



Housing the Future Workforce in the Hampton Roads Region

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Prepared for

Housing Virginia

May 2014

Acknowledgements

The author would like to thank the following supporters:

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Special thanks also to Jeannette Chapman, Research Associate at the George Mason University Center for Regional Analysis, for tremendous data analysis support.

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Executive Summary

A vibrant and sustainable regional economy depends on the availability of a sufficient supply of housing—of the right types and prices and in the right locations—to accommodate the future workforce in Hampton Roads. Housing, along with transportation investments and development of a skilled labor force, needs to be a key element of a successful regional economic development strategy. Housing and transportation, in particular, are two sides of the same coin and provide the critical means by which workers are connected to jobs. There will never be enough resources to fund all the transportation and transit projects envisioned for the region to connect its residents to its employment centers. But making decisions at the local level to increase the supply of housing close to jobs can achieve the goals of linking workers with jobs, and at substantially lower public cost.

The changing structure of the Hampton Roads economy will lead to changing housing needs in the region. The ability for Hampton Roads to remain competitive during this period of economic restructuring will depend on both a comprehensive regional housing strategy and local housing and land use policy decisions that promote housing development.

This study analyzes the *employment-driven demand for housing* in the Hampton Roads region¹ between 2013 and 2033 and presents estimates of future housing demand by location, tenure, type and price/rent. These forecasts represent a *low estimate* of the total housing demand in the region since they exclude estimates of the housing needed for self-employed workers, some part-time workers, replacement workers and individuals not in the labor force (e.g. seniors, persons with disabilities).

- Over the next two decades—between 2013 and 2033—Hampton Roads is expected to add 124,356 net new payroll jobs. Compared to the last two decades, the region’s job growth is shifting from the relatively higher-wage government sector to lower-wage sectors, including construction, health services, and administrative and waste services. There also will be continued relatively strong job growth in the professional and business services sector in Hampton Roads.
- If each jurisdiction in the Hampton Roads region supplied enough housing to accommodate its future workforce, there would be a need for 86,098 net new housing units between 2013 and 2033. This suggests a production level of about 4,300 units per year regionwide simply to accommodate the region’s net new workers. Housing future workers in the jurisdiction in which they work relieves the need for significant new transportation investments and can reduce the growth of jurisdiction-to-jurisdiction commuting and traffic congestion.

¹ The Hampton Roads region in this report consists of the jurisdictions in the Hampton Roads Planning District—the cities of Virginia Beach, Norfolk, Newport News, Portsmouth, Hampton, Chesapeake, Suffolk, Williamsburg, Franklin and Poquoson, and the counties of James City, York, Gloucester, Isle of Wright, Surry, and Southampton.

- The forecasts presented in this report estimate only the housing needed to accommodate the region's net new payroll workers. The region's comprehensive future housing needs—for new workers, replacement workers, self-employed and part-time workers, and people who are not in the labor force—could be 1.8 to 2.0 times the employment-driven forecasts reported here.
- These housing demand forecasts link the locations of future housing need to where jobs will be added over the next 20 years. The fastest job growth—and hence the greatest housing need—is outside the core jurisdictions. Job growth and housing demand will be slower in Norfolk, Portsmouth, Hampton and Newport News, while more robust economic growth and housing needs are forecasted for Virginia Beach and Chesapeake, and for the surrounding suburban jurisdictions.
- The tenure of housing that will be needed for the region's new workforce reflects the changing demographics of the working age population and the mix of jobs that the region is expecting. These housing demand forecasts suggest a continued downward shift in the homeownership rate, and estimate that 53.5 percent of the future housing needed by the workforce will be owner-occupied and 46.5 percent will be rental.
- Similarly, the types of housing units suggested by these employment-driven forecasts indicate a growing need for smaller housing units and more townhouses and multi-family housing. About 60 percent of the housing needed over the next 20 years is forecasted to be single-family detached housing, while 40 percent is townhouse or multi-family housing.
- In order to accommodate the future workforce near new jobs, it is important that the housing available be priced at levels affordable to new workers. There will be a substantial need for rental housing that is affordable to households earning less than \$50,000. Nearly three quarters of the rental units that will be needed by new workers will need to have monthly rents below \$1,250 in order for them to be affordable. On the homeownership side, more than 45 percent of the ownership units will need to be priced below \$200,000 to be affordable to the future workforce.

It is important to reiterate that these employment-driven housing forecasts represent the low estimate of the housing that will be needed in Hampton Roads over the next two decades. Accounting for the part-time and self-employed workers that are not included in these employment forecasts would add to the housing demand totals. Replacement workers—those workers moving to Hampton Roads to take jobs exited by retirees and others leaving the labor force—will also drive demand for housing. Furthermore, there will be a demand for housing from people not in the workforce, including seniors and persons with disabilities. These forecasts also do not include housing that will be developed as second homes or seasonal rental housing. Finally, these forecasts do not include a tally of new housing units that will be needed to replace older units that are removed from the stock due to disrepair, or to allow for frictional vacancy. It is estimated that the total housing needed in the region could be up to 160,000 to 180,000 units over the 2013 to 2033 timeframe.

These estimates of housing demand are based on a set of employment forecasts that take into account recent changes in Federal spending and build on post-recession economic trends in the region. As such, if the employment outlook for Hampton Roads changes—either because of changes at the Federal level or as a result of local efforts—the region’s housing needs will also change.

Several policy implications follow from these housing demand forecasts:

- **Housing should be part of a comprehensive regional economic development strategy.** Without a sufficient supply of housing—in the right locations, of the right types, and at the right prices and rents—Hampton Roads will have difficulty attracting workers and businesses. The need for a comprehensive housing strategy linked to growth in the workforce is particularly important as the Hampton Roads economy undergoes significant restructuring. Housing should join transportation and workforce development as common elements in local and regional economic development plans.
- **Multi-family housing, rental housing and housing affordable to low- and moderate-income workers will be in demand.** The housing demand forecasts suggest that the housing that will be needed for the future workforce will include more townhouse and multi-family units, and will need to include a substantial share of units at moderate prices and rents. As a result, there is a need for local jurisdictions to re-examine land use and zoning policies, conduct an inventory of and preserve existing market rate affordable housing, and develop priorities for public funding of affordable housing.
- **Without sufficient housing, traffic congestion and quality of life worsen, and the region’s full economic development potential may go unrealized.** A lack of sufficient housing within the Hampton Roads region, located in proximity to the region’s employment centers and to existing and planned transit, will lead to increased traffic congestion, and will result in longer commutes, less worker productivity, and declining quality of life for all residents of the region. Funding for transportation projects is limited, but planning for housing near existing transportation infrastructure and near job growth can achieve the goal of efficiently linking workers to jobs. If there is an insufficient supply of housing affordable to workers, businesses will have a hard time retaining and attracting workers, and overall economic growth may suffer.

Housing the Future Workforce in the Hampton Roads Region

Economic Growth and Housing Demand

Given our best assumptions about the current landscape of Federal spending and economic conditions in the Hampton Roads region, current economic forecasts indicate that between 2013 and 2033, the region's total employment will increase by 16.4 percent, adding 124,356 net new payroll jobs (Table 1). This job growth reflects a diversifying economy, with gains in the professional and business services, health services, construction and administrative and waste service sector. Government employment—and military employment, in particular—will grow much more slowly than in the past.

These job forecasts suggest an annual growth rate of about 0.8 percent. The region lost payroll jobs in 2008 through 2010 and has been growing at a rate of less than once percent since 2010. Looking ahead, the employment growth projected for Hampton Roads reflects a steady return to a normal annual rate of job growth.

There are potential obstacles that may prevent this job growth from occurring. At the same time, there are opportunities for the region to increase its competitiveness moving forward. A skilled workforce, adequate transportation infrastructure and a sufficient supply of housing are essential ingredients for a vibrant and sustainable regional economy. The first two elements are standard components of local or regional economic development strategies. Housing, on the other hand, is usually overlooked as a critical economic development tool.

The region's projected job growth will not materialize without a sufficient number of workers to fill the projected new jobs. To attract these new workers, the region will need to offer a sufficient supply of housing that meets the needs of the future workforce, is affordable given the changing wage structure of the economy, and is located near emerging and growing job centers.

There are significant consequences associated with not having enough housing to accommodate the region's future workforce close to where the numbers of jobs are growing. It is not practical to think there will be sufficient resources to expand the region's transportation capacity to accommodate thousands of additional inter-jurisdiction commuters. Even if the commuting capacity could be provided, there would still be serious and growing environmental impacts. Thus, planning for a sufficient supply of housing in the region near job centers reduces transportation needs and contributes to a higher quality of life for all Hampton Roads area residents and businesses.

The Hampton Roads economy is evolving. As a result of declining Federal spending and shifts in priorities in the Department of Defense, the region's job growth will be disproportionately driven by the private sector, rather than the government. Future job growth in the Hampton Roads region will be led primarily by four sectors—professional and business services, health services, construction, and administrative and waste services. Many of the region's new workers will have lower wages than the current workforce. The sectoral changes in the economy—along with shifting demographics that mean a younger, more racially and ethnically diverse workforce—will have important implications for the types of housing that will be needed. In order to accommodate the region's new workforce, there will

be growing needs for smaller homes, units in multi-family buildings, and rental housing. Without sufficient housing—in the right locations, of the right types, and at the right prices—Hampton Roads faces the possibility of slower economic growth, increasing traffic congestion and a declining quality of life.

**Table 1. Net New Jobs: 2013-2033
Hampton Roads Region**

Jurisdiction	Net New Jobs	Percent Change
Virginia Beach	24,661	14.1%
Norfolk	13,061	8.9%
Newport News	5,930	5.8%
Chesapeake	20,868	20.5%
Hampton	2,698	4.7%
Portsmouth	1,675	3.6%
Williamsburg/James City	23,707	54.4%
Suffolk	19,245	66.2%
Remainder of Region ^a	12,511	22.5%
Hampton Roads Region	124,356	16.4%

^a Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.
Sources: IHS Global Insight, Center for Housing Policy.

Forecasts of Housing Need to Support Regional Economic Growth

The primary objective of this research is to forecast the amount, location and type of housing needed to accommodate the Hampton Roads area future workers. This housing demand is derived solely from forecasts of the region's net new workers and excludes units needed for some part-time workers, self-employed workers, replacement workers and non-working households. Estimates of employment growth by sector and by jurisdiction form the basis of the housing demand forecasts. Assumptions about workers' wages, age structure, and household composition are used to forecast the amount, type and price of housing that the region will need over the 2013 – 2033 period.²

Four main questions are analyzed in this study:

1. **How much housing will be needed to accommodate the region's new workers?** The forecasts estimate the total number of housing units that will be needed to house the Hampton Roads region's net new workers between 2013 and 2023, and between 2023 and 2033.
2. **Where should this housing be located?** The location of the housing units needed for future workers is analyzed using two methods:
 - a. Each worker is assumed to be housed in the same jurisdiction in which he or she works. This method keeps the levels of inter-jurisdiction commuting stable and therefore assumes no worsening of traffic congestion. The forecasts of units resulting from this method are referred to as the "By Work Location" estimates.
 - b. Alternatively, housing demand by jurisdiction is based on current commuting patterns. This method assumes that each jurisdiction houses the same share of new workers as it does its existing workers. These estimates include workers who are both non-commuters (i.e. people who live and work in the same jurisdiction) and jurisdiction-to-jurisdiction commuters. The forecasts of units resulting from this method are referred to as the "By Current Commuting Patterns" estimates.
3. **What types of housing units will be needed?** These forecasts analyze the demand for single-family detached housing and townhouse/multi-family housing. The housing demand is further divided by tenure (owner/renter). Demand for different types of housing is driven by the demographic characteristics and wages of new workers.
4. **What prices and rents will new workers be able to afford?** The housing forecasts are based on forecasts of job growth by sector and take into account the wages of the net new workers to determine the demand for housing at prices and rent levels that are affordable under standard affordability assumptions.

² See the Appendix for a detailed methodology.

I. How much housing will be needed for the future workforce?

In order to accommodate the 124,356 estimated net new workers, the Hampton Roads region needs to add 86,098 housing units between 2013 and 2033. Assumptions were made about the household composition and number of workers per household in order to estimate how much housing will be needed to accommodate the net new workers. These forecasts assume about 1.44 workers per household, which is lower than the current worker-to-household ration and reflects the living arrangements of a younger workforce. Additional details on the methodology are available in the Appendix. Table 2 shows the distribution of these units by jurisdiction, assuming that each new worker is housed in the jurisdiction in which he or she works.

In order to meet this house these net new workers, the region would need to produce 4,305 net new units annually during the next two decades. This total needed for net new workers is below the housing production capacity in the region. According to building permit data from the U.S. Census Bureau, the jurisdictions in the Hampton Roads Planning District have permitted an average of 6,735 housing units each year over the past decade. Even during the slowdown in the housing market in 2007 through 2011, about 5,000 building permits were issued each year. If other sources of housing demand were included—such as self-employed and replacement workers, and individuals not in the labor force—the housing needs could be closer to 8,000 or 8,500 units per year, which is a level of production that is greater than historic averages.

Table 2. Estimates of Housing Demand for Net New Workers: 2013 – 2033
Hampton Roads Region
 By Work Location^a

Jurisdiction	2013-2033 Demand	2013-2033 Average Annual Demand	2003-2013 Average Annual Building Permits ^c
Virginia Beach	16,659	833	1,439
Norfolk	8,947	447	667
Newport News	3,911	196	459
Chesapeake	13,578	679	1,249
Hampton	1,800	90	394
Portsmouth	1,196	60	233
Williamsburg/James City	17,222	861	756
Suffolk	13,730	687	738
Remainder of Region ^b	9,055	453	800
Hampton Roads Region	86,098	4,305	6,735

^a The estimates by work location assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

^b Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

^c U.S. Census Bureau, Building Permits Survey.

The forecasts in Table 2 assume all new workers are housed in the jurisdiction in which they work. This is obviously a simplifying assumption, but it stresses the issue of locating housing near jobs to reduce pressure on the region's transportation infrastructure.

During the past decade, nearly all of the jurisdictions in Hampton Roads have been producing new housing on an annual basis sufficient to meet the part of future housing demand generated by net new workers. The exception is the combined area of James City county and Williamsburg, where the pace of housing construction has been lower than what is projected to be needed to accommodate those jurisdictions' future workers.

While the projected annual need regionwide is consistent with the average level of residential construction over the past 10 years, there are implications about the most efficient locations, types and prices/rents of housing that will be needed. Specifically, there has been a mismatch between need and supply when it comes to location, type and price of future housing demand. (See sections below.) In addition, recent levels of housing production likely have been insufficient when the full set of housing demand drivers are taken into account.

II. Where will this housing demand be?

This research includes forecasts of the locations of the units needed to accommodate net new workers using two methods: 1) assuming that all workers live and work in the same jurisdiction ("By work location") and 2) assuming that the shares of new workers commuting from one jurisdiction to another are the same as the existing inter-jurisdictional commuting rates ("By current commuting patterns").

Because these are employment-driven housing demand forecasts, the greatest housing needs are in the jurisdictions that are forecasted to add the most new jobs over the next two decades. The higher estimates of job growth over the next two decades for some of the region's more suburban jurisdictions reflect the greater capacity for development in those places and may not reflect targeted efforts within the more urban jurisdictions to change land use policy to draw more growth.

The cities of Virginia Beach and Chesapeake will see strong job growth and housing demand over the next 20 years. Virginia Beach is forecasted to add 24,661 net new jobs between 2013 and 2033 which will drive demand for 16,659 net new housing units to accommodate the growing workforce. In Chesapeake, the forecasts indicate that there will be 20,868 net new jobs added, spurring demand for 13,578 net new housing units.

The city of Norfolk is projected to grow more slowly than the region, adding 13,061 net new jobs leading to a demand for 8,947 net new housing units in Norfolk between 2013 and 2033. Newport News will add 5,930 net new jobs which will generate a demand for 3,911 net new housing units if those new workers live in Newport News.

Outside the urban core, James City County and the city of Williamsburg combined³ are expected to add significant jobs, as well, adding 23,707 net new full-time jobs between 2013 and 2033. This job growth suggests a need for 17,222 net new housing units to accommodate the anticipated future new workers.

Portsmouth and Hampton, on the other hand, have produced a relatively greater share of the region's housing than the future employment-driven housing demand forecasts imply. Hampton will add 2,698 net new jobs which will result in demand for 1,800 net new units. In Portsmouth, an increase of 1,675 net new jobs suggests a need for 1,196 units over the next two decades.

These "By Work Location" jurisdiction-level housing demand forecasts assume that all new workers in a city or county live in there. However, not all workers live in same jurisdiction in which they work. Households may have multiple workers who work in different jurisdictions and these households may choose a home location that is the most convenient for all their workers. Some households choose where to live based on reasons independent of their work location, such as proximity to family or amenities. To account for these preferences, future housing demand was also analyzed using the current commuting patterns, assuming that new workers would commute the same way current workers do. It is important to stress that this method increases the levels of jurisdiction-to-jurisdiction commuting, which would increase the strain on the region's transit and highways systems and potentially increase the number of commutes to a level beyond current capacity in some locations.

Table 3 below shows the housing demand estimates both by work location and by current commuting pattern. The net new units as determined by the current commuting pattern consist both of those who live and work in the same jurisdiction ("Non-Commuters") and those who work in and live in different jurisdictions within the region ("Commuters"). Because of the current distribution of commuters, the housing unit forecasts by jurisdiction differ considerable from the estimates that assume all workers live in the jurisdiction in which they work. For example, given current commuting patterns, the cities of Portsmouth and Hampton would need additional housing over the next 20 years to accommodate not only their own new workers, but also to accommodate workers that live in the two cities but work elsewhere at the same rates the current workforce does.

These housing demand forecasts do not suggest locations for housing *within* jurisdictions. However, based on the assessment of the need for housing of different types and price/rent ranges (see below), a substantial portion of the housing that will be needed by future workers will need to be located close to established and growing employment centers, near transit and transportation networks, and in more compact developments.

³ IHS Global Insight produces jurisdiction-level forecasts of employment growth by industry sector. In some cases, the Global Insight forecasts have combined smaller jurisdictions into one (e.g. Williamsburg and James City County) due to the difficulty in forecasting out economic growth for small places.

Table 3. Estimates of Housing Demand for Net New Workers: 2013 – 2033
Hampton Roads Region
 By Work Location and Current Commuting Patterns^a

Jurisdiction	By Work Location	By Current Commuting Patterns		
		Non-Commuters	Commuters	Total by Commuting Pattern
Virginia Beach	16,659	11,987	7,974	19,962
Norfolk	8,947	3,719	3,399	7,118
Newport News	3,911	1,897	3,418	5,316
Chesapeake	13,578	6,634	5,864	12,498
Hampton	1,800	838	2,693	3,531
Portsmouth	1,196	414	2,142	2,556
Williamsburg/James City	17,222	6,860	645	7,506
Suffolk	13,730	7,087	2,191	9,277
Remainder of Region ^b	9,055	5,224	5,785	11,008
Elsewhere in MSA ^c	0	0	1,380	1,380
Outside MSA	0	0	5,946	5,946
Hampton Roads Region	86,098	44,661	41,437	86,098

^a The estimates by work location assume all new workers are housed in the jurisdiction in which they work and jurisdiction to-jurisdiction commuting levels will not increase from present volumes. The Non-commuters include workers who live in their work jurisdiction based on current commuting patterns. The Commuters include workers who do not live in their work jurisdiction, but live elsewhere within the region and are also based on current commuting patterns.

^b Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

^c The Virginia Beach Metropolitan Statistical Area (MSA) includes the jurisdictions in the Hampton Roads Planning District Commission, as well as Mathews County and two counties in North Carolina. The current MSA does not include Southampton or York county or the city of Franklin.

III. What types of housing units will be needed?

The housing demand forecasts are divided into four housing types—single-family owner, single-family rental, townhouse/multi-family owner, and townhouse/multi-family renter. Single-family units are defined as single-family detached homes and townhouse/multi-family units include townhouses, as well as multi-family apartments, condominiums and cooperatives.

The locations of the region’s new jobs, as well as the demographics and wages of the net new workers, are used to determine the types of housing units that will be need to accommodate these net new workers. Specifically, we use data from the most recent American Community Survey to make assumptions about the ages, household composition and housing type and tenure of the region’s new workers. There are no dramatic assumptions made about changing housing preferences; rather, the

distributions of housing characteristics of existing households in the region are applied to future households. Additional details on the methodology are available in the Appendix.

As show in Table 4, these forecasts indicate a need for 51,938 single-family detached homes and 34,159 townhouse/multi-family homes in the Hampton Roads region over the next 20 years to accommodate future workers.

**Table 4. Comparing Unit Types: Housing Need for Net New Workers by Housing Type
Hampton Roads Region
By Work Location^a**

Jurisdiction	Total Units	Single-Family		TH/Multi-Family	
		Owner	Renter	Owner	Renter
Virginia Beach	16,659	6,124	1,920	1,618	6,997
Norfolk	8,947	3,400	927	930	3,690
Newport News	3,911	1,311	495	323	1,782
Chesapeake	13,578	7,684	1,961	916	3,017
Hampton	1,800	1,019	118	240	423
Portsmouth	1,196	401	233	31	531
Williamsburg/James City	17,222	8,420	2,938	1,002	4,863
Suffolk	13,730	6,743	2,286	881	3,820
Remainder of Region ^b	9,055	4,445	1,513	549	2,545
Hampton Roads Region	86,098	39,547	12,391	6,491	27,668
		51,938		34,159	

^a The estimates by work location assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

^b Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

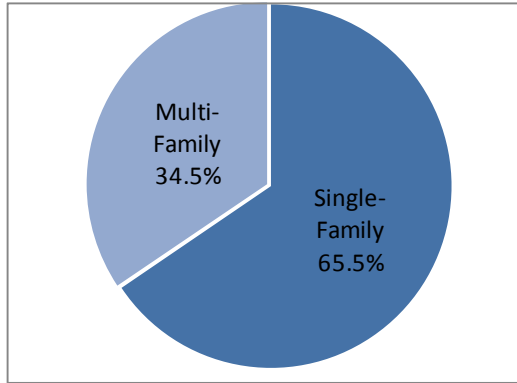
The housing types of housing that will be needed to accommodate workers in the years to come are somewhat different from what has been built previously. According to these housing demand forecasts, 60.3 percent of the future housing demand will be for single-family detached housing, while 39.7 percent will be for townhouses or for units in multi-family buildings. This future need reflects a slight shift towards more townhouse and multi-family housing compared with the existing housing stock in the region (Figure 1).

In addition, there will be a significant shift in the mix of owner and rental housing demanded by the region's future workers. These housing demand forecasts indicate a need for units that are 53.5 percent owner-occupied and 46.5 percent rental. Lower homeownership rates for new workers arise from two factors. First, future workers will be younger and have somewhat lower incomes, which suggest lower homeownership rates. Second, it is assumed that access to mortgage credit will not loosen considerably over the forecast period, which will continue to create a barrier to homeownership for some

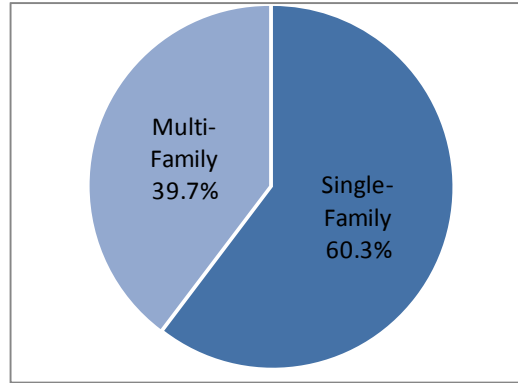
households. The future rate of homeownership among new workers is about 10 percentage points less than the existing homeownership rate in the region (Figure 2).

Figure 1. Comparing Unit Types: Existing and Needed

Current Housing Stock



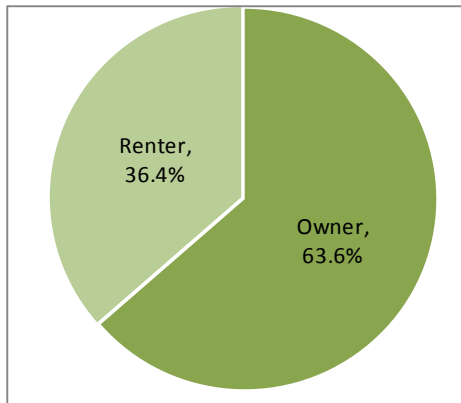
Housing Needed for Net New Workers



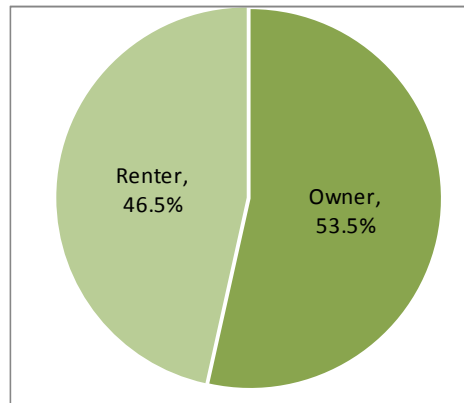
Source: 2009-2011 American Community Survey

Figure 2. Comparing Ownership versus Rental: Existing and Needed

Current Housing Stock



Housing Needed for Net New Workers



Source: 2009-2011 American Community Survey

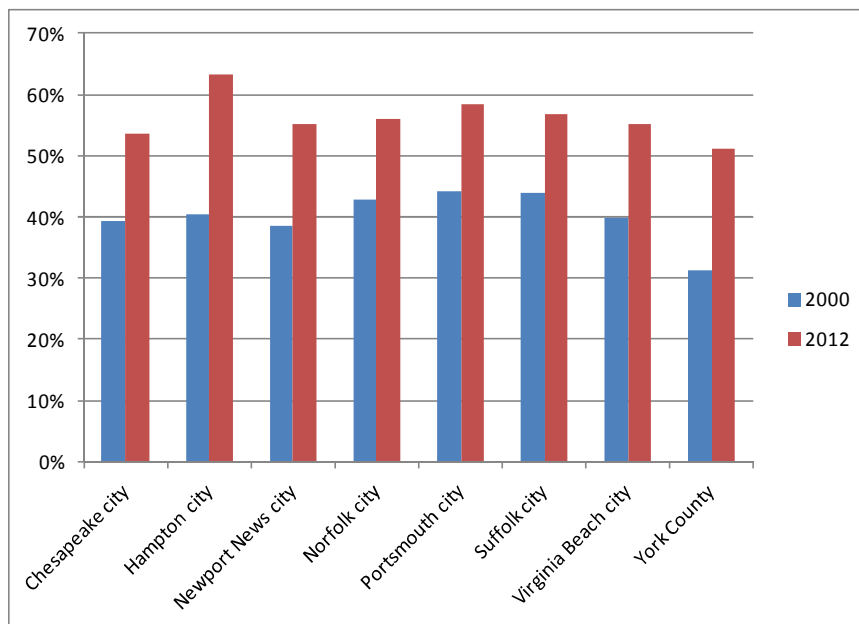
The shift to more townhouses and multi-family housing units, as well as more rental units, reflects the changing demographics of the region's workforce to include younger workers and more single-person households. The demand shifts are also a result of somewhat lower wages among the region's new workers.

IV. What housing costs can future new workers afford?

Even with a seemingly adequate sufficient supply of housing in optimal locations, new workers may still be forced to look for housing outside of the region or may spend a disproportionately higher share of their income on housing if housing costs are unaffordable. Or they may choose not to come to work in the region at all, opting for jobs in lower cost places. As a result, the region’s housing must be priced so that it is affordable to new workers. The new workers coming to the Hampton Roads region will have a range of wages and, therefore, there will be a need for housing at a range of prices and rents. While there will be job growth in relatively high wage sectors, there will also be substantial and increasing employment growth in lower-wage sectors. In addition to the shifting wage structure, a growing share of workers in the region will live alone and will therefore have only one income. As a result, there will be substantial demand for housing at relatively moderate prices and rents in the Hampton Roads region.

Affordability has become an increasing challenge in Hampton Roads. In the city of Virginia Beach, 39.8 percent of renters spent more than 30 percent of their income on rent in 2000.⁴ By 2012, the share had increased to 55.2 percent. Similar increases can be seen across the region (Figure 3). The lowest income households in the region have been disproportionately hard hit by rising rents and stagnant wage growth. Between 2010 and 2012, nearly 90 percent of the region’s renters with household incomes below \$20,000 spend more than 30 percent of the income on rent.

**Figure 3. Percent of Renters Spending 30% of More of their Income on Rent
Hampton Roads Region – Selected Jurisdictions**



Source: 2012 American Community Survey

⁴ Thirty percent is a generally accepted threshold for the maximum amount a household should spend on housing in order to leave sufficient income for other necessities.

Affordability challenges on the homeownership side have not been as severe as for renters, primarily because of the decline in owner costs over the past few years. Still, about a quarter of the region’s homeowners spend more than 30 percent of their income on housing costs.

There are growing affordability concerns related to the changing structure of the Hampton Roads area economy because some of the biggest job gains are in sectors that have wages below the area’s median wage.

**Table 5. Employment Forecasts and Wages by Sector – Net New Workers: 2013-2033
Hampton Roads Region**

	Net New Jobs	Median Wage (\$)
Total	124,356	34,600
Construction, Natural Resources and Mining	23,197	35,600
Manufacturing	(1,451)	44,600
Transportation & Utilities	1,836	37,700
Wholesale Trade	1,558	36,700
Retail Trade	6,271	21,000
Information	2,674	40,200
Finance & Insurance	2,453	36,700
Real Estate & Rental/Leasing	1,462	34,600
Prof, scientific and technical services; Management	27,976	56,600
Admin & waste services	21,970	25,500
Education	4,905	38,800
Health Services	24,594	31,400
Leisure & Hospitality	3,647	13,500
Other Services	(357)	24,700
Government	3,204	48,200
Military	417	48,000

Sources: IHS Global Insight, U.S. Bureau of Labor Statistics

The Professional, Scientific and Technical Services and Management sectors will comprise the largest share of net new job growth, accounting for 22.5 percent of all new full-time payroll jobs in the region over the next 20 years. The median wage for this sector is \$56,600, making it the highest wage sector in Hampton Roads. However, the other sectors with big job gains have significantly lower median wages. The Health Services sector, which will account for 19.8 percent of the region’s future job growth, has a median wage of \$31,400. New construction jobs will account for 18.7 percent of future job growth, with a median wage of \$35,600. And the Administrative and Waster Services sector, an important corollary to the Professional, Scientific and Technical Service industry, will make up 17.7 percent of the region’s

future job growth. Jobs in this sector have a median wage of \$25,500. Table 5 shows net new job growth by sector and the median wage of the sector.

The median wages by sector and by work jurisdiction are combined with assumptions about the average number of workers per household for different household types to calculate household incomes. Table 6 below shows the growth in households by income that will result increases in the full-time workforce over the 2013 – 2033 period.

**Table 6. Household Growth Associated with Net New Job Growth: 2013-2033
Hampton Roads Region
By Work Location^a**

Jurisdiction	Household Income (2011 \$s)				
	Less than \$25,000	\$25,000-49,999	\$50,000-74,999	\$75,000-99,999	\$100,000 or more
Virginia Beach	48	8,447	5,476	1,740	947
Norfolk	24	5,022	1,784	1,551	566
Newport News	139	2,332	1,032	262	146
Chesapeake	549	5,217	4,495	2,233	1,085
Hampton	0	1,356	223	0	221
Portsmouth	219	876	50	22	29
Williamsburg/James City	3,661	7,734	3,735	1,483	610
Suffolk	1,974	6,495	3,776	777	709
Remainder of Region ^b	1,478	4,487	1,953	758	377
Hampton Roads Region	8,092	41,966	22,524	8,826	4,690

^a The estimates by work location assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

^b Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

Affordable rents and homes prices are then based on household incomes. The maximum affordable home price is assumed to be no more than four times the annual household income. The maximum monthly rent that is affordable to a household depends on household income, and is assumed to be no more than 30 percent of the monthly household income for households with incomes below \$50,000, and an increasingly smaller share of household income for higher income renters (Table 7). Details on the calculations of maximum home prices and rents can be found in the Appendix.

Table 7. Household Income and Maximum Home Prices and Monthly Rents for Demand Forecasts

Household Income	Home Price	Monthly Rent
Less than \$25,000	Less than \$100,000	Less than \$625
\$25,000-49,999	\$100,000-199,999	\$625-1,249
\$50,000-74,999	\$200,000-299,999	\$1,250-1,314
\$75,000-99,999	\$300,000-399,999	\$1,315-1,749
\$100,000 or more	\$400,000 or more	\$1,750 or more

According to these forecasts, about 45 percent of the owner-occupied homes that will be needed to house new workers will need to be priced below \$200,000 (Table 8 and Figure 4a). These are homes that are affordable to households earning up to \$50,000 a year. An additional 30.9 percent of new owner households will be able to afford homes priced between \$200,000 and \$299,999. Only 9.0 percent of new owners in the region will be able to afford a home priced at \$400,000 or more given the wages and household demographics of new workers. By contrast, 16.4 percent of homes are currently valued at \$400,000 or more.

There will be a substantial need for moderately priced rental units to accommodate the region’s future workforce. Among new renter households, 14.2 percent will be able to afford a maximum monthly rent of \$625 per month (Table 9 and Figure 4b). This is the rent affordable to a household earning up to \$25,000 a year. Another 58.6 percent of new renters will be able to afford a unit renting for between \$625 and \$1,250. About 21 percent of new renters in the region will have incomes where they can afford rents between \$1,250 and \$1,314. Only 6.6 percent of renter households will have a household income sufficient to afford to rent a unit for \$1,315 or more. By contrast, 26.5 percent of current renters are paying \$1,315 or more.

Tables 8 and 9 show the breakdown of housing need by home price and rent for the jurisdictions in the Hampton Roads region, *assuming each jurisdiction supplies a sufficient amount of housing to accommodate all of its future workers*. The Appendix includes tables that provide the same breakdown using current commuting patterns—that is, assuming each jurisdiction houses the same portion of its future workers as is does its existing workers.

The demand for moderately priced owner and rental units does not suggest that all of these more affordable units will be new construction. In most local markets, it is very difficult to build new units at these lower price and rent levels without significant subsidy. Therefore, these forecasts suggest that a large share of the lower cost housing that will be needed in the future will have to come through preservation of existing affordable housing, including both the preservation of subsidized rental housing and the preservation of market-rate affordable housing that is at risk of becoming unaffordable through redevelopment.

Note that in some cases, these forecasts imply a demand for zero units in particular price or rent ranges. This outcome is a result of the study’s methodology which uses median wages by sector to calculate

household incomes. By using median wages, rather than some distribution of wages, we can end up with no households with incomes in a particular range. These findings should be interpreted cautiously.

Table 8. Estimates of Housing Demand for Net New Workers by Price: 2013-2033

**Owner-Occupied Units
Hampton Roads Region
By Work Location^a**

Jurisdiction	Total Owner-Occupied Units	Home Price (2011 \$)			
		Less than \$200,000	\$200,000-299,999	\$300,000-399,999	\$400,000 or more
Virginia Beach	7,742	2,856	2,914	1,193	779
Norfolk	4,330	1,767	1,003	1,069	491
Newport News	1,634	811	542	174	106
Chesapeake	8,601	2,691	3,091	1,825	994
Hampton	1,259	883	155	-	221
Portsmouth	432	403	-	-	29
Williamsburg/James City	9,421	5,066	2,588	1,210	556
Suffolk	7,624	3,748	2,597	635	644
Remainder of Region ^b	4,995	2,680	1,354	650	311
Hampton Roads Region	46,038	20,905	14,246	6,757	4,130

^aThe estimates by work location assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

^bIncludes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

Table 9. Estimates of Housing Demand for Net New Workers by Rent: 2013-2033

**Renter-Occupied Units
Hampton Roads Region
By Work Location^a**

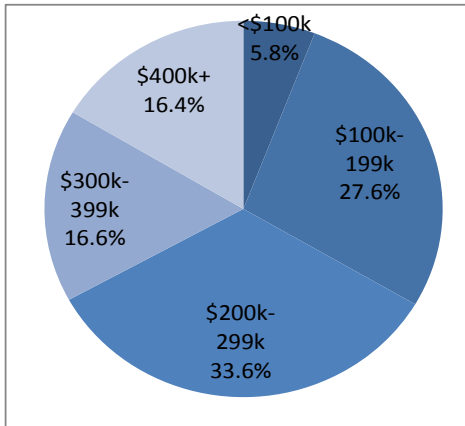
Jurisdiction	Total Renter-Occupied Units	Home Price (2011 \$)			
		Less than \$625	\$625-1,249	\$1,250-1,314	\$1,315 or More
Virginia Beach	8,917	48	5,591	2,562	716
Norfolk	4,617	24	3,255	781	557
Newport News	2,277	124	1,535	490	128
Chesapeake	4,978	400	2,675	1,404	499
Hampton	541	-	473	68	-
Portsmouth	764	161	530	50	22
Williamsburg/James City	7,801	2,478	3,851	1,147	325
Suffolk	6,106	1,426	3,295	1,179	207
Remainder of Region ^b	4,059	1,034	2,252	598	175
Hampton Roads Region	40,059	5,695	23,458	8,278	2,629

^aThe estimates by work location assume all new workers are housed in the jurisdiction in which they work and jurisdiction-to-jurisdiction commuting levels will not increase from present volumes.

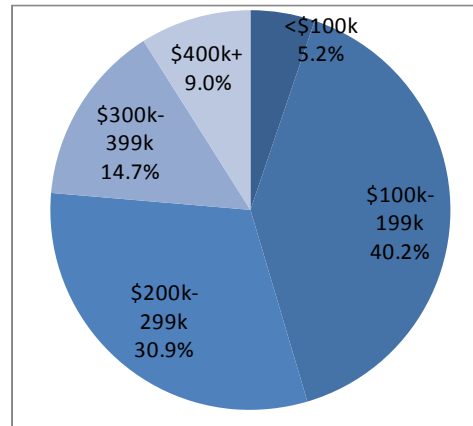
^bIncludes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

Figure 4a. Comparing Home Prices: Existing and Needed

Current Housing Stock



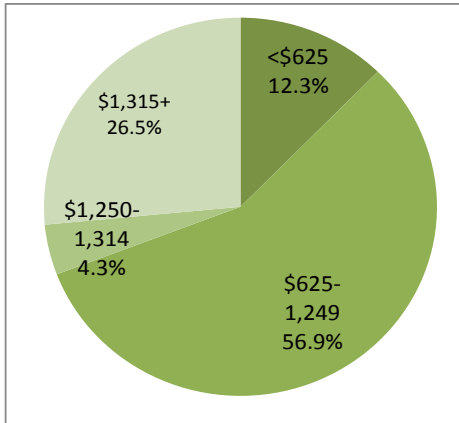
Housing Needed for Net New Workers



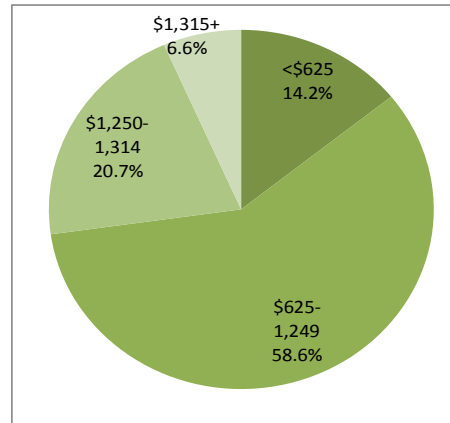
Source: 2009-2011 American Community Survey

Figure 4b. Comparing Rents: Existing and Needed

Current Housing Stock



Housing Needed for Net New Workers



Source: 2009-2011 American Community Survey

Study Limitations

These employment-driven housing forecasts represent the low estimate of the housing that will be needed in Hampton Roads over the next two decades. There are several important sources of housing demand that are excluded from this analysis:

- **Self-employed and some part-time workers.** The employment forecasts on which these housing demand forecasts are based include payroll jobs as tabulated by the Bureau of Labor Statistics. They exclude self-employed workers and some part-time workers. By one estimate, including part-time, self-employed and other non-covered workers would increase the estimates of the total workforce by up to 20 percent⁵ and therefore would lead to an increase in housing demand over the forecast period. The increased housing demand would be less than the potential increase in employment since some part-time and self-employment jobs are second job holders who would already be counted in the full-time payroll job projections. But the exclusion of these workers understates the total future housing demand in the Hampton Roads region. Assuming half of the excluded self-employed and part-time workers will generate additional housing demand, these housing demand forecast could increase by 8,000 to 10,000.
- **Replacement workers.** Replacement workers are workers that will move to Hampton Roads to take jobs exited by retirees and others leaving the labor force. The number of replacement workers in the region could be as high as 1.5 times the number of net new payroll jobs.⁶ Many replacement workers will fill jobs vacated by people who will not leave Hampton Roads. As a result, there will be additional demand for housing for these replacement workers. Even if only a third to 40 percent of the future replacement workers demand housing not currently in the stock, there could be demand for an additional 40,000 to 50,000 units in the region over the next 20 years.
- **People not in the workforce.** There will be additional housing demand in the region by people not in the workforce, including seniors and persons with disabilities. Some of these individuals will be among those discussed above in the note on replacement workers, but others may not have been accounted for at all in the discussion of housing demand. According to the most recent American Community Survey data, about 12 percent of the Hampton Roads population is age 65 or older and 11 percent (including children, adults and seniors) has a disability. Accounting for housing demand associated with the region's future senior and disabled population could add 20,000 to 25,000 units to the demand forecasts.⁷
- **Second homes or seasonal rental housing.** These employment-driven housing demand forecasts do not include housing that will be developed as second homes or seasonal rental housing. According

⁵ The U.S. Bureau of Economic Analysis (BEA) employment estimates include part-time and self-employed workers, as well as other workers not included in the unemployment insurance system. The U.S. Bureau of Labor Statistics (BLS), on which the IHS Global Insight forecasts are based, excluded these categories of workers. Comparing the two sources indicates that the BEA employment totals are 19 percent higher than the BLS totals for the Hampton Roads region. The BEA data include multiple job holders and would be an overestimate of the total jobs driving demand in the region.

⁶ This ratio is based on an analysis of net new jobs and replacement jobs in Northern Virginia using data from EMSI.

⁷ This estimate assumes the population grows by 300,000 over the next 20 years, and 10 percent of the population growth is seniors and disabled people not in the workforce.

to the 2010 Census, more than a quarter of the 58,000 vacant homes in the region are designated as being for “seasonal, recreational or occasional use.” Many communities in the Hampton Roads region are attractive places for seasonal homes and growing demand for by this segment of the housing market is not explicitly addressed in these forecasts. Assuming construction of new units for seasonal use could add 1,500 to 2,000 units to the forecasts.

- **Replacement units.** There is a segment of the region’s housing stock that has become so old or has grown into such disrepair that it will leave the housing stock. These forecasts do not include a tally of new housing units that will be needed to replace older units that will be removed from the stock due to age and/or disrepair, and an estimate of the future need associated with replacement units would require more analysis of the current housing stock.
- **Frictional vacancy.** There always needs to be additional vacant units in a housing market to allow for moves. This frictional vacancy has been between four and eight percent in the Hampton Roads region, according to Census data. These housing demand forecasts do not include units to accommodate this frictional vacancy. Assuming a five percent vacancy rate, the housing demand forecasts could increase by 7,000 to 8,500 units.

It is beyond the scope of this study to rigorously quantify all of the sources of future housing demand. However, based on these rough estimates, the total demand for housing could be between 160,000 and 180,000 units, or between about 1.8 to 2.0 times the base employment-driven forecasts presented in this report. Furthermore, given the lower projected income levels of the excluded sources of demand, the additional housing demand will be more concentrated at the lower end of the price and rent ranges. So, there will be even more need for smaller housing units and lower priced rental homes.

In addition to the sources of housing demand excluded from this analysis, these estimates of housing demand are limited by the source of employment forecasts used as the base. The employment forecasts used were made at a particular time, using a particular methodology, that take into account recent changes in Federal spending and build on post-recession economic trends in the region. As such, if the employment outlook changes—either because of changes at the Federal level or as a result of local efforts—housing needs in the region will also change. Alternate employment forecasts would suggest a different level of housing to accommodate future workers.

Finally, these estimates assume housing preferences in the future remain relatively unchanged. If there is a dramatic and sustained shift in housing preferences, then the mix of housing types demanded would be different than what it presented here. Because there is no compelling evidence of persistent changing preferences, these housing demand forecasts do not attempt to include any such adjustments.

Policy Implications

Housing Should be Part of a Comprehensive Regional Economic Development Strategy

A sufficient supply of housing is integral to ensuring that Hampton Roads achieves its full economic potential. New jobs cannot be filled without workers available to fill them. And while some workers may be able to commute long distances or from outside the region, the wages of the job must be high enough to justify the commute and the transportation infrastructure must have the capacity for these workers. Many workers, however, may look elsewhere for jobs if they cannot find affordable housing close to work.

Regions that have adequate housing to accommodate future workers will have a competitive advantage over other places. This is particularly true as workers have become mobile. In addition, regions with housing close to employment centers will not have to supply additional transportation services and can benefit from additional worker spending in the region. As a result, housing should join transportation and workforce development as common elements in local and regional economic development plans.

For Hampton Roads to realize its full economic development potential—particularly in this period of economic restructuring—all jurisdictions need to have a housing policy that reflects their specific housing requirements to accommodate future economic growth and the workforce housing demands that this desired growth implies.

Housing is where the workforce lives. It is where workers spend a large share of their incomes and where they pay their taxes. Recognizing this critical link between housing and regional economic growth is critical to the future vitality of the Hampton Roads economy. The region cannot achieve its projected growth potential without new workers. And this workforce will not be available to the region's future businesses in the absence of sufficient housing, located to minimize commuting, and at price levels affordable to new workers. As the structure of the Hampton Roads economy evolves and becomes less dependent on the Federal government, it is important for the region to find ways to be as competitive as possible. Without meeting the projected future demand for housing, the region may lose position to other metropolitan area economies that have now rebounded from the economic downturn and have achieved a better balance between housing and their future workforce requirements.

Multi-family Housing, Rental Housing and Housing Affordable to Low- and Moderate-Income Workers Will be in Demand

The housing demand forecasts suggest that the housing that will be needed for the future workforce will include more townhouse and multi-family units, and will need to include a substantial share of units at moderate prices and rents. The reasons for the shift towards smaller, less expensive and rental housing relates to the changing demographics of the labor force and the distribution of wages of new jobs. The workers coming into the region over the next 20 years will be younger than the existing workforce, and they will be more likely to live in one-person households.

Increases in townhouse and multi-family development will require local jurisdictions to review land use and zoning policy with an eye to targeting higher density residential development in the places that make the most sense—near transit and jobs.

The affordability challenges in the region will only get worse without a sufficient supply of lower-cost housing. When households spend a disproportionate share of their income on housing costs, there is not enough left for other necessities, such as food, child care, health care, transportation and education. When housing costs are a burden to households, they also spend less locally, which can be a drag on local economic recovery.

Housing that is affordable to lower-income working households is very difficult to build in many places in Hampton Roads without significant subsidies or incentives. Local commitment of dedicated funding for affordable housing can help facilitate the development of lower-cost housing. However, much of the more affordable housing that will be demanded by new workers is existing, rather than new, housing. Therefore, it is essential that there is an inventory of market rate and subsidized affordable housing units in the region, and that efforts are made to preserve existing lower priced housing, particularly in the fastest-growing and in-demand locations.

Without Sufficient Housing, Traffic Congestion and Quality of Life Worsen, and the Region’s Full Economic Development Potential May Go Unrealized

A lack of sufficient housing within the Hampton Roads region, located in proximity to the region’s employment centers and to existing and planned transit will lead to increased traffic congestion, and will result in longer commutes, less worker productivity, and declining quality of life for all residents of the region. While funding for light rail in Hampton Roads appears likely⁸, increased funding for additional transportation expansions and improvements is less certain. Therefore, the ability to build new roads to solve regional traffic problems is untenable. Allowing land use and zoning changes that permit the construction of more housing near jobs, which will require less commuting, is a critical alternative.

The lack of housing, increasing traffic congestion and declining quality of life would make it more difficult for businesses to recruit workers and will make it less attractive for new firms to locate in the region. In some other parts of the country, communities have achieved a better balance between their housing supply and economic growth. Workers may choose to leave Hampton Roads for places with more affordable housing closer to jobs and with shorter, less stressful commutes. The pull of the Federal government in the region is lessening. And while Hampton Roads has many amenities that will continue to be attractive to workers and businesses, there are many other choices as both firms and labor are more footloose.

⁸ Interviews with Steve Lawson, President of The Lawson Companies, and Andy Friedman, Director of Housing and Neighborhood Preservation in Virginia Beach, 3/3/2014.

Appendix

Table A-1. Estimates of Housing Demand for Net New Workers by Price: 2013-2033

**Owner-Occupied Units
Hampton Roads Region
Non-Commuters Only^a**

Jurisdiction	Total Owner-Occupied Units	Home Price (2011 \$)			
		Less than \$200,000	\$200,000-299,999	\$300,000-399,999	\$400,000 or more
Virginia Beach	5,571	2,055	2,097	859	560
Norfolk	1,800	735	417	444	204
Newport News	793	394	263	85	52
Chesapeake	4,202	1,315	1,510	892	485
Hampton	586	411	72	-	103
Portsmouth	150	140	-	-	10
Williamsburg/James City	3,753	2,018	1,031	482	222
Suffolk	3,935	1,935	1,341	328	332
Remainder of Region ^b	2,888	1,545	784	379	179
Hampton Roads Region	23,678	10,548	7,515	3,469	2,147

^a These estimates assume that each jurisdiction houses a share of its future workers. That share is consistent with the current share of the workforce that works and lives in the same jurisdictions, defined as “non-commuters” in this analysis.

^b Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

Table A-2. Estimates of Housing Demand for Net New Workers by Rent: 2013-2033

**Renter-Occupied Units
Hampton Roads Region
Non-Commuters Only^a**

Jurisdiction	Total Renter-Occupied Units	Home Price (2011 \$)			
		Less than \$625	\$625-1,249	\$1,250-1,314	\$1,315 or More
Virginia Beach	6,417	35	4,023	1,844	515
Norfolk	1,919	10	1,353	325	231
Newport News	1,105	60	745	238	62
Chesapeake	2,432	196	1,307	686	244
Hampton	252	-	220	32	-
Portsmouth	264	56	183	17	8
Williamsburg/James City	3,107	987	1,534	457	130
Suffolk	3,152	736	1,701	608	107
Remainder of Region ^b	2,334	584	1,303	345	101
Hampton Roads Region	20,982	2,664	12,369	4,552	1,398

^a These estimates assume that each jurisdiction houses a share of its future workers. That share is consistent with the current share of the workforce that works and lives in the same jurisdictions, defined as “non-commuters” in this analysis.

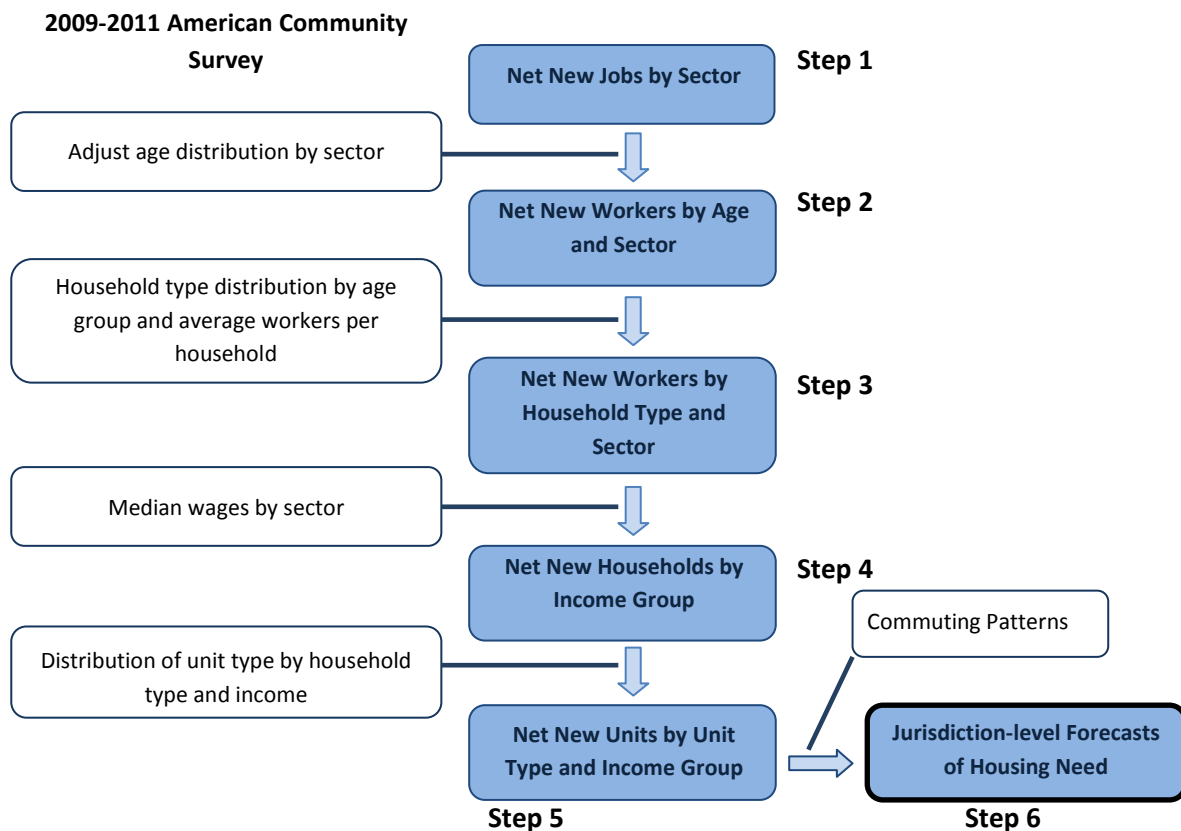
^b Includes Franklin, Gloucester, Isle of Wright, Southampton, Surry and York.

Methodology

The housing demand forecasts are employment driven forecasts of the need for housing in the Hampton Roads Planning District. In addition to updated employment forecasts, this approach uses the most more current data from the American Community Survey (ACS) and refined assumptions about the characteristics of workers and households.

These forecasts link regional economic employment growth with the availability, location and price of housing. Housing forecasts were generated for 13 jurisdictions or groups of jurisdictions that comprise the Hampton Roads Planning District⁹. These housing forecasts were based on forecasts of job growth by industry sector for each jurisdiction and included an assessment of the amount and type of housing that would be needed to house each jurisdiction’s new workers.

Figure A1. Methodology for Forecasting Housing Needs



⁹ There are 16 counties and cities in the Hampton Roads Planning District. For this research, three independent cities were combined with their surrounding counties. The city of Williamsburg is included in the James City County forecasts. The city of Franklin is included in the Southampton County forecasts. The city of Poquoson is included in the York County forecasts.

A six-step model was conducted to generate housing demand forecasts (see Figure A1). Each step in the process was important for modeling not simply the overall demand for housing, but also the need for housing in different jurisdictions, of different types, and at different price/rent points. The characteristics of the housing units needed for the region's future workers depend on the age, household composition, and household income of new workers, which are all factors included in the analysis. This section briefly outlines the methodology and data used to derive the forecasts.

1. Determine job growth by industry

It is important to understand the types of jobs coming to the region so we can develop estimates of worker age and household income, which will determine household composition, housing types and affordability levels. IHS Global Insight provides annual job forecasts for each of the region's jurisdictions. These employment forecasts are based on a county-level econometric model that Global Insight updates regularly. The forecasts include payroll jobs only, excluding unincorporated self-employed persons. Therefore, the Global Insight figures undercount the total employment activity in the region.

The Global Insight forecasts include 13 major industry sectors. In some cases, we split the Global Insight sectors into subsectors if the workers in different subsectors were likely to have different wages. We split the Global Insight transportation, trade and utilities sector into transportation and utilities, wholesale trade and retail trade. We divided the education and health services sector into two sectors. We split the financial services sector into finance and insurance and real estate. Finally, we split the professional and business services sector into professional and technical services/management and administrative/waste services. Employment data¹⁰ from the U.S. Bureaus of Labor Statistics was used to divide the sectors.

The Global Insight forecasts were compared with the 30-year employment forecasts developed by the Hampton Roads Planning District Commission (HRPDC). Based on a review of these forecasts and a conversation with HRPDC Chief Economist Greg Groontendorst, we made some adjustments to the Global Insight forecasts to better reflect local economic development and planning activities.

2. Assign net new jobs to workers by age category

Understanding the age distribution by sector of the region's future workforce is important for estimating housing demand, since the demand for different types of housing is strongly associated with individuals' ages. The first step in moving from jobs to housing demand is to estimate the age distribution of the net new workers. For each jurisdiction and job sector, we assigned some share of the net new workers in each sector to one of three age groups: under 30, 30-44 or 45-64. We assumed no net new workers are aged 65 or older.

New workers will be somewhat younger than the existing workforce. We analyzed data from the 2009-2011 American Community Survey (3-year microdata sample) to estimate the age distribution of current

¹⁰ The employment data was annual 2012 data from the Current Employment Statistics using the Norfolk-Virginia Beach-Newport News, VA-NC MSA geography.

workers for each industry sector. This analysis was done separately for each jurisdiction or combination of jurisdictions if the county/city was too small.¹¹

We then adjusted the age distribution to account for the fact that net new workers would be younger by analyzing 2009-2011 ACS data on the age distribution of workers¹² who had recently moved in the Hampton Roads Planning District. Through this analysis, we found that recent movers were more likely to be 18-29 or 30-44 than existing workers. Recent movers were less likely to be 45-64.

3. Assign net new workers to a household type and sector

This process of assigning workers to households consisted of two steps: i) determining the type of household to which a worker is most likely to belong based on age and job sector, and then ii) calculating the average number of workers within each household type to determine the number of net new households.

i) Determine the household type

Age is an important determinant of housing demand largely because of the household composition implied by the ages of the individuals in the households. For example, workers under age 30 are more likely to live in one-person households or two adult-no children households and workers age 30 to 44 are more likely to live in households with children.

We assigned each net new worker in each sector to one of 11 household types based on the age group to which they were assigned in the previous analytic step. The 11 household types are listed below.

Household Size	Household Composition
1-person households	1 adult
2-person households	1 adult, 1 child
	2 adults
3-person households	1 adult, 2 child
	2 adults, 1 child
	3 adults
4+ person households	1 adult, 3+ children
	2 adults, 2+ children
	3 adults, 1+ children
	4+ adults, 1+ children
	4+ adults

¹¹ The ACS data can be analyzed by public use microdata area (PUMA). Each PUMA contains at least 100,000 people, based on the 2000 Census. For the analysis of the 2009-2011 ACS data, the cities of Poquoson and Williamsburg are combined with the counties of Gloucester, James City, Mathews, and York. The cities of Portsmouth and Suffolk and Isle of Wight County are combined. The cities of Emporia and Franklin are combined with the counties of Brunswick, Greensville, Lunenburg, Mecklenburg, Southampton, Surry and Sussex.

¹² For calculations using ACS data, a worker is defined as anyone in the labor force.

We used the 2009-2011 ACS 3-year data and analyzed the current distribution of household types for each age group and for each jurisdiction. Thus, for each jurisdiction, we assessed the percent of workers under 30 who live in one-adult households, the percent who live in one-adult, one-child households and so on. From step 2 above, we know how many workers in each sector are in each age group (under 30, 30-44, and 45-64) for each jurisdiction. We used the distribution of household types by age from the 2009-2011 ACS to assign workers in each sector and age group to a household type.

ii) Calculate the average number of workers per household

We then used the 2009-2011 ACS 3-year data to calculate the average number of workers in each household. Because this forecast is for net new workers only, this average includes only households with a worker.

The average number of workers in each of the 11 household types is used to convert workers into households. This was calculated by dividing the total number of workers assigned to each household type by the average number of workers in each household type. (See Figure A2 for example.) This step assumes that workers who live in the same household also work in the same sector and jurisdiction.

Figure A2. Example of Assigning Workers to Household Types

Assume there were 1,000 net new workers in the construction sector in the city of Virginia Beach who were between the ages of 30 and 44. From the 2009-2011 ACS we have the household type distribution for people age 30 to 44 in Virginia Beach, as show in the second column of the table below. We use that distribution to assign the 1,000 net new construction workers to a household type, as shown in the fourth column of the table below. We repeat this process for all age groups and all sectors in each jurisdiction.

Household Type	% of all 30-44 year olds in Virginia Beach	Average No. of Workers	No. of Net New Construction Workers Age 30-44	No. of Net New Households Associated with New Construction Workers Age 30-44
1 adult	21%	1.00	210	210
1 adult/ 1 kid	5%	1.00	50	50
2 adults	36%	1.34	360	269
1 adult/ 2 kids	3%	1.00	30	30
2 adults/ 1 kid	13%	1.66	130	78
3 adults	7%	2.34	70	30
1 adult/ 3+ kids	2%	1.00	20	20
2 adults/ 2+ kids	8%	1.58	80	51
3 adults/ 1+ kids	3%	2.35	30	13
4+ adults	1%	3.27	10	3
4+ adults/ 1+ kids	1%	3.39	10	3

Then, we combine workers into households. For example, the 210 workers in the first row of the table above form 210 households, but the 360 workers in the third row form 269 households (360 workers / 1.34 workers per household).

4. Calculate household income in net new households

Housing demand is driven by age and household composition, as well as household income. We calculated median household incomes for all 11 household types and all industry sectors. Then, we tabulated the total number of households in each of six income categories: less than \$25,000; \$25,000 – 49,999; \$50,000 – 74,999; \$75,000 - 99,999; \$100,000 – 149,999; and \$150,000 and greater.

We used the 2009-2011 ACS 3-year data to calculate the median wages by industry for each jurisdiction. Using the median wage by industry and the average number of workers per household (assuming both are in the same industry), we calculate the household income for each household type and sector for each jurisdiction. We then sum up—across sectors—the number of households in each of the six income categories for each of the eleven household types. Thus, we have a count of the numbers of 1 adult households in each income group, the numbers of 1 adult, 1 child households in each income group, and so on.

5. Assign each household a unit type by income group

After step 4, we have a count of the number of households by household type and household income that are associated with net new job growth. Household type and household income are both associated with the type of housing demand. Therefore, we use these counts to estimate the need for four different types of housing units in six rent/price categories. The four housing unit types are: single-family owner and renter, and multi-family (including townhouse/single-family attached) owner and renter. The six rent/price categories are associated with the six income groups and represent the maximum rent or home price affordable to households in each income group.

We used the 2009-2011 ACS 3-year data to run crosstabulations of housing type (i.e. four types) by household composition (i.e. 11 household types) for each of the six income groups. The results of this analysis show the current distribution of housing types for different household types and household incomes.

We ran this analysis for two sets of jurisdictions: (1) the cities of Newport News, Norfolk and Virginia Beach City combined and (2) cities of Emporia, Franklin, Poquoson, Portsmouth, Suffolk and Williamsburg and the counties of Brunswick, Gloucester, Greenville, Isle of Wight County, James City, Lunenburg, Mathews, Mecklenburg, Southampton, Surry and Sussex and York combined. We did not run the analysis for the jurisdictions separately because the sample sizes were too small. We combined jurisdictions because the microdata are based on public use microdata areas, or geographies that include about 100,000 people and combine smaller jurisdictions.

We then applied these distributions to the projected households for each jurisdiction to estimate the need for housing by unit type and rent/price. This step assumes that housing preferences do not change in the future.

We made assumptions about the affordable price and rent levels for households in each income group. The maximum affordable rent was set as a percentage of household income. We assumed that rents

would not exceed 30% of renters' income with incomes below \$50,000; 21% of income for renters with incomes between \$50,000 and 99,999; and 18% of income for renters with incomes about \$100,000.

These rent percentages are based standard definitions of housing burden for the lowest income group and on an analysis of rents as a percentage of household income in the 2009-2011 ACS for the other income groups, knowing that higher income renters tend to spend a lower percentage of their income on rent than do lower income renters. The housing price for homeowners was set at four times household income.

Table A5. Home Value and Monthly Rental Price

Household Income	Home Price	Monthly Rent
Less than \$25,000	Less than \$100,000	Less than \$625
\$25,000-49,999	\$100,000-199,999	\$625-1,249
\$50,000-74,999	\$200,000-299,999	\$1,250-1,314
\$75,000-99,999	\$300,000-399,999	\$1,315-1,749
\$100,000 or more	\$400,000 or more	\$1,750 or more

6. Develop jurisdiction-level estimates based on in-commuting assumptions

After step 6, we have a count of the number of new housing units needed by type and price needed to accommodate *all* new workers in a jurisdiction. These estimates are “By Work Location.” These forecasts assume that all new workers over the next 20 years will live in the jurisdiction in which they work.

We generated another set of forecasts that assumed that the new jobs in each jurisdiction had the same in-commuting rate associated with existing jobs. For example, 42 percent of Norfolk city jobs are held by people who live in the city of Norfolk. For the set of forecasts based on commuting patterns, we assumed that 42 percent of new workers in Norfolk would be also housed in the city. We made this assumption for all the jurisdictions, given their individual current in-commuting rates. These units are referred to the “Non-Commuters.”

However, to maintain the regional commuting rates, the inter-jurisdictional commuters are added to these forecasts. Even though only 42 percent of jobs in Norfolk are held by Norfolk residents, 97 percent are held by those who reside anywhere within the planning district. This means that 55 percent of Norfolk jobs are held by those who reside outside of Norfolk, but within the Planning District, and three percent are held by people who live outside the planning district.

Study Limitations

The demand for housing depends on many factors. Modeling this housing demand necessarily involves making several simplifying assumptions. Some of the complexity of housing need will be excluded from the analysis and some of the limitations of the research are described briefly in this section. Additional information on limitations of the study are discussed in the body of the text.

The housing demand forecasts exclude the housing needed to accommodate replacement workers, some part-time and self-employed workers, as well as other non-paid working households. This analysis excludes the housing needs for replacement workers resulting from the aging of the current workforce ages and retirement. Some retiring workers will leave the region, thus freeing up housing units for new or replacement workers. However, many of the retiring workers will stay in the region. As a result, there will be additional housing demand from replacement workers.

In addition, these employment-driven demand forecasts are based on forecasts of net new full-time jobs in the region which excludes part-time jobs and some self-employed workers. Some part-time job holders may hold second full-time jobs, so their housing needs will be included in these forecasts. However, the housing demand associated with many part-time workers and some self-employed workers is not accounted for, and thus these forecasts provide an underestimate of total housing need.

The housing demand forecasts also include other housing demand including demand for seasonal or vacation homes, and units to account for frictional vacancy and replacement of units that are removed from the stock due to age and/or disrepair. These employment-driven housing demand forecasts do not include housing that will be developed as second homes or seasonal rental housing. Many communities in the Hampton Roads region are attractive places for seasonal homes and growing demand for by this segment of the housing market is not explicitly addressed in these forecasts.

These forecasts do not take housing vacancy or housing replacement into account. There always needs to be additional vacant units in a housing market to allow for moves; however, these housing demand forecasts do not include units to accommodate this frictional vacancy. There is also a segment of the region's housing stock that has become so old or has grown into such disrepair that it will leave the housing stock. These forecasts do not include a tally of new housing units that will be needed to replace older units that will be removed from the stock due to age and/or disrepair. As a result, these exclusions suggest that these housing demand forecasts underestimate the total future housing needs in the region.

It is assumed that there are no major shifts in the housing unit preferences of future cohorts or in the direction of Federal policies related to homeownership. These forecasts are based on data on the housing characteristics of current residents by age group, household composition and household income in order to make estimates of future housing needs. This method assumes that there are no major changes in the housing unit preferences of future cohorts.

In addition, this research makes no assumptions about the direction of Federal policies related to homeownership which might make owning relatively less attractive or feasible over time. We assume

the current relatively tight credit environment persists throughout the forecast period. If there are major changes to the federal mortgage interest deduction or to regulation related to down payment and other requirements for securing a home mortgage, then homeownership may be less desirable or less achievable for future workers.

It is assumed that workers' housing location choices are related solely to their place of work. The forecasts by work location were generated to keep current jurisdiction-to-jurisdiction commuting levels constant over the next 20 years. The means to achieving this goal is to place all workers' homes in the jurisdictions in which they work. This is an oversimplification of the decisions people make about where to live. Many households with multiple workers have work places in different jurisdictions. Workers have become increasingly more mobile with respect to work, changing jobs more frequently than in the past. And while telecommuting is still a small part of the labor force, with a very small share of workers regularly working from home, some workers are not tied to a physical workplace. These housing demand forecasts are not meant to suggest that people should live in the same jurisdiction in which they work. Rather, these forecasts provide guidance for the amount of housing that would be required so that workers have the options for affordable housing closer to where they work. The overall quantity of housing needed could be redistributed somewhat throughout the region given other factors that influence housing choice.