics that have been developed, it is also not surprising that the variability among these success stories is noteworthy.

In some cases, these stories appear to be the result of relatively straightforward efforts. In Kane County, Illinois, a local manufacturer partnered with the Illinois Housing Development Authority (IHDA) to provide funds to moderate-wage earners to help buy housing closer to the plant. IDHA matched funds provided by the manufacturer to support down payments, cover closing costs, or reduce mortgage interest. Reduced employee turnover, absenteeism, and training costs recouped the manufacturer's $150,000 cost within one year. In Chicago, public school employees can obtain below market-rate loans and waivers of application and appraisal fees for home purchases in the Logan Square area.[35]

One of the common features of most success stories is that results are produced from creatively combining many strategies and tactics in response to the opportunities that arise in local settings. Even a classic strategy like Montgomery County's inclusionary zoning ordinance has been constantly refined and has been modified over 20 times since first created in the 1970s.[36]

[35] "Success stories," *Building Sustainable Communities: Workforce Housing*, Volume 1, January 2004.
[36] Homes for Working Families. *Workforce housing: innovative strategies and best practices*. Urban Land Institute. 2006

As an example of a success story, a development of 55 single-family homes in southwest Georgia under the federal Section 5(h) Homeownership Plan program, the local housing authority developed a program that includes: 1) a two-year lease-to-purchase period allowing residents time to build equity, save for down payments, repair credit problems, and prepare for homeownership; 2) the opportunity to apply for mortgages after this period; 3) the opportunity to take an additional two years to qualify for a mortgage if the first application is rejected; and 4) the requirement to participate in counseling and training programs addressing planning for homeownership, credit counseling, household budgeting, financial counseling and other topics.[37]

As another example, a partnership of major employers in Macon, Georgia—city government, Mercer University, and the Medical Center of Georgia—created a program to revitalize a decaying neighborhood using $7.3 million in funding from the employers, private sources, and local banks. In addition, a three-year grant from the U.S. Department of Housing and Urban Development supported community building initiatives including organizational development, leadership training, neighborhood cleanup and community policing. Other efforts provided down payment assistance and created a community development corporation.[38] Other examples reinforce the finding that success is derived from the creative combination of strategies and practices.[39] Some of these are described briefly below:

- The development of a new airport for Denver opened up the redevelopment of the 7.5 square-mile Stapleton airport site for many uses. Tax increment financing, innovative land acquisition, low-income housing tax credits and a close working relationship with local public schools created 1,600 affordable housing units out of a total of 12,000 units in the Stapleton mixed-use development;
- Casa del Maestro (house of the teacher) is a 40-unit garden apartment development built on surplus land owned by the Santa Clara, California school system. Financing at below market rates with little or no down payment was provided by the California School Boards Association Finance Corporation, which funds capital projects for public schools. Project design focused on blending the apartments seamlessly into the surrounding single-family community. Ongoing project management is provided by a nonprofit created specifically for this purpose. Only school district employees may rent units;
- A small project in Fairfax County, Virginia created eight affordable townhouses in a development otherwise devoted to 97 luxury homes (4,000 to 5,000 square feet) in response to the county's Affordable Dwelling Unit Ordinance. All financing was private. The affordable units utilized a "great home" design scheme whereby four townhouses of 1,200 square feet were combined into a single structure that mimics the look of and blends easily with the 97 luxury homes in the development;
- Ohlone-Chynoweth Commons in San Jose, California is a mixed-use development with all 194 multifamily rental units developed as affordable housing for households earning

[37] "Workforce housing in Georgia." Housing and Demographics Research Center, University of Georgia. September 2001.
[38] *Ibid.*
[39] *Op. cit.*, Homes for Working Families

30 percent to 60 percent of the region's median income. The project was jointly undertaken by the regional transportation agency and a nonprofit developer. While the city expedited the application and approval process, issues raised by neighboring communities slowed the development process. City tax-exempt bonds, federal Low-Income Housing Tax Credits, a city loan, and other regional, state, and federal grants and funds provided financing. The project is located on a regional rail line with connections to major employment centers and is sited on what had been under-utilized space in a park-and-ride lot for the rail line. Property management and resident services are provided through a nonprofit agency affiliated with the developer.

Principles for success

The examples of successful projects described above demonstrate that there are many paths to creating viable and affordable housing in many different settings. According to some observers, there are themes and principles that characterize these projects which can be summarized as follows.[40]

- A comprehensive and flexible approach to policies and programs;
- The use of public policies, land, programs and money to leverage private investment;
- Public/private partnerships, when appropriate;
- Facilitated development processes created by waiving fees and expediting approvals;
- Creation of mixed-income communities with some market-rate units, when possible;
- Opportunities for affordable homeownership, not just affordable rental units, and support for homebuyer education;
- Projects aligned with smart growth, green design, and transit-oriented development;
- Education on connections between affordable housing and community economic health and well-being; and
- Integration of affordable housing into surrounding communities.

In summary, planning for affordable housing can utilize many strategies and many tools. What separates the best projects from others seems to be the creativity of planners and developers combined with a capacity to harness and leverage many, diverse resources. These projects also responded to local conditions in many ways from architectural "disguises" that created affordable housing seemingly indistinguishable from high-end homes to creating housing for teachers who served the community where the housing was located. Because of the creativity associated with the numerous success stories, housing affordability has been enhanced throughout many communities in the U.S., ranging from Silicon Valley to the rural South.

Appropriate strategies for Central Maryland

After researching all of the tools available nationwide, looking at the various success stories and studying the principles for success, one needs to then apply these ideas, practices and principles to the existing practices and local market conditions in order to define the strategies most

[40] *Ibid.*

appropriate for Central Maryland. The housing downturn that began in earnest in 2006 and deepened considerably in 2007 and 2008 have highlighted the importance of housing affordability. The lack of affordability induced many households to embrace housing expenses far in excess of what has been traditionally viewed as financially sound. This has been true both of owner-occupied and rental dwelling units. Therefore, any effort to promote more advantageous ratios of income to housing expense must encompass both owner-occupied and rental segments.

If implemented, any of these strategies could result in reducing the affordable housing imbalance by 2015. reader should keep in mind that this study only covers six years into the future and many of these strategies to address the imbalance between demand and supply of affordable housing may take longer to implement than the timeline covered by this analysis. The broad strategy areas recommended to be considered include:

Strategy I. *Expand the availability of sites*.

Land cost can be reduced by making publicly owned land - including County surplus property and Board of Education owned property - available at no cost to developers for the construction of workforce housing. Federal, State and County dollars, if made available, could also be used to purchase land for the construction of new housing, encouraging infill development.

Strategy II. *Changes to Land Use Policies*.

By allowing land use to support a diversity of housing types, workforce housing can easily be provided. Local jurisdictions should encourage mixed use development with jobs, housing and other services within walking distance. Mixed use sites should be planned to meet the objective of providing affordable "live near your work" opportunities. Inclusionary zoning should be adopted requiring that workforce housing be provided coupled with other incentives such as flexible setbacks and the ability to build alternative dwelling units. Density bonuses may need to be considered in exchange for workforce housing as part of inclusionary zoning and mixed use zones. The counties should examine how Adequacy and Public Facilities (APF) ordinances are affecting the supply of workforce housing. Local jurisdictions should develop an expedited review and permitting process as an incentive to developers who provide workforce housing as a component of development. Local jurisdictions should consider the feasibility of adaptive reuse of commercial buildings, such as motels and former retail centers, for workforce housing. Commercial revitalization areas should allow for the provision of workforce housing.

Further, there are very few public policies as broadly accepted as the notion of transit oriented development. The density associated with such development is consistent with elevated levels of ridership, varied price points, efficient utilization of land, and significant positive economic and fiscal impacts. Transit oriented development opportunities can be quite rare, however, with the implication being that state and local governments are encourage to take full advantage of these opportunities.

Strategy III. *Funding Strategies*.

Land use efforts to address the need for workforce housing should be coupled with financial incentives from the public sector. Local governments often provide funds that can complement various financial incentive programs available from the federal and state governments. Many local jurisdictions have established Housing Trust Funds that are funded through one or more consistent and dedicated funding sources. These dedicated sources many times include transfer and recordation tax funds from tax increment financing districts, and a portion of the taxes on select services and commodities. Development cost can be reduced by reducing or even eliminating permitting, capital facilities, and impact fees. Payment-in-Lieu-of-Tax agreements help to lower the operating cost for developers of multifamily rental projects, thus maximizing private funding.

Strategy IV. *Empowering residents*.

The region should provide program subsidies and educational resources so that residents can afford and maintain housing. Down payment, closing cost and mortgage write-down support for residents seeking to purchase homes can be provided in the form of grants or loans. Programs to share equity created over time in owner-occupied affordable housing can help homeowners build wealth while allowing a portion of the equity to be reinvested into future affordable housing projects. Programs that provide low cost financing or grants to rehabilitate owner-occupied homes are a good vehicle for preserving and maintaining the current stock of affordable housing. Finally, by educating prospective homeowners about the process of home purchasing and the responsibilities of homeownership, communities can encourage greater homeownership and community development. Similarly, quality counseling can help homeowners avoid foreclosures and other pitfalls of homeownership.

Chapter 5: Overlap of Housing Supply Areas

Key Findings:

This report concludes only 76 households will seek housing in Anne Arundel and Howard counties as a result of BRAC activities at APG.

This housing demand will occur over a period of many years, primarily between 2010 and 2015. This demand will not materially affect the functioning of the overall housing market and will not influence issues of affordability in any material way.

Even when one also accounts for the impact of BRAC activities at Aberdeen Proving Ground in Harford County on demand for housing in Anne Arundel and Howard counties and the City of Laurel, it appears that BRAC will represent only fraction of incremental demand available to be satisfied during the years ahead.

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List of Exhibits

I. Demand Related to BRAC Impacts at FGGM and APG

BRAC is expected to relocate thousands of jobs to Maryland, particularly at FGGM and APG. Because these facilities are only about an hour's drive apart, it is reasonable to assume that there will be some overlap in the demand for housing generated by BRAC.

Job creation and housing demand at APG and FGGM

One of the earliest studies of BRAC impacts in Maryland estimated that well over 20,000 on base jobs would be added to four Maryland facilities. As shown in Exhibit I-1, the majority of these jobs are located at APG and FGGM.

Exhibit I-1: Net increase in jobs resulting from BRAC

Facility	*On base jobs*	*Share of total jobs*
APG	9,154	40.3%
Andrews Air Force Base	400	1.8%
National Naval Medical Center	3,467	15.2%
FGGM (1)	9,717	42.7%
Total	22,738	100.0%

Note: 1. On base jobs estimate is midpoint of the range of on base jobs.
Source: Science Applications International Corporation

Housing demands are even more tied to the impacts at APG and FGGM. Most of the BRAC jobs relocating to Andrews Air Force Base will be coming from Northern Virginia and will likely have little impact on housing demand in Maryland. The jobs moving to the National Naval Medical Center are being transferred from Walter Reed Army Medical Center in nearby Washington, D.C. Again, it is highly unlikely that these job transfers will affect housing demand in Maryland. Virtually all housing market impacts related to BRAC in Maryland are then likely to be generated by the job relocations at FGGM and APG.

As has been discussed prior, housing demand will be created not only by the on-base jobs that are most closely associated with BRAC, but also by the jobs associated with the contractor tail and those created by the multiplier effect--the indirect and induced jobs. Housing demand will also be affected by commuting patterns, the available supply of housing and other factors. Exhibit I-2 lists the total demand for housing expected to result from the BRAC impacts at APG. This mid-case estimate shows that Harford, Baltimore, and Cecil counties are expected to absorb most of this demand, over 14,000 households representing 84 percent of total demand. The number of households expected to seek housing in Anne Arundel or Howard counties is quite small, only 76 households, under 0.5 percent of all demand generated by APG. Not only are these counties relatively far from APG, but commuting would require driving through or perhaps around Baltimore City, thus encountering daily the most congested traffic in Central Maryland. As the counties are at a fairly similar distance from APG, it is reasonable to assume that the total demand by these 76 households is evenly distributed between the two jurisdictions.

Exhibit I-2: BRAC housing demand from APG--mid-case

Jurisdictions	*Number of households*
Harford County	7,059
Baltimore County	5,168
Cecil County	1,984
Baltimore City	877
York County	835
Lancaster County	380
New Castle County	380
Chester County	152
Anne Arundel & Howard counties	*76*
Total	16,910
Source: Sage	

The housing demand generated by BRAC impacts at FGGM is listed in Exhibit I-3. This demand represents the steady state condition likely to occur around 2015. Given the location of FGGM on the border of Anne Arundel and Howard counties, it is not surprising that over half of the expected demand is in the two counties. Exhibit I-4 combines the housing demand that BRAC is expected to create in Anne Arundel and Howard counties and in the City of Laurel. Impacts on the City of Laurel are expected to be infinitesimal.

Exhibit I-3: BRAC housing demand from FGGM--mid-case

Jurisdiction	*Number of households*
Anne Arundel County	*3,451*
Howard County	*1,847*
Baltimore County	1,074
Carroll County	816
Baltimore City	471
Laurel (Prince George's County)	*117*
Other Prince George's County	344
Montgomery County	286
Harford County	218
Other Maryland	444
Virginia	356
Pennsylvania	234
Washington, D.C.	118
West Virginia	12
Delaware	5
Total	9,793
Source: Sage	

Exhibit I-4: Combined BRAC housing demand--mid-case

Jurisdiction	*Number of households*		
	Demand from FGGM	Demand from APG	Total demand
Anne Arundel County	3,451	38	3,489
Howard County	1,847	38	1,885
City of Laurel	117	N/A	117
Total	5,415	76	5,491
Source: Sage			

In considering demand created by BRAC, it is helpful to see BRAC in the context of total demand for housing. Total demand is best seen in terms of unconstrained demand for housing in the two counties. As explained in a prior report, Sage's estimate of unconstrained demand is based on the growth in jobs in these counties and the assumption that most people wish to live relatively near to where they work.[41]

Exhibit I-5 summarizes the estimates and forecasts of households in the three jurisdictions in 2005, 2010 and 2015. Forecasts for Anne Arundel and Howard counties use a methodology for estimating unconstrained demand. The forecast for Laurel is from the Round 7.1 forecast compiled by the Washington Metropolitan Council of Governments. All of these forecasts include estimates of the impacts of BRAC. That is, the almost 5,500 households listed above in Exhibit II-4 are already included in the forecasts of growth in households presented below. From 2005 to 2010, growth is significant in all jurisdictions with Laurel growing over 14 percent, Anne Arundel County experiencing an increase of 11,681 households, and Howard County experiencing an over 10 percent increase in the number of households. Growth in the 2010 to 2015 period is predicted to be only slightly less vigorous in percentage terms. The Laurel and Howard County growth rates drop significantly while Anne Arundel County's growth rate barely decreases.

Exhibit I-5: Forecasted growth in households

Jurisdiction	*2005*	*2010*	*2015*	*Change: 2005-2010*		*Change: 2010-2015*	
				Number	Percent	Number	Percent
Anne Arundel County	199,808	211,489	223,589	11,681	5.8%	12,100	5.7%
Howard County	110,936	122,511	132,719	11,575	10.4%	10,208	8.3%
City of Laurel	10,527	12,055	12,995	1,528	14.5%	940	7.8%
Total	321,271	346,055	369,303	24,784	7.7%	23,248	6.7%
Sources: City of Laurel, Sage.							

[41] Sage's methodology for estimating unconstrained demand is based on an interest in examining demand for housing that is not limited by local policies that constrain the number of new housing units that are approved for construction. The forecasts generally provided by local governments and published by the Baltimore Metropolitan Council essentially estimate future population on the basis of the number of housing units that will be approved. These policies are often deliberately designed to restrict growth and, thus, deflect the demand for housing to other jurisdictions, typically more distant from the locations where jobs are likely to be created in the future.

BRAC in the context of overall housing demand

BRAC-related demand for housing is expected to unfold largely between 2010, when most of the forecasted jobs will relocate to FGGM and APG, and 2015, when the full impacts of those relocated jobs are assumed to finally be realized. This delay in the realization of full impact is primarily a function of the assumption that many jobholders whose work location will change from Northern Virginia to FGGM will choose to commute from their present homes rather than relocate closer to FGGM. As these long-distance commuters retire or change jobs, it is expected that new job holders will choose to live in areas more typical of FGGM workers. It is also assumed that there are likely to be some delays in implementing the various decisions that will be made in relocating jobs to both FGGM and APG.

Although there are many other sources of household growth and new housing demand in Central Maryland, BRAC will be a significant contributor. Of the total expected growth in households between 2005 and 2015, BRAC will be responsible for almost 15 percent of these households in Anne Arundel County and almost 9 percent of the households in Howard County. For the City of Laurel, BRAC will account for less than 5 percent of expected demand. Details on total household growth and BRAC demand are shown in Exhibit I-6.

Exhibit I-6: BRAC demand as share of total household growth

Jurisdiction	*Change: 2005-2015*		
	Total households	BRAC households	BRAC as share of total
Anne Arundel County	23,781	3,489	14.7%
Howard County	21,783	1,885	8.7%
City of Laurel	2,468	117	4.7%
Total	48,032	5,491	11.4%

Source: Sage

Chapter 6: Identification of Housing Demand/Supply Gaps and Impediments

Key Findings:

Almost half of the BRAC households will likely be priced out of the housing market in Anne Arundel and Howard counties. This will create increased demand elsewhere with the City of Laurel almost certainly being high on the list of alternative places to live.

The number of BRAC households who would prefer to live in Anne Arundel and Howard counties, but who are highly likely to be priced out of the housing market totals 2,696 households.

By 2015, constrained housing demand in the two counties from BRAC activities at FGGM is expected to include the 5,298 households. The 2,696 households earning less than $80,000 represent 44 percent of this unconstrained demand.

The impacts of BRAC at FGGM provide opportunities for Anne Arundel and Howard counties to create deliberate and strategic responses to the likelihood that proximately located workforce/affordable housing will become quite scarce as BRAC impacts unfold.

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List of Exhibits

I. Housing Markets and BRAC-Related Impacts at FGGM

BRAC is expected to create thousands of jobs in Maryland, particularly at FGGM and APG. Indeed some observers have suggested that as a single event, BRAC may be the biggest economic boost Maryland has seen since the Second World War. Nevertheless BRAC is just a part of the overall economic growth that will occur in Central Maryland during the next 5 to 6 years. Even at FGGM, there are other important sources of job growth. The impacts of BRAC need to be considered in this larger context, not just in terms of the consequences of the jobs that BRAC will bring to FGGM.

These jobs are expected to arrive in significant numbers at FGGM in 2010. While full effects will take years to occur, the bulk of job locations are expected at the beginning of the impact period. Even if there are some delays in the onset of these job relocations, there is every expectation that substantial impacts will be felt within a year's time.

In terms of its effect on the local housing market, BRAC will likely arrive while Maryland (and the rest of the nation) is still suffering through one of the most severe downturns in housing prices and sales in decades. Because housing is a naturally cyclical industry, however, there is every expectation that normal conditions will return to the housing market by the time the BRAC impacts at FGGM have run their course.

Job creation and housing demand related to BRAC at FGGM

In looking at BRAC impacts it is critical to consider not only the most visible employment--the on-base jobs that the federal government will relocate, but also the many other jobs that are linked to these on-base positions. These other jobs include the defense contractors likely to move to the area around FGGM to be close to their clients, the indirect employment in businesses that supply goods and services to the on-base agencies and the defense contractors, and the induced employment supported by the local spending by on-base, contractor tail, and indirect employees. As shown in Exhibit I-1, there is a range of estimates for the total employment associated with BRAC at FGGM, primarily associated with uncertainties about contractor tail employment. In the most likely case, just over 16,000 jobs will be supported in Maryland because of the BRAC-related impacts at FGGM.

Exhibit I-1: Total jobs associated with housing demand related to BRAC at FGGM: steady state

Type of job	Mid-case	Low case	High case
On-base	5,400	5,400	5,400
Contractor-tail	3,778	2,833	4,722
Indirect	2,019	1,811	2,227
Induced	4,864	4,364	5,365
Total	16,061	14,408	17,713

Note: Totals may not add due to rounding.
Source: Sage

Because Marylanders typically have more than one worker in a household, the number of households associated with this number of jobs is fewer than the number of jobs. Typically,

there are approximately 1.6 jobs per household. This factor allows for the conversion of job growth to household growth. As households determine housing demand, the conversion of jobs to households also allows for the estimation of new demand for housing from employment growth.

This jobs-to-housing-demand logic is based on Maryland's economy historically operating with little unemployment and on the highly specific and technically sophisticated nature of most BRAC-related jobs. Given the typically low rates of unemployment in Maryland, there is little expectation that BRAC jobs, particularly on-base and contractor tail jobs, will be absorbed by the current labor market. Instead, these jobs are expected to expand the labor market and increase population. In the near term, this logic may be tested by the current and atypical high unemployment in Maryland. Longer term, however, Maryland's economic condition is almost certain to return to low unemployment and to continued population growth generated by an expanding employment base.

Many of the jobs relocated to FGGM currently are located in Northern Virginia. A substantial share of those holding these jobs have indicated an intention to commute from their current residences rather than move when their jobs are relocated. Reasons for this are varied, but likely include jobs held by spouses, desires to accommodate children close to graduating from school, pending retirements in the relatively near term, locations of current residences within "reasonable" commuting time of FGGM, and a familiarity with the famously long commutes of many who work in the Washington, D.C. area.

The BRAC impacts at FGGM are expected to create an initial demand for housing in 2010 and then to reach a steady state of demand in 2015 as those who initially chose to commute from their current residences retire, change jobs, or decide to relocate their residences to areas more typical of those working at FGGM. These two stages of housing demand are summarized in Exhibit I-2.

Exhibit I-2: Net increase in housing demand

Timing of demand	*Estimated net housing demand (households)*		
	Mid-case	Low case	High case
Initial demand	6,021	5,415	6,627
Steady state	9,793	8,785	10,801

Source: Sage

Based on the commuting patterns of current FGGM workers, this housing demand will be concentrated in the area around FGGM, but will stretch across much of Maryland and into surrounding states. Given the high cost of housing in Anne Arundel, Howard, and Montgomery counties, it is expected that the households of many indirect and induced workers, who generally earn less than on-base and contractor tail workers, and who might prefer to live near where they work, will instead seek housing in other lower cost jurisdictions. The distribution of all BRAC-related housing demand is summarized in Exhibit I-3 and the net increase in demand is presented in Exhibit I-4.

Exhibit I-3: Estimated location of all BRAC-related housing demand

Jurisdiction	*Share of direct and contractor-tail demand*	*Share of indirect and induced demand*	*Share of all housing demand*
Anne Arundel County	38.5%	30.8%	35.2%
Howard County	20.6%	16.5%	18.9%
Baltimore County	9.4%	13.1%	11.0%
Carroll County	7.1%	10.0%	8.3%
Baltimore City	4.1%	5.7%	4.8%
Other Prince George's County	3.0%	4.2%	3.5%
Montgomery County	3.2%	2.6%	2.9%
Harford County	1.9%	2.7%	2.2%
Laurel (Prince George's County)	1.0%	1.4%	1.2%
Other Maryland	3.9%	5.4%	4.5%
Virginia	3.6%	3.6%	3.6%
Pennsylvania	2.4%	2.4%	2.4%
Washington, D.C.	1.0%	1.4%	1.2%
West Virginia	0.1%	0.1%	0.1%
Delaware	0.0%	0.0%	0.0%
Source: FGGM data on housing location of current workers, Sage			

Exhibit I-4: Net increase in housing demand by jurisdiction

Jurisdiction	*Initial demand*	*Steady state*
Anne Arundel County	2,122	3,451
Howard County	1,135	1,847
Baltimore County	660	1,074
Carroll County	502	816
Baltimore City	290	471
Laurel (Prince George's County)	72	117
Other Prince George's County	212	344
Montgomery County	176	286
Harford County	134	218
Other Maryland	273	444
Virginia	219	356
Pennsylvania	144	234
Washington, D.C.	73	118
West Virginia	7	12
Delaware	3	5
Total	6,021	9,793
Source: Sage		

This demand for housing can be characterized in several ways. Based on surveys of many whose work will be relocated to FGGM and data on existing housing characteristics, the propensity to buy or rent can be estimated and is listed by jurisdiction in Exhibit I-5.

Exhibit I-5: Net increase in housing demand by jurisdiction: owner-occupied and rented

Jurisdiction	*Initial demand*		*Steady state*	
	Owner	Renter	Owner	Renter
Anne Arundel County	1,793	329	2,916	535
Howard County	908	227	1,477	369
Baltimore County	528	132	859	215
Carroll County	437	65	710	106
Baltimore City	188	101	306	165
Laurel (Prince George's County)	159	53	258	86
Other Prince George's County	137	39	223	63
Montgomery County	114	20	185	33
Harford County	54	18	88	29
Other Maryland	212	61	344	100
Virginia	184	35	299	57
Pennsylvania	118	26	192	42
Washington, D.C.	63	9	103	15
West Virginia	6	1	9	2
Delaware	2	1	4	1
Total	4,903	1,118	7,974	1,819
Source: Sage				

The BRAC households for the most part will enjoy middle-income status--over 85 percent will have household incomes ranging from $50,000 to $150,000. Only 8 percent will earn less than $50,000 and only 7 percent will earn over $150,000, as shown in Exhibit I-6.

Exhibit I-6: Distribution of household income of BRAC households

Household income bracket	*Total households*		*Share of total*
	Initial demand	Steady state	
$15,000 to $24,999	58	95	1.0%
$25,000 to $34,999	88	144	1.5%
$35,000 to $49,999	303	493	5.0%
$50,000 to $74,999	1,470	2,392	24.4%
$75,000 to $99,999	1,808	2,940	30.0%
$100,000 to $149,999	1,885	3,065	31.3%
$150,000 to $199,999	408	663	6.8%
$200,000 or more	1	1	0.0%
Total	6,021	9,793	100.0%
Source: Sage			

In most parts of the country the income attributed to at least 90 percent of BRAC households would provide reasonable, even substantial housing purchasing power. Anne Arundel and Howard counties, however, are hardly typical of the nation with 2008 median incomes estimated at $77,000 and $95,000, respectively. Median income in Laurel at roughly $61,000 is still well above the national median income of approximately $50,000.

Housing supply

Given the likely approval of proposed housing projects in the next few years and historic patterns of housing development, the future supply of housing in each jurisdiction can be forecast. The following tables (Exhibit I-7 through Exhibit I-9) track the growth in housing supply by housing type for each jurisdiction.

Exhibit I-7: Anne Arundel County projections of total housing stock by housing type

Housing type *	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
SFD	127,560	128,733	129,906	131,078	132,220	133,264	134,277	135,289	136,302	137,488
SFA	33,888	34,318	34,749	35,179	35,613	35,951	36,292	36,634	36,975	37,444
MF	32,984	33,362	33,741	34,120	34,480	34,776	35,053	35,330	35,608	35,956
Total	194,432	196,414	198,395	200,377	202,314	203,990	205,622	207,253	208,885	210,888

Note: * SFD = single-family detached. SFA = single-family attached. MF = multifamily.
Source: Anne Arundel County Department of Planning and Zoning

Exhibit I-8: Howard County projections of total housing stock by housing type

Type of housing *	*2005*	*% of total*	*2010*	*% of total*	*2015*	*% of total*
SFD	55,042	54.9%	57,625	53.0%	60,624	51.5%
SFA	20,319	20.3%	22,113	20.3%	24,184	20.5%
APT	21,940	21.9%	23,598	21.7%	26,154	22.2%
MH	1,559	1.6%	1,602	1.5%	1,605	1.4%
AR- SFD	28	0.0%	126	0.1%	311	0.3%
AR-SFA	367	0.4%	1,411	1.3%	1,907	1.6%
AR-APT	999	1.0%	2,241	2.1%	2,956	2.5%
Total	100,254	100.0%	108,716	100.0%	117,741	100.0%

Note: * SFD = single-family detached. SFA = single-family attached. APT = apartment. MH = mobile homes. AR = age-restricted.
Sources: Howard County Department of Planning and Zoning

Exhibit I-9: City of Laurel projections of total housing stock by housing type

Type of housing	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*	*2015*
SF & 2-family	2,490	2,525	2,564	2,597	2,612	2,612	2,612	2,612	2,612
Townhouse	2,302	2,322	2,362	2,427	2,492	2,542	2,592	2,592	2,942
Multi-family	6,752	7,208	7,233	7,783	8,273	8,323	8,723	8,723	8,723
Total	11,544	12,055	12,159	12,807	13,377	13,477	13,927	13,927	14,277

Source: City of Laurel

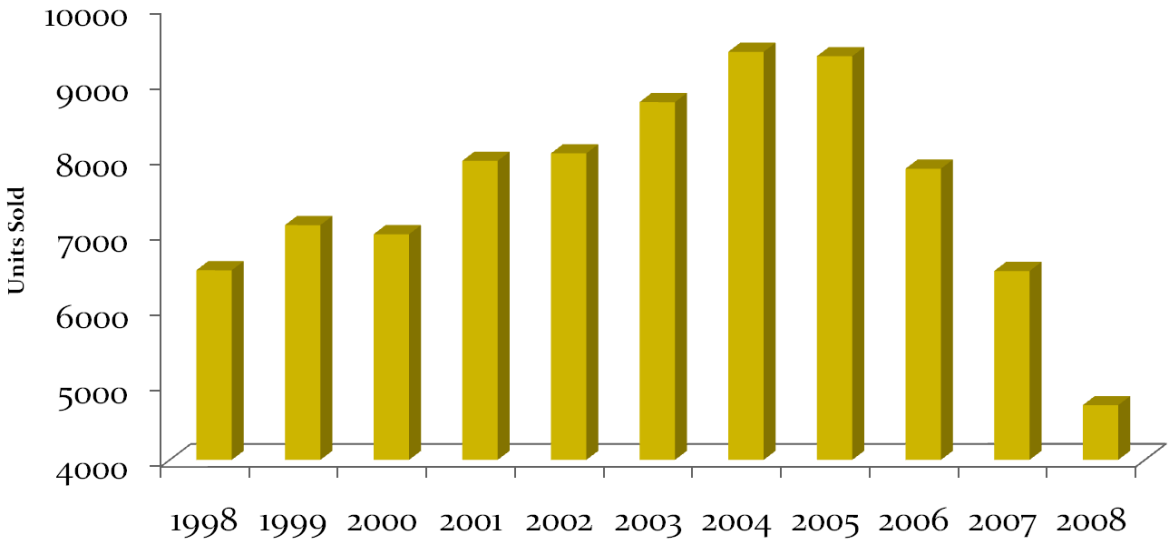
Of interest is the mix of housing types in each jurisdiction. There is very little change over time in the share of each housing type in Anne Arundel County's housing stock. In Howard County, there is a noticeable reduction in single-family detached housing (typically the most expensive) while the growth in age-restricted housing is substantial. The most dramatic changes in the mix of housing type is expected in Laurel where the great majority of new construction will be multi-family housing and townhouses, suggesting that more affordable housing will be more available over the next several years.

The current housing market

The decline in median and average home prices observed during the past two to three years provides some benefit in the form of closing the gap between what people can afford and what they must typically pay in an Anne Arundel and Howard County context. However, the fall in prices has also been associated with severe declines in construction volume, which positions the housing market for future price appreciation. Indeed, the active inventory of unsold homes in both Anne Arundel and Howard Counties has declined markedly over the past year positioning the market for price stability in the near term and potentially rapid appreciation over the next three to five years. In other words, the past two or three years of price decline failed to address fully the growing gap between home prices and household income that has been forming for decades.

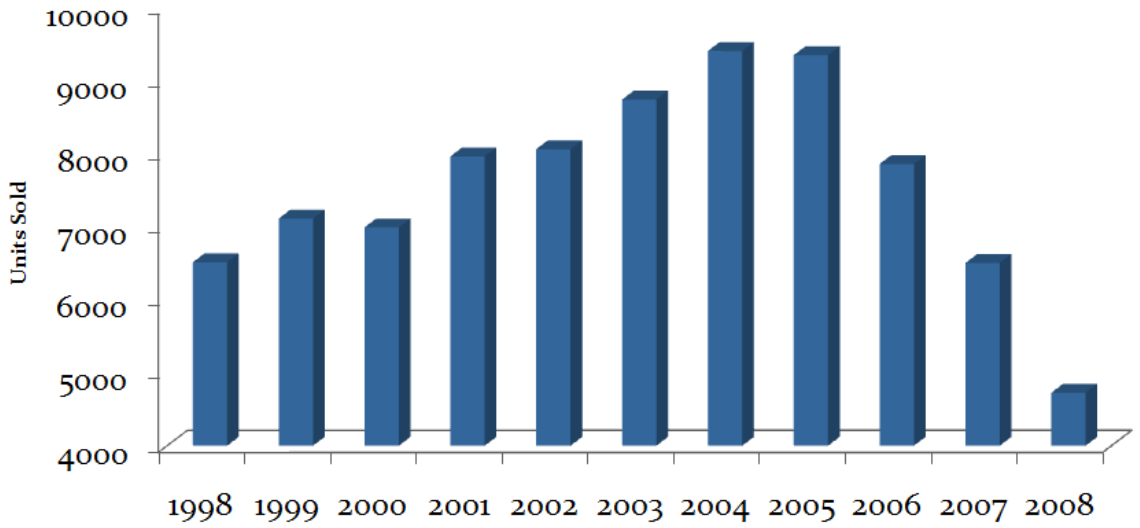
The housing demand created by BRAC at FGGM will begin to unfold soon while the housing market in Maryland (and the rest of the U.S.) is almost certain to be still affected by the current downturn. As shown dramatically in the following charts (Exhibit I-10 and Exhibit I-11), housing sales fell sharply after rising to unprecedented levels in 2004 and 2005 in both Anne Arundel and Howard counties. By 2008, sales in both counties were at the lowest levels in a decade.

Exhibit I-10: Anne Arundel County housing sales: 1998-2008



Source: Maryland Department of Planning, State Data Center

Exhibit I-11: Howard County housing sales: 1998-2008



Source: Maryland Department of Planning, State Data Center

As sales collapsed, housing prices fell. The double-digit annual increases in median housing prices that seemed inevitable in 2002, 2003, 2004, and 2005, turned to actual year-to-year decreases in price that have continued to the present (i.e. June 2009). See Exhibit II-12.

Exhibit I-12: Change in median value of housing for sale

Year	*Anne Arundel County*	*Howard County*	*Prince George's County*
2000	4.6%	0.9%	N.A.
2001	3.9%	7.6%	3.7%
2002	16.3%	18.4%	12.8%
2003	16.6%	12.3%	15.9%
2004	22.1%	24.8%	24.0%
2005	20.4%	19.0%	30.5%
2006	5.8%	2.7%	11.5%
2007	-1.2%	1.3%	-3.0%
Through October 2008 (1)	-5.9%	-9.0%	-18.8%

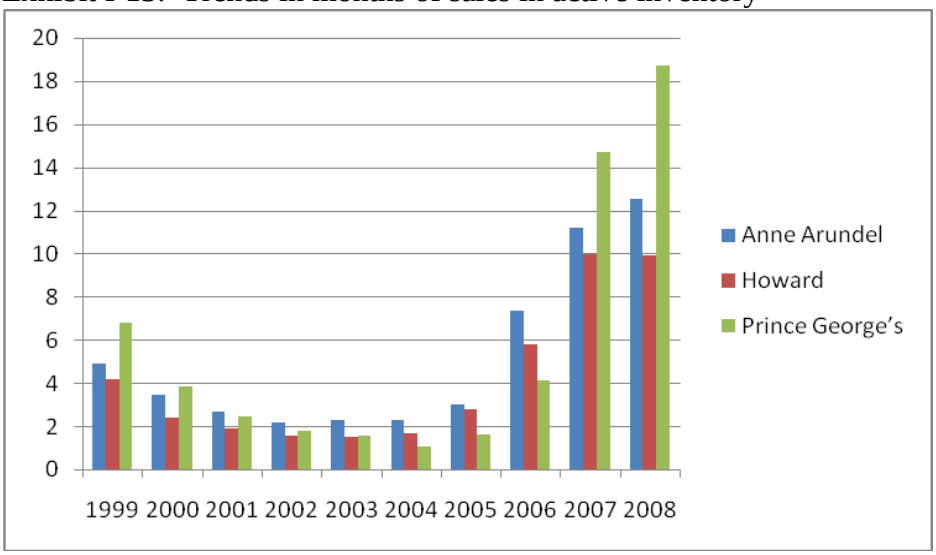
Note: 1. Change in sales for October 2008 compares sales for first 10 months of 2008 with first 10 months of 2007.
Sources: Maryland Association of Realtors, Sage

The reduction in housing prices has created conditions that favor housing affordability. This apparent affordability, however, is complicated by high unemployment, wary mortgage lenders, and the inability of households seeking new homes to sell their existing homes. These factors add yet more impediments to normal functioning of the housing market.

As a result, there is an enormous supply of housing on the market that will take many months to sell. This supply combined with minimal sales volume yields a sharp increase in the time required to sell the active inventory of homes on the market. Typically, about three months' of sales equals the inventory of homes on the market. By 2008, this time period had grown to about

a year in Anne Arundel and Howard counties and much longer in Prince George's County (a proxy measure for Laurel). Exhibit I-13 provides trends in these counties for the last decade.

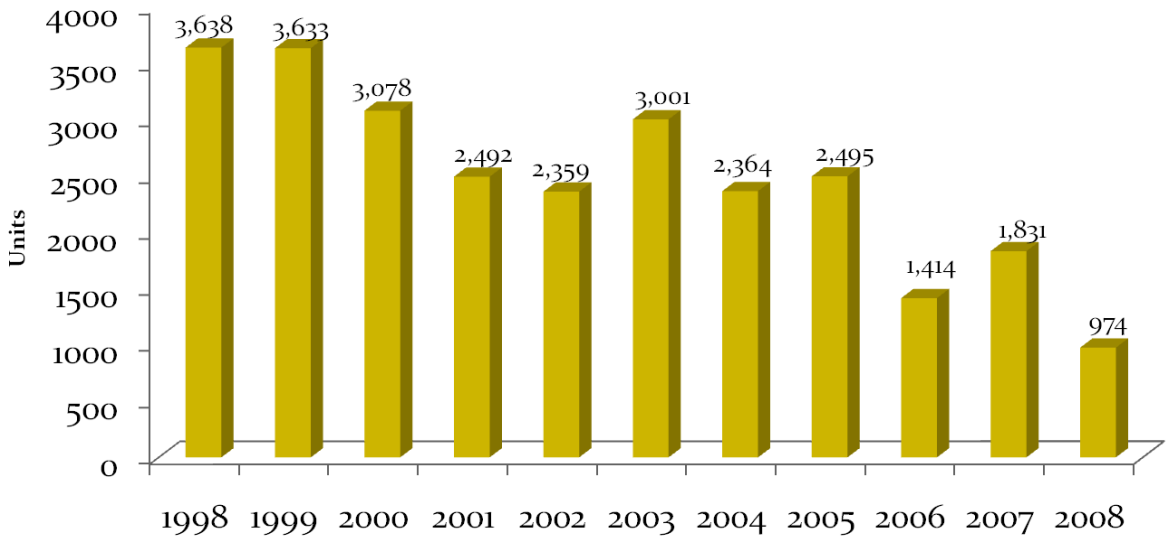
Exhibit I-13: Trends in months of sales in active inventory



Sources: Maryland Association of Realtors, Sage.

Given the doldrums in the housing market in the last couple of years, new construction has slowed substantially. In Anne Arundel County, which in recent years has averaged over 2,000 housing permits, authorized fewer than half that number in 2008 (see Exhibit I-14).

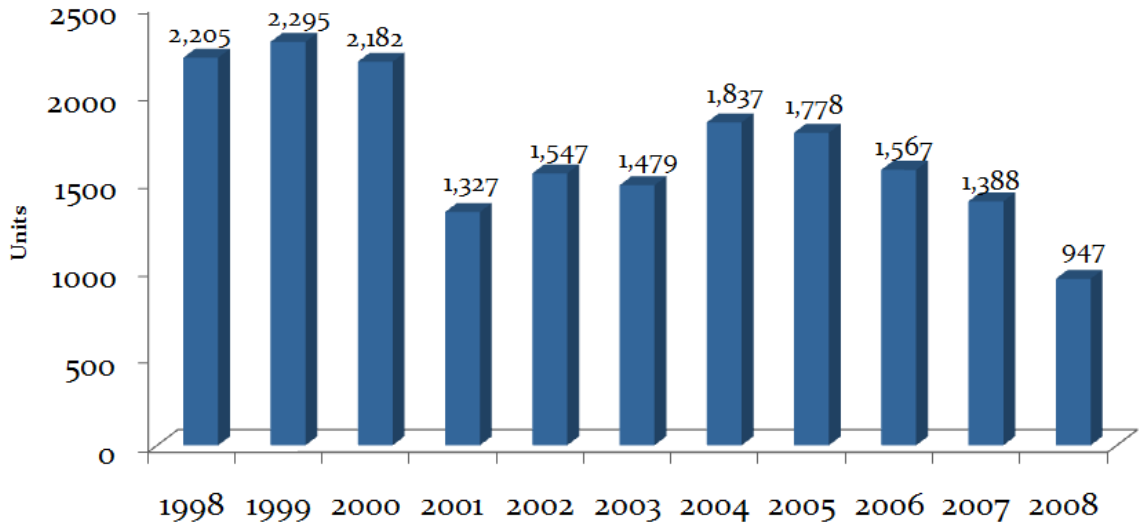
Exhibit I-14: Anne Arundel County housing permits: 1998-2008



Source: Maryland Department of Planning, State Data Center

New construction in Howard County was not quite as robust over the past decade as in Anne Arundel County. Yet, the sharp reduction in permits in 2008 was similar, the only year in the past decade when fewer than 1,000 new units were approved in the county (see Exhibit I-15).

Exhibit I-15: Howard County housing permits: 1998-2008



Source: Maryland Department of Planning, State Data Center

The current housing market provides contradictory signals with respect to the housing demand that BRAC will create. As prices fall, housing is becoming significantly more affordable. Yet the inability of the market to foster and support the normal sale of housing restricts the availability of housing for all segments of the market with the exception of creditworthy first-time buyers who do not need to sell an existing home in order to purchase a home.

These conditions are likely to continue long enough to affect the initial BRAC housing demand. By the time the steady state of demand is realized in 2015 and almost certainly well before then, however, more typical housing market conditions will prevail. Consequently, it is important to look ahead to market conditions that are likely to be in place over the next 5 to 6 years.

BRAC housing demand in the context of the future housing market

In considering longer term housing demand created by BRAC, it is helpful to see BRAC in the context of the total demand for housing. Total demand is best seen in terms of unconstrained demand for housing in the two counties. As explained in Chapter 4, Sage's estimate of unconstrained demand is based on the growth in jobs in these counties and an assumption that most people would wish to live relatively near where they work.[42]

[42] Sage's methodology for estimating unconstrained demand was developed to address an interest in examining demand for housing that is not limited by local policies that constrain the number of new housing units that are approved for construction. The forecasts generally provided by local governments and published by the Baltimore Metropolitan Council essentially estimate future population on the basis of the number of housing units that will be approved. These policies are often deliberately designed to restrict growth and, thus, deflect the demand for housing to other jurisdictions. Given the forecasts for robust job growth in Anne Arundel and Howard counties, the

Regardless of the current economic downturn, the long-term prospect for Central Maryland is for robust job growth at FGGM and many other employers. Anne Arundel and Howard counties are expected to have particularly robust job growth for the foreseeable future. The Baltimore region as a whole is expected to see jobs and households grow 16 to 17 percent between 2000 and 2015. Growth rates in the two counties are expected to be significantly higher with employment growth outstripping household growth and the ratio of jobs per household higher than the regional average and increasing relative to the region over time.

Exhibit II-16 presents the most recently published data on population, households, and jobs in the counties and the total Baltimore region. It is important to clarify that these forecasts of households are largely determined by the expectations of new construction allowed by the counties' zoning and growth policies.

Exhibit I-16: Trends in population, households, and employment

	2000	*2005*	*2010*	*2015*	*Change 2000 - 2015*
Anne Arundel County					
Population	489,656	513,700	532,790	546,517	11.6%
HHs	178,670	192,450	202,314	210,888	18.0%
Jobs	297,000	318,435	339,012	361,961	21.9%
Pop/HH	2.74	2.67	2.63	2.59	N.A.
Jobs/HH	1.66	1.65	1.68	1.72	N.A.
Howard County					
Population	250,800	272,000	287,700	301,800	20.3%
HHs	90,950	100,300	109,729	117,734	29.4%
Jobs	160,000	176,800	196,382	214,854	34.3%
Pop/HH	2.76	2.71	2.62	2.56	N.A.
Jobs/HH	1.76	1.76	1.79	1.82	N.A.
Baltimore region					
Population	2,515,389	2,634,600	2,737,290	2,816,917	12.0%
HHs	959,663	1,013,750	1,069,243	1,112,222	15.9%
Jobs	1,534,400	1,615,735	1,711,094	1,792,115	16.8%
Pop/HH	2.62	2.60	2.56	2.53	N.A.
Jobs/HH	1.60	1.59	1.60	1.61	N.A.
Source: Baltimore Metropolitan Council					

By assuming that household growth in Anne Arundel and Howard counties would more closely track employment growth, alternative estimates of the number of households that would like to live in the counties can be made. These estimates assume that people prefer to live near their work and that if this preference was realized, jobs per household in each jurisdiction in the Baltimore region would be more consistent across the region. One estimate of unconstrained demand assumes that the two counties conform to the regional average value of approximately 1.6 jobs per household, not the increasing values seen above in Anne Arundel and Howard counties. For example, the number of households forecast for the counties would result in 1.61

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jurisdictions to which demand is diverted are typically more distant from the locations in these counties where jobs are likely to be created in the future.

jobs per household in 2015 (the regional average) not the 1.72 and 1.82 ratios forecast for Anne Arundel and Howard counties. This assumption can be used to estimate an upper limit for unconstrained demand for housing in the two counties.

A lower limit for unconstrained demand can be calculated by assuming that the ratios of jobs per household evidenced in 2000 remain constant over time. Under this assumption, in 2015 the ratio for Anne Arundel County would be 1.66, not the forecast value of 1.72 while in Howard County the ratio would be 1.76, not the forecast value of 1.82.

Results of these calculations of unconstrained demand for housing are shown in Exhibit I-17. In addition to the high and low estimates of unconstrained housing demand, the exhibit lists the mid-point of these estimates. This mid-point will be used in subsequent discussion of housing demand. As shown here, unconstrained demand is an estimate of the number of households who would prefer to live in the two counties in order to be relatively close to their places of work. These estimates of demand do not take into consideration vacancy rates for housing in the counties.

Exhibit I-17: Estimated unconstrained housing demand in Anne Arundel and Howard counties

Jurisdiction	*2000*	*2005*	*2010*	*2015*
Number of households--high estimate				
Anne Arundel County	174,388	199,808	211,489	223,589
Howard County	93,946	110,936	122,511	132,719
Number of households--low estimate				
Anne Arundel County	178,670	191,565	203,944	217,749
Howard County	90,950	100,500	111,631	122,131
Number of households--mid-point estimate				
Anne Arundel County	176,529	195,686	207,717	220,669
Howard County	92,448	105,718	117,071	127,425
Source: Sage				

Exhibit I-18 summarizes the estimates and forecasts of households in the three jurisdictions in 2005, 2010, and 2015. Forecasts for Anne Arundel and Howard counties use the methodology for estimating unconstrained housing demand. The forecast for Laurel is from the Round 7.1 forecast compiled by the Washington Metropolitan Council of Governments. Because the estimates of future employment in all jurisdictions include all BRAC jobs, all of these forecasts include estimates of the impacts of BRAC; that is, BRAC households are included in the estimates of total households in each jurisdiction in 2010 and 2015.

Exhibit I-18: Forecasted growth in households/unconstrained housing demand

Jurisdiction	*2005*	*2010*	*2015*	*Change: 2005-2010*		*Change: 2010-2015*	
				Number	Percent	Number	Percent
Anne Arundel County	195,686	207,717	220,669	12,030	6.1%	12,953	6.2%
Howard County	105,718	117,071	127,425	11,353	10.7%	10,354	8.8%
City of Laurel	10,527	12,055	12,995	1,528	14.5%	940	7.8%
Total	311,931	336,842	361,089	24,911	8.0%	24,247	7.2%
Sources: City of Laurel, Sage.							

Although there are many other sources of household growth and new housing demand in Central Maryland, BRAC will be a significant contributor, accounting for one of every nine of the increase in households in the three jurisdictions between 2005 and 2015, based on estimates of unconstrained housing demand. Of the total growth in households expected between 2005 and 2015 who would prefer to live in Anne Arundel and Howard counties and the City of Laurel, BRAC will be responsible for 14 percent of these households in Anne Arundel County and almost 9 percent of the households in Howard County. For the City of Laurel, BRAC will account for less than 5 percent of expected increase in housing demand. Details on total household growth and BRAC demand are shown in Exhibit I-19. As discussed in Chapter 5, the BRAC households listed below include 76 households seeking housing in Anne Arundel and Howard counties because of the BRAC impacts at APG.

Exhibit I-19: BRAC demand as share of total household growth

Jurisdiction	*Change: 2005-2015*		
	Total households	BRAC households	BRAC as share of total
Anne Arundel County	24,983	3,489	14.0%
Howard County	21,707	1,885	8.7%
City of Laurel	2,468	117	4.7%
Total	49,158	5,491	11.2%
Source: Sage			

By comparing total forecasted housing supply and total unconstrained housing demand, longer-term trends in housing availability can be examined. Exhibit I-20 compiles information on the housing stock and total households/unconstrained housing demand in each of the three jurisdictions starting in 2000 and going through 2015. Data for 2000 are taken from the U.S. Census and are presumably the most recent, reliable data on both housing stock and households. For all other data, the sources are earlier exhibits in this report. In addition for 2010 and 2015, the housing demand created by BRAC is separately listed. This allows for an assessment of the impact of BRAC relative to other demands for housing. BRAC demand as listed in this exhibit is part of the overall unconstrained demand discussed above. For example, as noted in Exhibit I-17, the mid-point of unconstrained housing demand in Anne Arundel County in 2015 is estimated at 220,669 households. Of this total, 3,489 households are related to the BRAC changes at FGGM and APG, while the remaining 217,218 households are unrelated to BRAC.

Exhibit I-20: Impact of BRAC on housing availability

Factor	*Anne Arundel County*	*Howard County*	*City of Laurel*
Housing stock, 2000	186,937	92,818	9,548
Total households, 2000	178,670	90,043	8,931
Housing stock as share of total households, 2000	104.6%	103.1%	106.9%
Housing stock, 2005-2007	194,432	101,441	11,544
Unconstrained housing demand, 2005-2007	195,686	105,718	9,924
Housing stock as share of unconstrained housing demand, 2005-2007	99.4%	96.0%	116.3%
Housing stock, 2010	202,314	108,716	12,807
Non-BRAC demand, 2010	205,595	115,936	11,981
BRAC housing demand, 2010	2,122	1,135	72
Unconstrained housing demand, 2010	207,717	117,071	12,053
Housing stock as share of unconstrained housing demand, 2010	97.4%	92.9%	106.3%
Housing stock, 2015	210,888	117,741	14,277
Non-BRAC demand, 2015	217,218	125,578	12,878
BRAC housing demand, 2015	3,489	1,885	117
Unconstrained housing demand, 2015	220,669	127,425	12,995
Housing stock as share of unconstrained housing demand, 2015	95.6%	92.4%	109.9%
Sources: U.S. Census, Anne Arundel County, Howard County, City of Laurel, Sage			

What Exhibit I-20 clearly shows is the impact of the estimated unconstrained housing demand in the counties. In 2000, there was an adequate or even plentiful supply of housing. In 2000, housing availability reflects actual conditions for both supply and demand. The analysis does not include an estimated of unconstrained demand in 2000 and the households residing in the counties reflect whatever constraints were then in place. For all subsequent years, the estimates of households in the counties are forecasted unconstrained housing demand while the changes in the housing stock (i.e. number of housing units) reflect estimates of the regulated volume of new construction in the counties. Thus, the data for all years except 2000 provides comparisons between constrained supply and unconstrained demand. In the counties this comparison provides a consistent picture of a supply of housing unequal to unconstrained demand and a trend for expansion of the housing stock to fail to keep pace with unconstrained demand. As a result, the housing supply steadily falls farther behind the growth in new households. As has often been the case, the data for the City of Laurel, reflect a different story with demand and supply in a more reasonable balance.

A comparison of unconstrained demand and forecasted housing stock/supply fails to consider another important factor in housing availability, namely, vacancy rates. At any given time, there should be some vacant housing to account for sales of owner-occupied housing (e.g., new units not yet sold or existing units that are unoccupied during the transition from prior owner to new owner), vacancies during the initial rental of new renter-occupied housing, and the normal turnover of existing rental housing. As discussed in an earlier Sage report, the mix of owner-occupied housing and rental housing in Anne Arundel and Howard counties and benchmark

vacancy rates of 2 percent for owner-occupied housing and 5 percent for rental housing suggest target vacancy rates of 2.7 percent for both counties.

By considering benchmark vacancy rates, an adequate future housing supply for the counties can be estimated. Because the forecasted housing supply in Laurel should be at least adequate to meet future housing needs, it is unnecessary to estimate a benchmark housing supply for the city. Using the 2.7 percent target vacancy rates for the counties, desirable housing supplies can be estimated. These desirable or "benchmark" numbers of housing units are estimated by assuming the need for one housing unit per forecasted household (i.e. for each unit of unconstrained housing demand) plus enough housing units to allow for the benchmark 2.7 percent vacancy rate. These benchmark estimates of housing units are compared to forecasted housing units in Exhibit I-21. For both counties the shortfall is estimated at thousands of housing units representing at least 5.4 percent and as much as 11.1 percent of the forecasted housing stock in the counties in 2010 and 2015.

Exhibit I-21: Comparison of benchmark and forecasted housing supply

Jurisdiction and year	*Estimated unconstrained demand*	*Housing units*			
		Benchmark	Forecasted	Shortfall	
				Number	Share of forecasted supply
Anne Arundel County					
2010	207,717	213,325	202,314	11,011	5.4%
2015	220,669	226,627	210,888	15,739	7.5%
Howard County					
2010	117,071	120,232	108,716	11,516	10.6%
2015	127,425	130,865	117,741	13,124	11.1%

The comparison of benchmark housing supply numbers for each county to the forecasted amount of housing that is likely to exist indicates a substantial lack of housing availability for all those who might prefer to live in the counties. This lack of availability will affect BRAC households as well as others, of course. Exhibit I-22 compares BRAC demand to the shortfall in housing presented in Exhibit I-21. The point of this comparison is to demonstrate that the housing shortfall based on unconstrained demand will greatly exceed the demand associated with BRAC. In Howard County the number of housing units in the shortfall is seven times the number of BRAC households who might prefer to live in Howard County, while in Anne Arundel the shortfall is more than four times as large as expected BRAC demand.

Exhibit I-22: Comparison of housing shortfall to BRAC demand

Jurisdiction	*Housing shortfall*	*BRAC demand*	*Ratio of housing shortfall to BRAC demand*
Anne Arundel County	15,739	3,489	4.5
Howard County	13,124	1,885	7.0

What are the implications of the estimated shortfalls of housing? The overall conclusion is not that households will be camping in the parks of Anne Arundel and Howard counties. If the past is prologue to the future as it usually is, the imbalance between demand and supply will mean

that households will find housing elsewhere—in Prince George's, Carroll, Baltimore, and other counties, and in Baltimore City. The City of Laurel is likely to be a magnet for many of these households, especially middle-income households that fit the characteristics of the available housing in Laurel. Excess demand will keep existing housing prices high in Anne Arundel and Howard counties and will encourage new construction at the high end of the market. Vacancy rates for all housing will be relatively low with rates for less expensive housing becoming particularly low. The availability of housing affordable to middle and lower income households in both counties will diminish with retail, service, and municipal workers likely feeling the brunt of this scarcity. Commutes to jobs in the counties will likely grow longer.

Given the likelihood that developers of new housing will concentrate on the high end of the housing market, the impacts of the longer term housing shortage will fall most heavily on lower-income BRAC households. Even the existing market has relatively little to offer to these households. A recent article in *The Baltimore Sun* extolling the new-found affordability of housing in the Baltimore region found that 43 percent of the region's homes for sale were priced under $250,000 compared to only about one-quarter of homes for sale in 2006. While this was good news for the region's affordability as a whole, the affordability picture in Anne Arundel and Howard counties was substantially less upbeat. In Anne Arundel County less than 19 percent of all homes for sale were priced under $250,000 while in Howard County less than 15 percent of homes for sale were priced similarly.[43] Under the most favorable conditions for housing affordability in many years, only one house in five in Anne Arundel County and only one house in seven in Howard County are available for under $250,000. By the time BRAC's full effects are felt in 2015, when more typical housing market conditions will almost certainly prevail, these favorable conditions for affordability will likely be long gone and housing priced under $250,000 will be much scarcer in the two counties.

This price point of $250,000 represents a dividing line for affordability for lower-income households. The income required to meet general underwriting guidelines for a $250,000 house is in the range of $70,000 to $80,000 depending on interest rates, down payment and other factors. In Anne Arundel County, this is roughly the median or typical household income and is actually well below the median household income in Howard County. Recent US Census data indicate that 47 percent of Anne Arundel County households and 37 percent of Howard County households have household incomes of less than $75,000. Almost 32 percent of BRAC households fall into this same category as shown in Exhibit I-23.

[43] Hopkins, Jamie Smith, "Increasingly, the price is right," *The Baltimore Sun*, July 15, 2009.

Exhibit I-23: Distribution of household income Anne Arundel and Howard counties and BRAC

Household income bracket	*Anne Arundel County*	*Howard County*	*BRAC*
Less than $10,000	3.1%	2.8%	0.0%
$10,000 to $14,999	2.4%	1.7%	0.0%
$15,000 to $24,999	5.4%	3.0%	1.0%
$25,000 to $34,999	6.8%	4.7%	1.5%
$35,000 to $49,999	10.7%	8.5%	5.0%
$50,000 to $74,999	18.6%	15.9%	24.4%
Less than $75,000	47.0%	36.6%	31.9%
$75,000 to $99,999	16.2%	14.3%	30.0%
$100,000 to $149,999	20.7%	24.2%	31.3%
$150,000 to $199,999	8.5%	12.1%	6.8%
$200,000 or more	7.5%	12.6%	0.0%
Total	100.0%	100.0%	100.0%
Sources: US Census Bureau, Sage			

The incomes of households that constitute unconstrained demand for housing are likely to be no more affluent than existing households in Anne Arundel and Howard counties. Indeed, those who end up looking in other more affordable jurisdictions are in general much more likely to be less affluent than households in the two counties. Because the counties already are unable to meet this unconstrained demand, it is reasonable to assume that the unmet need is for lower priced housing. This indicates that at least half the unconstrained demand for housing in Anne Arundel County and at least 40 percent of the unconstrained demand in Howard County would be for housing priced at no more than $250,000 whereas in the current market, noted for its remarkable affordability, less than one in five houses in Anne Arundel County and about one in seven houses in Howard County are available at this price.

As the housing market returns to more normal conditions over the next several years when the impacts of BRAC are being realized, conditions will almost certainly grow less favorable for BRAC (and other) households earning up to $70,000 to $80,000. The housing stock will not grow as fast as unconstrained demand. The imbalance of demand and supply will continue to place upward pressure on prices of existing homes and encourage new construction at the upper, more lucrative end of the housing market. Current plans in Howard County call for a sharp increase in age restricted housing that is likely also to limit the supply of housing for lower-income BRAC households who will tend to be younger and occupying more entry-level positions or working in economic sectors characterized by lower wages (e.g., retail, services). For every BRAC household seeking housing there will be several non-BRAC households competing for homes in the two counties, particularly for BRAC households earning no more than $80,000.

In the context of the likely housing market in Anne Arundel and Howard counties when BRAC impacts are felt over the next several years, BRAC households earning no more than $80,000 will find it extraordinarily difficult to find conveniently located housing in either county. Indeed,

the analysis strongly suggests that these lower-income BRAC households are effectively priced out of the market in Anne Arundel and Howard counties. A few of these lower-income household may find the housing they want but they are very likely to be the rare exception.

Given the high probability that housing demand across the income spectrum will significantly outpace the expansion of housing supply in Anne Arundel and Howard counties, higher-income BRAC households are also likely to fail to find housing in desirable locations in the two counties. These higher income households, capable of spending $300,000 to $500,000 for a home are clearly more in the mainstream of the counties' housing markets. Thus this analysis assumes these higher-income households will find housing while those earning less than $80,000 will not. There will likely be exceptions on either side of this income divide, but a conservative estimate is that only those under the $80,000 income level will be effectively priced out of the two counties' housing markets.

Exhibit I-24 summarizes the number of BRAC households who would prefer to live in Anne Arundel and Howard counties, but who are highly likely to be priced out of the housing market. These households primarily reflect those included in Exhibit I-4 above. The values in that exhibit, however, reflect an assumption that many lower-income households will not even try to find housing in Anne Arundel and Howard counties. Exhibit I-19 includes this displaced demand to estimate the total unconstrained demand for housing in the two counties by households earning less than $80,000.

Exhibit I-24: BRAC households earning less than $80,000 preferring housing in Anne Arundel and Howard counties: steady state

	Anne Arundel	*Howard*	*Total*
Constrained demand	1,229	657	1,886
Displaced demand	527	282	810
Total unconstrained demand	1,756	939	2,696

As indicated by Exhibit I-23, the great majority of these BRAC households would be expected to have household incomes of $50,000 to $80,000. These households can generally afford housing priced at $200,000 to $290,000. Only 7.5 percent of BRAC-related households are estimated to have household incomes under $50,000.

By 2015, constrained housing demand in the two counties from BRAC activities at FGGM is expected to include the 5,298 households included in Exhibit I-4. Adding the 810 households that constitute displaced demand, the unconstrained demand for housing created by BRAC in the counties is estimated at 6,108 households. The 2,696 households earning less than $80,000 represent 44 percent of this unconstrained demand.

Thus almost half of the BRAC households will likely be priced out of the housing market in Anne Arundel and Howard counties. This will create increased demand elsewhere with the City of Laurel almost certainly being high on the list of alternative places to live.

II. Strategies to Respond to Housing Gaps

The impacts of BRAC at FGGM provide opportunities for Anne Arundel and Howard counties to create deliberate and strategic responses to the likelihood that proximately located workforce/affordable housing will become quite scarce as BRAC impacts unfold. The impediments to workforce and affordable housing are relatively straightforward although local capacity to overcome those barriers is hardly guaranteed.

Impediments to more affordable housing

Housing prices can be attributed to the cost of land and the value of improvements. Construction and other improvements tend to be manageable and flexible. For example, housing can be made larger or smaller and the quality of materials can be chosen across a wide spectrum of cost and quality. As a result, the value of improvements can vary considerably. A small house with carefully chosen materials and equipment can be built for much less than a sprawling house replete with professional grade appliances and other amenities.

By contrast, the price of land is much less subject to control. The price of land tends to reflect the value that the overall community and the local market place upon it. As the aphorism goes, no one is making more land. Thus, as land is consumed for development, undeveloped land with desirable qualities becomes ever scarcer and more valuable, all things being equal.

A recent Sage client developing housing in Carroll County, generally considered a more affordable area of the state than Howard and Anne Arundel counties and less affected by development pressures, was offered $325,000 in January 2006 for each of 50 finished building lots by a national homebuilding company.[44] Given this finished lot price, the final price for a house built on one of these lots is thus likely to range from $800,000 to $900,000. Needless to say, homes in this price range are well beyond the means of virtually all households associated with BRAC at FGGM, whether directly-employed by the base or defense contractors or indirectly in other parts of the economy.

- Lack of permissible density remains a problem

Given that land prices are unlikely to change radically going forward[45], the only policy option for making land more affordable per housing unit is to increase permissible housing density. Housing developed at six units or 16 units per acre by definition creates more options for workforce/affordable housing than housing that uses one or two acres per home. Thus, the first major impediment to more affordable housing is economic--the price of land--and this can be addressed by reducing the amount of land used per housing unit.

What is also clear is that the most successful efforts to overcome barriers to more affordable housing are based on creative combinations of different strategies and policies that fit particular local conditions and constraints. Tools that can work in urban settings such as rehabilitation of abandoned properties have no relevance for many suburban locations where no properties are abandoned and development pressures are intense. On the other hand, transit-oriented

[44] Client name not released because of the proprietary and legally-sensitive nature of the work.

[45] In the study team's judgment, much of the price adjustment in land prices in response to the housing downturn has already occurred, particularly in prime areas proximate to major job centers.

development, which has attracted much attention recently, may be relevant to BRAC, which has bus and rail options located proximate to FGGM.

Applicable case study

The City of Laurel presents a sharp contrast to Anne Arundel and Howard counties with respect to the availability of workforce housing. While some of this can be attributed to historic differences between Laurel and the counties, it is also true that Laurel in recent years has continued to authorize expansions of its stock of housing that have typically kept pace with or exceeded the growth of the city's population. Vacancy rates indicate an adequate supply of housing. This relative abundance of housing helps to support greater affordability. Moreover, recently authorized and anticipated construction favors townhomes and multifamily housing, both housing types that tend toward affordability. Often, Howard and Anne Arundel counties are viewed as representing models for other communities. In this instance, it may be that Laurel is a model for them.