5. JURISDICTIONAL FORECASTING METHODOLOGIES

DISTRICT OF COLUMBIA

1. Introduction

The D.C. Office of Planning (OP) is the primary point of contact for the District government with the Metropolitan Washington Council of Governments (COG) in developing the Cooperative forecasts. The Office of Planning has the responsibility for preparing the District's forecasts for population, households and employment for submission to the COG Cooperative regional forecast. Within OP, the State Data Center is the unit responsible for developing the final forecast report.

Although the Office of Planning has primary responsibility for the forecast, it is developed with input and review from other offices and agencies within the government. Once OP has incorporated all agency contributions into a draft, this draft is submitted to the Executive Office of the Mayor for review prior to formal transmittal by the Office of Planning Director to COG.T

The District Department of Transportation (DDOT) provides information on any significant street and highway reconfiguration that might impact the location of households. As such, the Round 7.0 forecast includes the proposed impact on population and households of the Anacostia Light Rail and the New York Avenue Metro Station (both of these DDOT projects are also included in the Consolidated Long Range Plan). The District's Department of Employment Services (DOES) was the primary data source for the employment segment of the forecast. DOES expanded the data from it's most recent forecast to include persons in the military, self employed, and unpaid family members to satisfy the employment requirements for the COG forecast.

During the developmental phases of the District's Round 7.0 submission the population, household and employment data were submitted to COG for input into the Econometric Model. The feedback received was valuable for consideration but did not substantively alter the District's assumptions and calculations for population and households. However, employment results from the Econometric Model did lead the District to reexamine its employment projections for the years 2020 – 2030. Reconsideration of the assumptions for the last decade of the forecast period resulted in the District forecasting fewer jobs than originally projected for 2020 – 2030.

Both top down and bottom up methodologies are used in developing the District's forecasts. Using the 2000 data as control totals, the task for 7.0 focuses on documenting the extent to which there have been gains or loses in population, households and employment between 2000 and 2005. The top down process for Round 7.0 began with using the year 2000 numbers for

population, households and employment. The Census 2000 data provide a definitive basis for population, number of households and household size. The year 2000 is also a benchmark year for the Department of Employment Services ten-year forecasts. With the jurisdictional totals established as controls, the bottom-up methodology determines where there has been substantial creation or removal of households or employment at the small area level. The bottom-up approach is used as a check to see if the jurisdictional control totals are in need of adjustment and to ensure that population, households and employment are distributed appropriately at the Traffic Analysis Zone (TAZ) level.

The previous forecast rounds of 6.3, and 6.4 did not contain any changes in terms of households, population and employment for the District. Round 6.4A contained very minor changes for the period 2015 – 2030 to reflect the impact of the Inter-county Connector. Round 6.3 included all the major Consolidated Long Range Plan (CLRP) projects in its numerous revisions which obviated the need for changes in later rounds.

The Round 7.0 forecast includes significant changes from rounds 6.3 – 6.4A in each of the three major forecast categories. The population forecast begins with the same base year 2000 data for all rounds but has a significant decrease in the short term through 2010, slower growth during the middle decades, and larger growth over the last decade. The same pattern of growth is repeated for the household forecast. The employment forecast has a revised 2000 base, which is larger than the base in previous forecasts. This increased base results from changes in the number of persons in the military, self employed and unpaid family members. The increased base is sustained over the forecast cycle through 2030.

II. Household and Population Forecasts

Both population and household forecasts use the 2000 Census data for its base, the Office of Planning development activity data base which is updated quarterly, for future periods and other sources listed below. The 2005 forecasts were derived from new housing starts tracked by the U.S. Census Bureau and the Office of Planning. The past four years have averaged well over 1,500 units per year. Starting in 2001 the DC Office of Planning started tracking development projects larger than 10 units in the city. Information on projects was collected from a variety of sources including OP's Development Review Division cases, building permits, certificates of occupancy, news articles, and real estate development organizations. Information collected included the status of a project (completed, under construction, planned, conceptual), the land use (residential, commercial, industrial et al), the type of construction (new construction, vacant rehab, occupied rehab, change of use), number of units, and other data. Since 2000, there were 8,518 new residential units completed that were either new construction, vacant rehab, or change of use. The total number of units delivered during the same time period including occupied rehab was 15,582. This information does not include the number of units completed in buildings smaller than 10 units. Information from market research firms indicates that the impact on building vacancy rate during this time period has been negligible. This suggests that the units are being occupied by new households.

The District's household forecasts for 2010 and 2015 are primarily based on known projects in various stages of planning and development. Projects that are now under construction or have recently been approved, are presumed to be completed by 2010 (unless detailed staging data

indicates a longer buildout period). Projects in the preliminary planning or conceptual stages are presumed to be completed between 2010 and 2015.

Forecasts for 2015-2030 are based on a number of variables, including:

- Buildout estimates for major local development initiatives, including about a dozen "new neighborhood" sites around the city
- Land capacity data for major vacant sites, based on current zoning and Comprehensive Plan designations
- Land capacity data for "underutilized" sites (defined based on land to improvement value ratios) in areas where the Comprehensive Plan supports revitalization and infill. Again, current zoning is presumed to remain in place, and has been used to generate estimated housing unit yields.

Current Sources of data include:

- **Office of Planning** Development Review files and cases (EISF, HP, ZC, BZA, Raze, Large Tract Review & Alley Closings) and Revitalization projects and RFP's
- **DCRA** Building Permits are currently received monthly and OP is working to receive Certificates of Occupancy on the same basis for the future
- **DMPED** housing pipeline report
- **DMPED** Industrial Revenue Bond & TIF reports
- **DC Marketing Center Data**
- **Downtown BID** Data
- Private sector market studies
- News articles
- Developer information (for conceptual projects)

The Office of Planning also uses its own Geographic Information System (GIS) unit to maintain shape files indicating development projects, with the related data and maps to display projects by land use and development status.

Long-Term Assumptions

- Average household size is expected to return to 2.16 and then rise slightly to 2.19 by 2030.
- No change in the housing vacancy rate is presumed in the forecasts.
- Group quarters population, including college dormitories, nursing homes, and jail/ ex-offender populations, are being assumed to remain constant during each 5-year increment.
- The Census data is used primarily for establishing the 2000 baseline and is generally considered unreliable for forecasting purposes. The District believes the Census annual estimates are undercounting the actual population. The District further believes the Census projections do not reflect anticipated demographic trends, recent housing market forces, the economic turn-around of the past five

years, and regional conditions that favor continued robust housing production in the city.

III. Employment Forecasts

Employment is forecasted at 860,000 by 2030, an increase of 29.5% over the 2000 (OP's) number and 15% growth from 2005-2030. An average annual growth rate of 1% is forecasted for the next ten years (2005-2015). Beyond 2015, we expect DC employment growth will continue to expand at a relatively modest pace of approximately 0.3 percent annually.

Employment forecasts are based on an analysis of trends in the region's major industry sectors and in the national economy. The District's 25-year employment forecast is in line with regional and national trends. The main factors contributing to the employment forecast are the following:

- DC area is one of the faster growing regional economies in the country
- A building boom unparalleled in the city's history
- Tremendous service sector growth that is expected to continue
- A substantial number of planned and proposed residential and commercial construction projects
- Ongoing recovery of the national economy that supports an increase in job growth

The Office of Planning relies mainly on the Department of Employment Services (DOES) for its base employment numbers with adjustments for military personnel, self-employed and other workers. DOES updates its employment numbers on a monthly basis. Thus, the employment forecast takes into account past, current and future projections by the DOES. Other sources of employment data taken into consideration are data from the Bureau of Labor Statistics, Dun & Brad Street, and the Census Bureau.

Long-term Assumptions

- Continued economic growth in the District but at a slower rate after 2015
- Continued vigor in the US economy providing broad-based support for employment growth
- District government policies for attracting and retaining highly qualified personnel will continue

The forecast for the next 25 years is a balanced look at prospects for the future. It is our 'base scenario' or most likely outcome of the future. However, risk factors like heightened security, inflation, housing market trends, energy prices, and budgetary outcomes can impact economic activity positively or negatively, and thereby influence the job market. At this point, the Office of Planning deems that the economy is tilting toward more upside than downside.

IV. Tables

District of Columbia Population, Households and Employment Forecasts 2000-2030 Round 7.0

								2000 to 2030	
	2000	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**	**Number**	**% Change**
Population	572,100	577,000	608,700	642,000	672,600	711,200	732,500	160,400	28.0%
Households	248,300	252,000	265,300	280,700	292,900	308,200	317,700	69,400	28.0%
Employment	*743,600	745,000	783,600	816,700	830,000	845,000	860,000	116,400	15.7%
Group Quarters Population	35,600	35,600	35,600	35,600	35,600	35,600	35,600	0	0
Household Size	2.16	2.15	2.16	2.16	2.17	2.19	2.19	0.3	1.4%

Note: *COG's 2000 employment differs from the Office of Planning's in order to accommodate jurisdictional adjustments requested by COG.

Montgomery County

Introduction

The Montgomery County Department of Park and Planning (Park and Planning) prepares the official employment, population, and household forecasts for the County. These forecasts are prepared as part of a cooperative effort with other member jurisdictions of the Metropolitan Washington Council of Governments (COG). The other member jurisdictions prepare similar forecasts. The combined jurisdictional forecasts become the Cooperative Forecast for the Metropolitan Washington Region. Since the inception of this process in 1975, major rounds of Cooperative Forecasts have been prepared every three to five years; Round 7.0, completed in 2005, is the latest forecast. Between rounds, yearly adjustments may be made by the member jurisdictions.

The City of Rockville is a participant in the COG Cooperative forecasting process. Park and Planning coordinates with the City of Rockville as needed and their forecasts are included in the Montgomery County forecasts. Park and Planning also coordinates with the City of Gaithersburg as needed. We receive monthly listings of their building permit activity and add their new development projects to the County's development pipeline.

The countywide forecasts are extensions of historical trends. The historical figures for households and population are from the U. S. Census of Population. The employment series is from the Maryland Department of Labor, Licensing, and Regulation's (DLLR) ES-202 Program with self-employment added. These historical trends are projected and modified based on the Park and Planning Department's best judgment on the forces that will affect housing, population, and employment in the future. The forecasts represent average growth over 5-year periods and do not attempt to forecast cyclical variations. Employment forecasts "drive" other forecasts. A slower rate of job growth will encourage formation of fewer new households and attract fewer in-migrants.

The forecasts of total at-place employment, total households, and total population are prepared using a top-down method. Countywide forecasts are established first. The county forecasts are then used as control totals for the forecasts by traffic analysis zone. Forecasts of employment type (office, retail, industrial, and other) and forecasts of household type (single-family and multi-family) are developed bottom-up at the traffic analysis zone level.

The forecasts are compatible with the planned transportation network (highway, transit, and demand management). The short and mid-range forecasts (2000-2020) are constrained by zoning restrictions as defined by master plans. The land uses allowed by the zoning have been tested in conjunction with planned transportation facilities and found to be compatible at

approved levels of service for transportation. To provide sufficient housing, and therefore workers, beyond 2020 to meet the Round 7.0 employment forecast, it is necessary to anticipate that areas within the County will be re-planned and rezoned to provide for the needed additional housing.

Our forecast is one of moderate growth with positive factors continuing to outweigh negative factors throughout the forecast period. Economically as well as physically, Montgomery County sits between the almost fully developed core and the less developed outer ring. The forecast therefore reflects a maturing county, one that has already experienced a significant amount of the development that will ultimately occur. The forecast also acknowledges that substantial development and redevelopment capacity remain, which will continue to attract new employment opportunities and provide a variety of housing choices for workers and their families.

Montgomery County Round 7.0 Cooperative Forecasts

Year	Population	% Change	Households	% Change	Employment	% Change	Jobs/Household
2000	873,341		324,565		474,300		1.46
5-year change	68,659	7.9%	22,435	6.9%	25,700	5.4%	
2005	942,000		347,000		500,000		1.44
5-year change	58,000	6.2%	23,000	6.6%	45,000	9.0%	
2010	1,000,000		370,000		545,000		1.47
5-year change	40,000	4.0%	20,000	5.4%	35,000	6.4%	
2015	1,040,000		390,000		580,000		1.49
5-year change	37,100	3.6%	17,900	4.6%	35,000	6.0%	
2020	1,077,100		407,900		615,000		1.51
5-year change	38,200	3.5%	16,900	4.1%	30,000	4.9%	
2025	1,115,300		424,800		645,000		1.52
5-year change	40,500	3.6%	16,500	3.9%	25,000	3.9%	
2030	1,155,800		441,300		670,000		1.52

Source: Montgomery County Department of Park and Planning, Research and Technology Center.

Employment Forecast

Forecasts of jobs in Montgomery County project into the future a long historical data series extending back to 1959. This series is based on the Maryland Department of Labor, Licensing, and Regulation's (DLLR) ES-202 Program coverage of private sector wage and salary employment.

The forecast extension of the historical series into the future is based on interpretation of long-term growth trends. The long-term pattern is that Montgomery County's employment base has matured from a bedroom community in the 1950s to a major suburban employment center beginning in the 1980s and into the future. As this maturing has occurred, our annual rate employment growth as a percent of existing employment has tended to decline. Future job growth in the County will exhibit a continuation of these declines as it is constrained by limited resources of land, labor force, and infrastructure capacity. There will also be increasing

competition from other jurisdictions in the Baltimore-Washington area, particularly the next tier of counties as their economies mature into employment centers. We expect Montgomery County's share of regional employment to decline during the forecast period because of our declining job growth and more rapid growth in the next tier of counties.

Our forecasts start with the long-term growth trend and reduce it to account for constraints. At the present time there is adequate land zoned for job use to accommodate the long-term growth rate for well over a decade. The land constraint comes mainly in the form of greater difficulty in developing and limited choice of large prime parcels. The easiest to develop green field pieces are largely developed leaving smaller parcels with more constraints or pieces that need assembly or redevelopment. All of these factors constrain job site development through higher costs.

Infrastructure capacity constraints are mainly in the form of limitations on transportation capacity. The supply of land for residential development is more constrained than the supply of land for jobs. This shifts some of the burden of job growth onto transportation.

There are currently about 102,000 jobs in the pipeline of approved development. This would accommodate forecast growth for about the next 13 years. Two significant proposed projects are not in the pipeline. A technology park in the Calverton area has the potential for over 2,000 jobs and a bioscience and technology park adjacent to the Montgomery College campus in Germantown has the potential for 3,000 to 4,000 jobs.

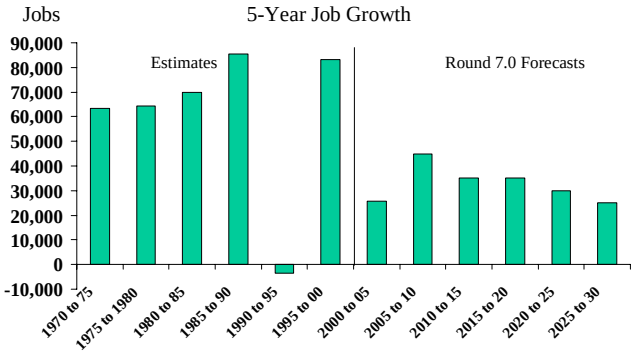
The slowing growth of the labor force is a constraint on growth through much of the nation. As the baby boomers, born from 1946-1964, reach retirement age over the next thirty years a large cohort will leave the workforce. Areas like Montgomery County with high levels of foreign immigration will have moderate growth in their labor forces compared to declines in other areas.

Montgomery County has a critical mass of federal agencies that attract private companies specializing in supporting the needs of these agencies. Since the downsizing of federal government employment, the federal government is purchasing more services from the private sector. Dr. Stephen S. Fuller, a George Mason University expert on the federal government's impact on the Washington Area, estimates that for every $1 billion in federal procurement 8,000 jobs are created. Montgomery County's federal procurement spending consistently ranks within the top ten of all jurisdictions in the nation. The Departments of Health and Human Services and Defense are the source of over half the procurement spending in the County. The National Institutes of Health (NIH), the National Oceanic and Atmospheric Administration (NOAA) and the National Institute of Standards and Technology (NIST) attract many guest researchers and contractors from outside the area. About 25 percent of NOAA's jobs are filled by contract workers. Other agencies like the Food and Drug Administration, which is consolidating in Montgomery County, and the Department of Energy also create many spin-off jobs. This is especially true in the County's biotechnology industry.

The last two decades began with recessions, but the County's economy responded differently in each decade. In the 1980s, the recession was brief and recovery rapid. Between 1981 and 1982 the County lost 5,700 jobs, but the next year jobs increased by 9,700. What followed was the

County's four strongest years of job growth from 1983 to 1987 when job growth averaged 22,600 jobs per year. The peak was 27,900 jobs during 1984. In the 1990s, the recession hit deeper and recovery was slow. During 1990, the County lost 19,400 jobs. During the next five years, the economy was relatively flat. Job losses (in 1991) or job gains were less than half a percent in four of the five years. The only bright spot was an increase of 13,900 jobs (3.1 percent) in 1994. The County's economy finally broke the recession adding 27,100 jobs during 1996, a 5.8 percent increase the highest job growth since the peak year of 1984. Between 1996 and 2000 job growth has been between 3 to 4 percent per year.

Montgomery County's Employment Forecast Shows a More Moderate and Declining Growth from 2005 to 2030

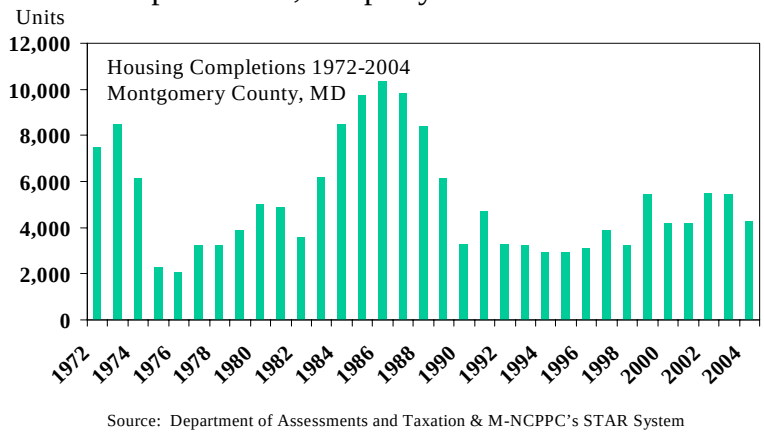


Since 2000, job growth has slowed. Between 2000 and 2005, job growth is expected to be about 25,700, a 5.4 percent increase. Excluding the 1990 to 1995 recession years when the County lost jobs, this would be the County's lowest 5-year job growth since 1965 to 1970. Between 2005 and 2010, the County's job growth is expected to rebound to 45,000, a 9 percent increase. After 2010, a more moderate and slightly declining job growth is expected through 2030. Between 2000 and 2030 the County's jobs are expected to increase by 41 percent going from 474,300 jobs in 2000 to 670,000 jobs in 2030.

Household Forecast

During the 1990s, construction of new housing in Montgomery County had fallen to its lowest level since the late 1970s. The County's slow recovery from the recession of the early 1990s stifled housing production. Housing completions during the 1990s averaged only 3,600 units per year. Housing production exceeded 4,000 units in only two years, 1991 (4,722 units) and 1999 (5,464 units). In both years, multi-family production rivaled that of the 1980s boom years, 2,994 multi-family units in 1991 and 2,210 multi-family units in 1999.

Since 1999, Montgomery County has been averaging 4,800 housing completions a year, compared to 3,400 per year from 1990-1998

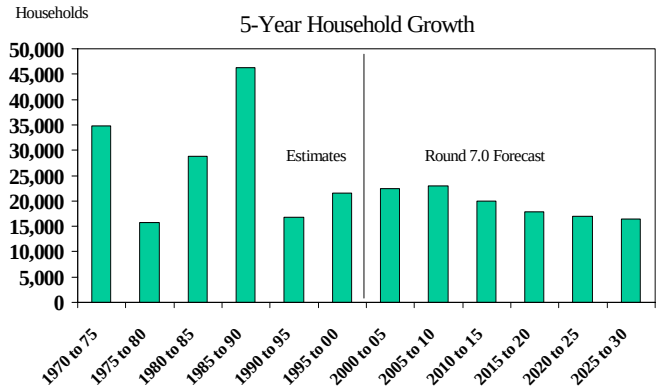


Source: Department of Assessments and Taxation & M-NCPPC's STAR System

Housing completions since 1999 remain relatively strong compared to the 1990s. Between 2000 and 2004, housing completions varied from about 4,200 units to almost 5,500 units per year. There are about 28,000 housing units in the pipeline of approved development, about 6 years of production at the current rate of construction.

Round 7.0 forecasts that our maturing County will never again experience the housing boom of the 1980s. The forecast has an increase of about 4,400 households (occupied housing units) per year from 2000 to 2015. About 4,700 housing units per year were built between 2000 and 2004. After 2015, as the County becomes more mature and land for development becomes more scarce, household growth drops to about 3,600 households per year between 2015 and 2020, and then drops further to 3,300 households per year between 2020 and 2030. Because the housing industry is highly sensitive to market conditions, substantial variations in yearly production totals from the forecast are possible. The household forecast does not attempt to predict these peaks and valleys.

Montgomery County Will Never Again Experience the Household Growth of the 1980s



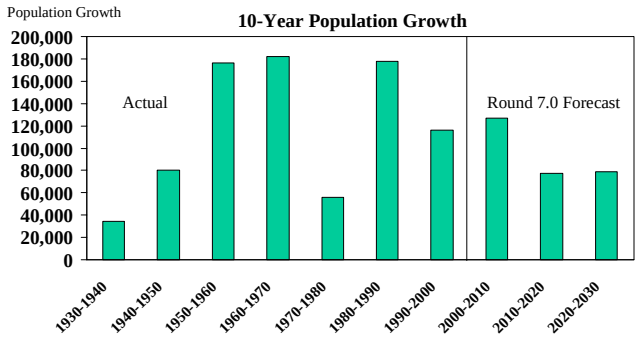
The household growth forecast for the next 25 years (94,300 households) cannot be attained without changes in master plans and zoning. Current estimates of the County's remaining residential capacity indicate that there is enough capacity to accommodate the forecast to 2020 and perhaps a few years beyond.

Population Forecast

Montgomery County's population began to grow rapidly after WWII. Population growth was highest in the 1950s, 1960s, and 1980s. The County's population increased by more than 175,000 in each of those decades, population growth peaked at almost 182,000 in the1960s. Population growth in the 1990s was more moderate, 116,300, but this was the largest increase for any jurisdiction in Maryland.

The Round 7.0 forecast has the County's population growth increasing during this decade compared to the 1990s. This increase is related to housing production that is already outpacing the 1990s and this increase in housing production is expected to continue through the end of the decade. In the 2000s, a population growth of almost 127,000 is forecast, a 14.5 percent increase; in the 2010s, a growth of about 77,000 is forecast, a 7.7 percent increase; and in the 2020s, a growth of 78,000 is forecast, a 7.3 percent increase.

Population Growth Will Continue to Decline



The main components of future population growth will continue to be the natural increase in population (births exceeding deaths) and foreign immigration.

After peaking in 1990, the County's births declined through 1997. Since 1998 births began increasing, reaching an all time high of 13,546 in 2004. The forecast assumes births slightly increasing from current levels through the end of the forecast period. The County's female population 15 to 44 years of age is expected to continue to increase through 2030. More women of childbearing age will result in more births.

Foreign immigration will continue to be a major factor in the County's population growth and increasing births. The Census Bureau estimates that over 43,000 foreign immigrants moved to Montgomery County since April 1, 2000, 47 percent of all foreign immigration to Maryland during this period. Because U.S. immigration policy favors family reunification (immigrants go where immigrants are), our forecast assumes continued foreign immigration to the county at current levels. But immigration could moderate because of the war on terrorism, if this occurs, population growth could be lower than forecast. Many of the immigrants are from countries with higher fertility rates than the U.S. contributing to the County's higher births.

Three factors are expected to moderate future population growth.

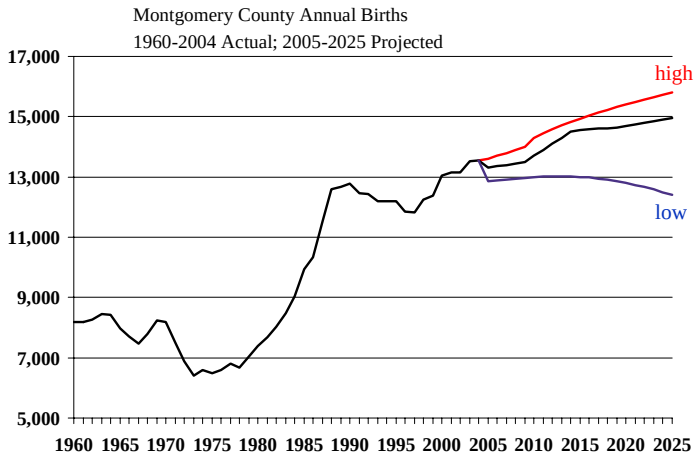
1. About 80 percent of the County's household growth beyond 2015 is expected to be living in multi-family housing which historically has smaller average household sizes than single-family detached or attached housing.
2. The forecast assumes the County's net losses in domestic migration that occurred during the 1990s will continue in the future.
3. As a maturing jurisdiction Montgomery faces diminishing resources that can sustain rapid growth such as available land and transportation capacity.

Supporting Information

Births

Montgomery County births reached an all time high of 13,546 in 2004! Births are continuing at record levels, even though Montgomery County had experienced a gradual decline from the peak of its second baby boom. For Montgomery County, this upward trend from the "baby bust" of the 1970s has not been a "boomlet," but a full fledged boom – as the number of births reached levels 50 percent greater than the highest peaks of the post World War II baby boom. This boom peaked at 12,773 births in 1990 and then gradually declined to 11,812 in 1997. Since 1997, the County's births have increased. There were 12,251 births in 1998, up about 4 percent over 1997. In 1999, births leveled off a bit, but still increased by 1 percent, reaching 12,369. During 2000, the County's births increased by 686, almost 6 percent over 1999 reaching at the time an all time high of 13,055 (during the same period, births in both Maryland and the U. S. increased by 3 percent). Births have continued to increase every year.

Births increasing since 1998



The County's births by maternal race and Hispanic origin reflect its increasingly diverse population. In 2004, 44 percent of the County's births were white non-Hispanic, 21 percent were Hispanic (who can be of any race), 20 percent were African American, and 14 percent were Asian. In 1990, the County's births were 66 percent white non-Hispanic, 16 percent African American, 10 percent Hispanic, and 3 percent Asian. In 2004, Montgomery County accounted for 43 percent of the State's Asian births and 38 percent of the State's Hispanic births.

Nationally, the recent past trend has been unfavorable for increased births because of the aging of baby boom women into their 40s. Now the number of women of childbearing age (15 to 44 years) is increasing and an increasing number of these women are from countries with higher fertility rates than the U.S., mainly Latin American countries and the Asian continent. In 1998, U.S. births increased for the first time since 1990 and U.S. births continued to increase in 1999

and 2000. The U.S. Census Bureau's latest population projections report for the U.S. has births increasing for the foreseeable future.

The Park and Planning Department is forecasting increasing births for the County through 2030. The same factors causing increasing births nationally are occurring in Montgomery County. According to Census Bureau estimates, all the County's population growth during the 1990s was due to increases in the Hispanic and non-white populations. These population groups have higher fertility rates than the white non-Hispanic population. Almost half of Maryland's Hispanic population lives in Montgomery County, and Hispanic women have the highest fertility rates of any group. The Hispanic and non-white populations, especially Asians, are expected to continue to grow and make up an increasing portion of the County's future population. Recent immigrants are evidence of this; 35 percent of the County's immigrants come from Asia and 30 percent from Latin America. The Park and Planning Department's Demographic Model is forecasting increases in the female population of childbearing age every decade through 2030. The largest increases are projected between 2020 and 2030.

Montgomery County as a Gateway into the Region

Montgomery County is a major "gateway" into the State of Maryland for migrants from other states and for immigrants from the rest of the world. Individuals and families are continually attracted to Montgomery County because of its large employment base, its quality of life, and its growing immigrant population base.

The Montgomery County gateway works in two directions. After first having migrated to Montgomery County, some workers move to other Maryland jurisdictions for jobs, or because of housing preferences, costs, or other life style reasons (it should be noted that when County residents move, it is more likely to be to other areas within the County than to destinations outside the County). Research shows that these population movements are continuous. The "net" movements of population, called "net migration" are highest during periods of the highest economic growth and are lowest during recessionary or low growth periods when "net out migration" sometimes occurs.

Domestic Migration

Domestic migration flows can be broken into two basic components: **interstate migration**, movement from and to other areas of the U. S., and **intrastate migration**, movement within Maryland itself. One source of domestic migration data is the Internal Revenue Service (IRS). The IRS migration data is prepared by the Maryland Department of Planning. It is based on assigning individual tax returns to counties over consecutive years and would include most, but not all, individuals who move. The number of exemptions requested on the tax returns is used to estimate the number of people who have moved.

IRS migration data for Montgomery County from 1980 through 2000 shows a tale of two decades. During the 1980s, Montgomery County's net domestic migration gain was 45,500.

During the 1990s, the County had a net migration loss of 39,700. The 1980s were marked by a period of high net gains in interstate migration, especially during the boom years of the last half of the decade, and low net losses in intrastate migration. In the 1990s, the County's net interstate migration flow has turned from a high net in-flow during the 1980s to a low net out-flow during the 1990s, and the low net intrastate losses during the 1980s have increased sharply during the 1990s.

Montgomery County's Net Domestic Migration Flows 1980 – 2003

	1980-1985	*1985-1990*	*1990-1995*	*1995-2000*	*2000-2003*
Net Interstate Migrants (In-Out)	*17,150*	*31,956*	*775*	*-4,877*	*5,068*
Net Intrastate Migrants (In-Out)	*2,474*	*-6,071*	*-21,692*	*-13,935*	*-20,284*
Total Net Migration	*19,624*	*25,885*	*-20,917*	*-18,812*	*-15,216*

If high net migration coincides with high economic growth, Montgomery County will not likely see net interstate migration at the level of the 1980s again. Future job growth is not expected to match job growth of the 1980s. The County gained 70,000 jobs from 1980 to 1985 and added another 85,000 jobs from 1985 to 1990. The largest forecast five-year job growth is 45,000 jobs from 2005 to 2010. Forecast job growth drops to 35,000 from 2010 to 2015 and 2015 to 2020, then drops to 30,000 from 2020 to 2025, and job growth drops to 25,000 from 2025 to 2030.

Looking only at net migration masks the amount of movement in and out of the County. IRS data shows that between 1980 and 2000 about 847,000 people moved into Montgomery County, an average of 212,000 people every five years. Most of these in-movers, 70 percent, come from outside Maryland and about 35 percent of the interstate in-movers are from the District of Columbia (21 percent) or Virginia (14 percent).

Another source of data on the volume of in-movers is the Planning Department's Census Update Survey (CUS) that asks people where they lived five years ago. The latest CUS was conducted in 2003. Results indicate that about 174,000 people or 19 percent of the County's 2003 population did not live here in 1998. About 106,000 or 61 percent of these in-movers came from outside Maryland, the District of Columbia, or Northern Virginia. The remainder of the in-movers are rather evenly distributed between the District of Columbia (11%), Prince George's County (10%), elsewhere in Maryland (10%), and Northern Virginia (8%).

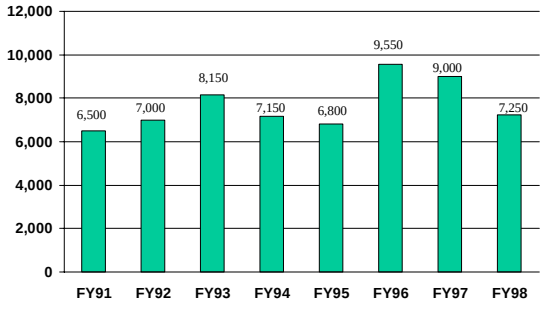
Foreign Immigration

Immigration data from the U.S. Census Bureau and the Immigration and Naturalization Service (INS) shows that immigration from abroad was a major component of Montgomery County's population growth during the 1990s. According to Census Bureau estimates, from April 1, 1990

to July 1, 1999, 63,267 persons immigrated from outside the U.S. to Montgomery County. That is 48 percent of all foreign immigration into Maryland during that period. The County's only in-state rival as an international "gateway" for immigrants is neighboring Prince George's County, which attracted 29,705 immigrants during the same period, less than half of Montgomery County's total. The saying "immigrants go where immigrants are" seems to be holding true. In 1990, 45 percent of the State's foreign-born population lived in Montgomery County. By 2000, the County's foreign-born population reached almost 233,000, a 29 percent increase since 1990, and the County has maintained 45 percent State's foreign-born population.

High Levels of Immigration Continue

(Legal Immigration in Montgomery County)

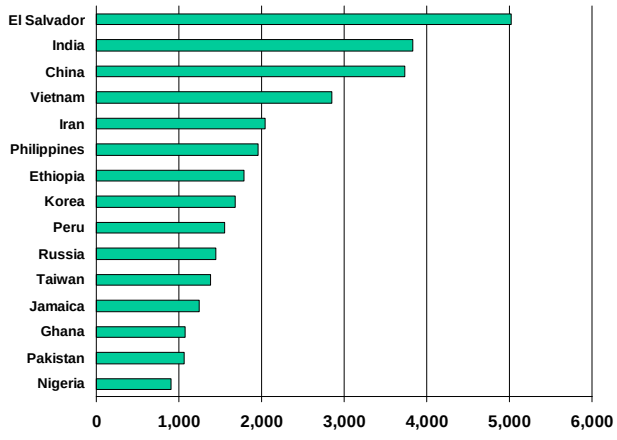


Source: U.S. Immigration and Naturalization Service

The Census Bureau estimates that between 2000 and 2004 an additional 43,000 immigrants moved to Montgomery County. Immigrants accounted for 89 percent of the County's population growth in this period.

These recent immigrants are an extremely diverse group. INS data shows that recent immigrants (federal fiscal years 1992 through 1998) came to the County from 191 countries; 76 of these countries provided 100 or more immigrants. El Salvador contributed the greatest number of immigrants but only accounted for 9.1 percent of total immigration, followed by India with 7.0 percent and China with 6.8 percent. Most recent immigrants come from Asia, 35 percent; followed by the Americas, 32 percent; Africa, 15 percent; Europe, 12 percent; and the Middle East 6 percent.

Top 15 Countries of Origin for Legal Immigrants to Montgomery County, FY 1992-1998



Source: U.S. Immigration and Naturalization Service

Immigrants are attracted to Montgomery County because of its economic vitality, and in 1990, they accounted for 19 percent of the County's population. By 2000, immigrants made up 27 percent of the County's population ranking second in the COG Region to Arlington County's 28 percent.

Nationally, the Census Bureau is projecting immigration through 2020 to be similar to immigration during the 1990s. The Urban Institute projects that, under current immigration law, about 70 million post-1990 immigrants and their offspring will be added to the U.S. population by 2040, accounting for almost two-thirds of the net population growth during this period. Based on these projections, the foreign born population will account for about 14 percent of the nation's population by 2040 (up from about 9 percent today) and by 2040, more than one in four U.S. residents is projected to be either an immigrant or the child of an immigrant.[1]

Labor Force

Labor force is defined as the people 16 years of age or older, who are working full time or part time, or if unemployed, are currently looking for work.

Since the 1950s and 1960s, the biggest change in the local and national labor force has been the increased participation of females. In 1950, about one-third of all women 16 years of age and older were employed. By 1990, nationally over half the women over 15 years of age were working, and in Montgomery County the figure was higher with nearly two-thirds of women 15 years or older employed. Although most of the increase in female participation in the labor force has been realized, female participation rates are expected to increase slightly in the future.

The Research and Technology Center offers three basic conclusions about the County's future labor force trends:

- The relative balance between jobs and labor force will continue, but after 2010 there will be a widening gap between jobs and labor force with jobs exceeding labor force.
- The number of mature workers will increase more than the number of young workers.
- Immigrants will continue to be an essential source of labor in all categories and will partially mitigate the jobs/labor force gap.

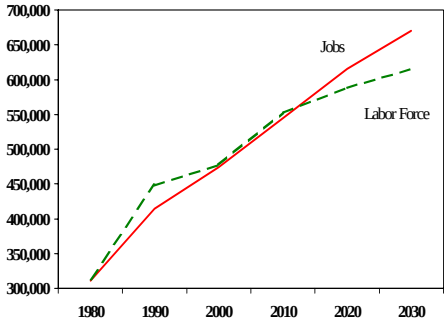
The County's jobs and labor force will continue to be in relative balance for the next 10 years. After 2010, there will be a widening gap between jobs and labor force with jobs exceeding the

[1] Michael Fix and Jeffery S. Passel; Immigration and Immigrants: Setting the Record Straight; 1994; Washington DC: The Urban Institute.

available labor force because the number of jobs created will exceed the number of County residents joining the labor force. Between 2010 and 2020 job growth is expected to nearly double labor force growth and between 2020 and 2030 job growth is expected to more than double labor force growth. This gap will have to be made up by increased in-commuting of workers from surrounding jurisdictions. This trend reflects the County's growing status as a maturing county and a job center.

The jobs/labor force gap is exacerbated by long-term demographic trends, principally the aging of the baby boom and baby bust generations. Nationally, the 30 to 44-age cohort is expected to loose population between 2000 and 2010 and then is expected to increase, but it is not expected to approach 2000 levels until 2020. In Montgomery County, the labor force population in the 30 to 44 age cohort is expected to decrease by 2,700 between 2000 and 2010, then increase by almost 8,000 between 2010 to 2020, and increase by 13,000 between 2020 and 2030.

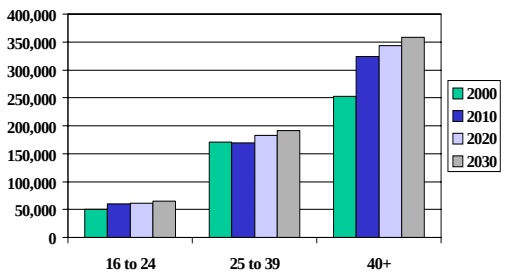
Gap Between Jobs and Labor Force
Projected to Widen After 2010



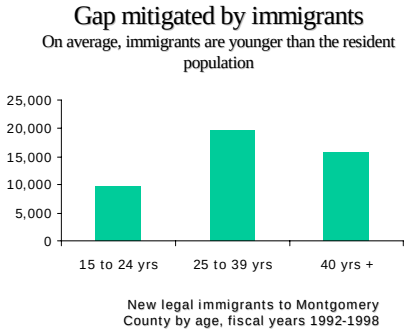
Round 7.0 Forecast

About 53 percent of Montgomery County's labor force is 40 years of age or older. This percentage is expected to increase to 58 percent by 2010 and remain at 58 percent through 2030. Today there are almost 253,000 people 40 years and above in the labor force. The number of "mature workers" is expected to increase to about 358,000 by 2030. Today there are about 50,000 young workers age 16 to 24 in the labor force, almost 11 percent of the total labor force. This percentage is expected to remain constant though out the forecast period. The labor force numbers about 170,000 in the 25 to 39 age group, about 36 percent of today's labor force. By 2010, this age group's percentage of the total labor force will drop to about 31 percent and remain at about 31 percent through 2030.

Over Half the County's Labor Force
Is 40 Years or Older



The gap between jobs and labor is partially mitigated by immigration, and the Research and Technology Center expects the County's high levels of immigration to continue. Immigration trends are shaped primarily by two factors: federal policies and past immigration. Assuming federal policies do not change, immigrants tend to locate in areas that have already welcomed substantial numbers of immigrants in the past. Montgomery County has been successful in attracting immigrants from many different countries and this will continue. Apart from sheer numbers alone (between April 1, 2000 and July 1, 2004, 43,000 immigrants moved into the County), immigrants are, on average, younger than the resident population. Immigrants therefore help mitigate the aging of the labor force that would occur if the county would rely on the resident labor force alone. Nationally, the Urban Institute projects that under current immigration law, immigrants will account for about one-third of the country's labor force growth in the 1990s and during the first decade of the 21st century (Fix and Passel, 1994).



Immigrants bring a variety of skills to the County's labor force. They provided a labor pool for almost all occupations, and many are well educated. On average, Montgomery County's foreign-born residents are more likely than native-born residents to have a Ph.D. (10 percent to 6 percent).

Average Household Size

In the top-down jurisdictional forecasts, Park and Planning does not forecast average household size to develop the household or population forecasts. Instead average household size is used as a reasonableness check on the forecasts.

To forecast group quarters population, we use the same ratio of group quarters population to total population in the Maryland Department of Planning's (MDP) latest forecasts. For Round 7.0, the same ratio as Round 6.4A is used. The resulting group quarters population is rounded to the nearest hundred. The group quarters population is subtracted from the total population to give the population living in households.

In 2000, the County's average household size was 2.66 persons-per-household, a slight increase over the average household size of 2.65 in 1990. Park and Planning's 2003 Census Update Survey reports the average household size increasing to 2.70. The Round 7.0 Forecast has the County's average household size decreasing slightly from 2005 through 2030. This seems reasonable considering that the aging of the baby boomers and the increasing percentage of multi-family households will result in smaller average household sizes, but the increases in minority and foreign-born populations who tend to have larger households will mitigate the decline in average household size.

Montgomery County Round 7.0 Cooperative Forecast
Population, Households, and Average Household Size

	2000	2005	2010	2015	2020	2025	2030
Total Population	873,341	942,000	1,000,000	1,040,000	1,077,100	1,115,300	1,155,800
Household Population	863,910	931,000	987,500	1,026,400	1,062,200	1,098,400	1,136,000
Group Quarters Population	9,431	11,000	12,500	13,600	14,900	16,900	19,800
Households	324,600	347,000	370,000	390,000	407,900	424,800	441,300
Average Household Size	2.66	2.68	2.67	2.63	2.60	2.59	2.57

Estimating Number of Employees in a Building

Park and Planning uses the following square feet per employee ratios to estimate the employment capacity of non-residential buildings.

50	fast food restaurants	400		office - medical
150	restaurants - not fast food	400		retail
210	hospitals	450		auto repair
225	office - down county	450		industrial or warehouse (not mini-warehouses)
250	office - remainder of county	500		other
350	R & D or flex space	1300		hotels

Information on office vacancy is obtained from the CoStar Group. The amount of vacant office space is tabulated by traffic analysis zone. The amount of vacant space is converted to potential employment capacity using the office factors above. The employment capacity of vacant office space is then subtracted from the office employment estimate for the current year and added to the office pipeline as a source for potential new jobs.

Tracking Development

Park and Planning receives building permit information from the Cities of Gaithersburg and Rockville and from the County's Department of Permitting Services.

Park and Planning mainly tracks completions. Residential and non-residential completions lists by tax account number are received quarterly from the Montgomery County Office of the State

of Maryland Department of Assessments and Taxation. The information includes: housing units completed, non-residential gross floor area completed, land use code, and premise address. These records are geocoded to traffic analysis zones.

City of Rockville

Highlights of the Round 7.0 Cooperative Forecast

Introduction

The City of Rockville's Department of Community Planning and Development Services prepares the official employment, population, and household forecasts for the City. These forecasts are prepared as a part of the co-operative effort with other member jurisdictions of the Metropolitan Washington Council of Governments (COG).

The City coordinates with The Maryland-National Capital Park and Planning Commission (M-NCPPC) as needed, and other member jurisdictions to prepare a combined forecast for the Washington Metropolitan region. City forecasts are included in Montgomery County Forecasts. Since the inception of the process in 1975, major rounds of cooperative forecasts have been prepared every three to five years; Round 7.0, completed in 2005, is the most recent forecast. Between rounds, yearly adjustments may be made by the member jurisdictions.

The City forecasts are extensions of historical figures for households and population from the U.S. Census. Historical trends are projected and modified based on best judgment on how the forces will affect housing, population, and employment in the future.

The City develops projections of population, household and employment based on pipeline development, market conditions, planned transportation improvements, and adopted land use plans and zoning. The data is combined with the regional projections to forecast employment and household numbers at the traffic zone (TAZ) level.

The City uses the Growth Development Forecast (GDF), the base of which is Census 2000 data, and State Tax Assessment records to track occupancy permits and building completions. The GDF is a compilation of approved and potential development in the City within its Urban Growth Boundary, used as a basis for 25-year Metropolitan Council of Government projections. Every 5-year period contains slight changes as a result of refined projections in the City's growth development forecast.

The forecasts are compatible with the approved land use plan. The short and mid range forecasts (2000-2020) are constrained by zoning restrictions as defined by the master plan. The land uses allowed by the zoning have been tested in conjunction with the planned transportation facilities and are found to be compatible at approved levels of service for transportation. The City forecast is of moderate growth with positive factors continuing to outweigh the negative factors throughout the forecast period. The city is almost fully developed and has already experienced a significant amount of recent development. The forecast acknowledges that there is reasonable redevelopment potential, particularly focused around transit stations.

Household Forecast

Regional economic growth will continue to attract new residents and fuel a general demand for new housing. Households, or occupied housing units, in turn form the basis for population forecasts. Planners monitor housing construction and estimate population growth by multiplying the number of occupied housing units by the average number of people in the household. Household growth is estimated to increase by 55 percent, up from 17,247 to 26,721 units. The addition of 9,474 households during the 2000 to 2030 forecast period reflects the growth in jobs and in-migration to the City.

Population Forecast

The City population is expected to grow steadily. Population growth will be spurred by long-term strength of the region's economy, high rates of in-migration and international immigration. By the end of the forecast period, 2030, the total population in the City is estimated to reach 69,531, an increase of 22,143 or 47 percent above the 2000 total of 47,388.

According to Census Bureau's estimates, a major factor contributing to population growth in the 1990s was due to the increases in the Hispanic and non-white populations. The City's Asian population has quadrupled and the Hispanic population has increased by 60 percent in the past 20 years. The Hispanic and non-white population are expected to grow and make up an increasing portion of the City's future population.

Employment Forecast

Forecast of employment are based on the projected square footage of development anticipated in each of the major categories: retail/commercial, office, industrial (service) or other. Regionally developed average conversion factors (by land use category), applied to the formula produce the average number of employees per square foot of gross floor area.

Forecast of future total are based upon the factors devised, the square footage allowed by zoning, traffic limitations, and the existing inventory of employment, and commercial space. Development pipeline projects and land use and zoning thresholds are added to the conversion factors to produce a composite employment projection.

Employment in the City of Rockville is forecast to grow from an estimated 68,700 jobs in 2000 to 104,843 jobs in 2030, an increase of about 36,143 jobs or 53 percent. Most of the projected increase in 2005 to 2010 is due to the addition of approximately three million square feet of commercial/office development, primarily in the Town Center and the Rockville Pike corridor area, including annexation near the Twinbrook Metro Area. Nearly two third of all new jobs are anticipated in service industries such as engineering, computer and data processing, business services, and medical research.

Summary
Round 7 Forecast of Population, Household and Employment
City of Rockville

Year	Population	Households	Employment

2000 (from Census)	47,388	17,247	68,700
5-year Change	12,553	5,419	6,522
2005	59,941	22,666	75,222
5-year Change	5,383	2,499	12,525
2010	65,324	25,165	87,747
5-year Change	2,932	987	6,104
2015	68,256	26,152	93,851
5-year Change	524	250	6,155
2020	68,780	26,402	100,006
5-year Change	245	117	2,198
2025	69,025	26,519	102,204
5-year Change	506	202	2,639
2030	69,531	26,721	104,843

PRINCE GEORGE'S COUNTY

Introduction

The Prince George's County Planning Department of The Maryland-National Capital Park and Planning Commission prepares forecasts for Prince George's County. The Planning Department, the Department of Environmental Resources, the Economic Development Corporation, and the Department of Social Services provide forecast data. Within Prince George's County, the City of Laurel has its own zoning power. The Planning Department consults with and receives data from the city.

One of the first steps in the forecasting process is the development of regional projections—based on a regional econometric model—of employment, households, and population by the Metropolitan Washington Council of Governments (COG). In Round 7, Census 2000 data forms the base, with forecasts produced for five-year intervals out to 2030. These projections are developed with an econometric forecasting model that uses local and national economic and demographic factors. Forecasts are employment driven based on the belief that the Washington area functions as one labor market. Employment growth and changes in this region are related primarily to federal fiscal policy, particularly federal jobs and contracts. National demographic trends act as a contributing or modifying force. These regional employment changes contribute to changes in the regional household and population numbers. While work on the regional modeling was in progress, Prince George's County developed jurisdictional forecasts based on a dwelling unit model. In addition to the number of dwelling units, this model uses a vacancy rate to generate households, and it uses a household size figure and group quarters population to generate population.

The Prince George's County Planning Department uses both top-down and bottom-up methods for dwelling unit forecast. In the top-down method, a county total is developed based on historical trends. In the bottom-up method pipeline indicators and development potential are used for small areas (i.e., Transportation Analysis Zones (TAZ)) and the county totals from the top-down approach are used as control totals. Once community planners review the results, recommended adjustments are made to the forecasts. The results of the county and regional estimates are brought together in a reconciliation process. If necessary, modifications are made to the forecasts to align both sets of numbers.

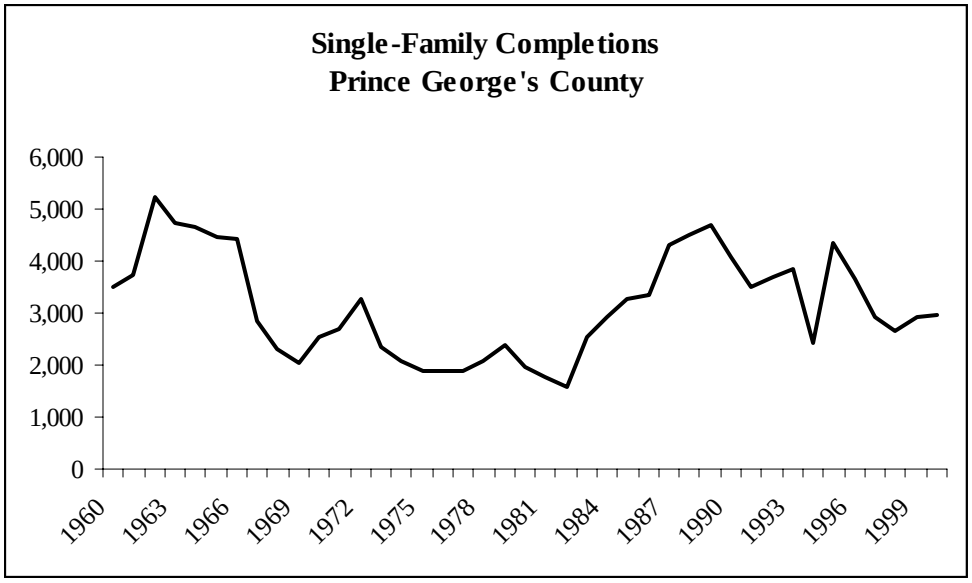
In Round 7, the dwelling unit forecast used GIS technology to estimate "realized" densities from parcels that were developed since 1995. These densities were used to estimate build out. Previously, zoning played a strong role in the forecast; now plans have a stronger role. In Round 7, there is a larger share of multifamily units because of the increased density called for in the General Plan.

The employment forecast is made using the top-down method. It was guided by the General Plan goal of increasing the jobs:population ratio. The General Plan goal effectively tied the employment forecast to the population forecast. The Round 7 employment figures were based on increasing the jobs:population ratio in each subsequent period.

Household and Population Forecasts

Household and population forecasts in Prince George's County are derived from dwelling unit forecasts. Households are occupied dwelling units, so the number of households is merely the number of dwelling units minus the number of vacant units. The number of vacant units is estimated by applying the vacancy rates reported in the 2000 Census. The Round 7 household forecast is the result of applying the county vacancy rate to the dwelling unit figures. Average household size figures are then applied to the household forecast to produce the household population estimate. The group quarters population is added to the household population to come up with the total population forecast.

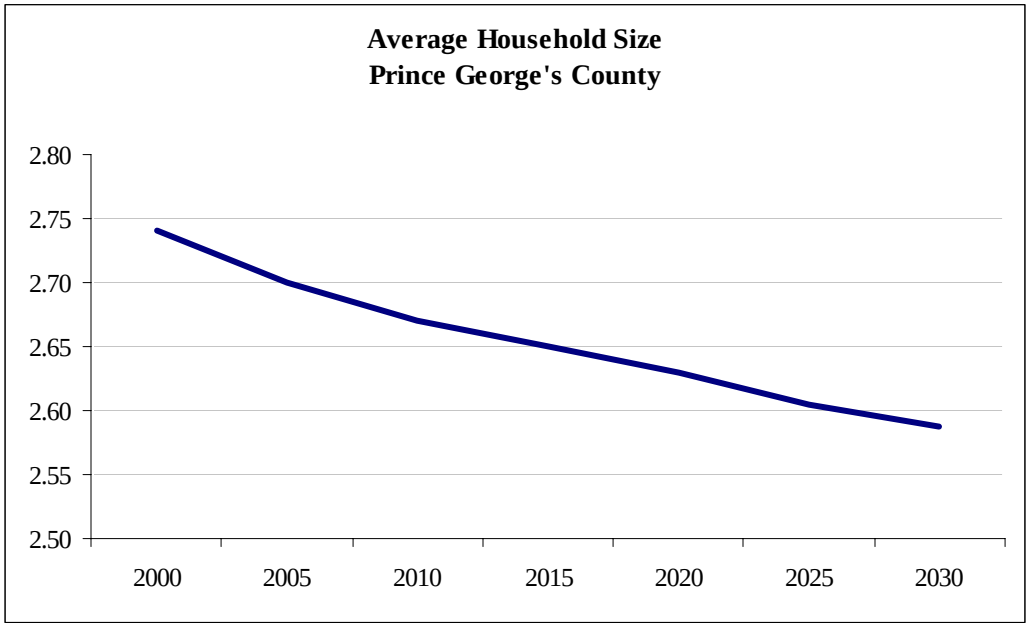
The countywide single-family dwelling unit forecasts are based on long-term single-family dwelling unit growth. The annual single-family completions in Prince George's County for each year during the period from 1960 to 2000 are displayed in the chart below. The multifamily dwelling unit forecasts are based on existing plans and the General Plan goal of increased density. The 2000 U.S. Census of Population and Housing was used as the base year data source. The time frame for each forecast period is July 1st.



Short-term single-family forecasts (up to 2010) are based on development pipeline, major projects, and plans. The development pipeline includes building permits, recorded lots, and approved preliminary subdivisions. In addition to the pipeline data from the Department of Environmental Resources, data sources include 2000 Census and dwelling unit completion data from the State Department of Assessments and Taxation. These bottom-up forecasts were mapped to facilitate community planner review. Existing group quarters population as of 2000 was taken as base. It was assumed that the group quarters will be at capacity by 2005 and stay that way through 2030 (i.e. all empty beds will be filled).

Long-term forecasts follow the short-term forecasts and are based on major projects and plans. Instead of planned maximum residential densities, realized densities were used to determine built-out capacity. The numbers of dwelling units in these long-term forecasts were influenced by built-out capacity, trends and major projects. Major projects include Konterra, National Harbor, Karrington, Greenbelt Metro and General Plan-designated centers such as Largo Town Center Metro and Branch Avenue Metro.

Average household size was determined based on the assumption that the population will continue to age and the percentage of one-person households will continue to increase. A regression analysis was applied to the Census Bureau's national average household size to determine the county's average household size.



Vacancy rates from the 2000 Census were adjusted to temporary anomalies to determine future vacancy rates. Growth of the group quarters population is assumed to be limited to attaining full capacity of existing facilities. In addition to U.S. Census Bureau data, Maryland Department of Planning and Department of Assessments and Taxation data are used in the forecast.

The following table includes the Round 7 residential forecast for Prince George's County.

Prince George's County Round 7 Forecast
(thousands)

Year	Dwellings	Households	Population
2000	306.2	288.6	808.1
2005	319.0	308.5	852.9
2010	341.3	321.8	872.6
2015	357.9	334.6	893.3
2020	369.6	346.9	914.9
2025	378.5	360.8	949.7

2030	392.6	378.1	993.1

Employment Forecasts

The Round 7 employment forecast was guided by the General Plan goal of increasing the jobs:population ratio 39 percent in 25 years. This translates into a ratio of .58 by 2027. Since this goal was adopted in 2002, estimates of subsequent employment and population growth have resulted in an unchanged jobs:population ratio. Consequently, an underlying assumption in Round 7 is that the jobs:population ratio will not reach the target level by 2030. Even though the Round 7 forecast does not achieve the jobs:population goal by 2030, the forecast figures reflect progress toward the .58 target ratio.

The General Plan goal was not the sole determinant of the employment forecast. The capacity for employment growth at Beltway interchanges, Metro stations, and on the large tracts of developable land throughout the county was also considered in forecasting employment growth.

The Bureau of Labor Statistics' Quarterly Census of Employment and Wages, Bureau of Economic Analysis' Regional Economic Accounts, Maryland Department of Labor, Licensing and Regulation's Employment and Payrolls, 2000 U.S. Census of Population and Housing, and Dun and Bradstreet were used as the base year data sources. The time frame for each forecast period is July 1st. In addition to the above sources, data from the Prince George's County Economic Development Corporation and the State Department of Assessments and Taxation were also used.

The two sets of factors used to convert undeveloped nonresidential land to employees are contained in the following table.

Employment Factors

Land Use	FAR	Sq. Ft./Employee
Office	.33	250
Retail	.27	400
Miscellaneous	.33	425

The floor-area-ratio (FAR) is used to convert land to building square footage. The FARs for the office and miscellaneous commercial zones were provided by community planners and are based on a sample of observations in different areas of the county. The FAR for retail zone is based on square footage and acreage figures in our shopping center database. The square foot per employee figures are applied to building square footage to produce the number of employees. The square foot per employee figures are composites based on the Urban Land Institute's mean square foot per employee ratios and local area information.

Conversion of SIC/NAICS employment classifications into the four land use categories is completed by COG.

The long-term assumptions are the same as short-term assumptions. In addition, in the event that the Inter-County Connector is not built, it is assumed that other transportation improvements will be made to accommodate the future development in Konterra.

The following table includes the Round 7 employment forecast for Prince George's County.

Prince George's County Round 7 Forecast

(thousands)

Year	Employment	J:P Ratio*
2000	338.3	.42
2005	358.7	.42
2010	390.0	.45
2015	424.0	.48
2020	460.9	.50
2025	501.0	.53
2030	544.7	.55

*Jobs to population ratio

CITY OF ALEXANDRIA

FORECASTS OF POPULATION AND EMPLOYMENT

Preparation of the City of Alexandria's forecasts of population and employment is the responsibility of the City's Department of Planning and Zoning. Ralph A. Rosenbaum under the direction of Kimberley Fogle undertook the data collection and the analysis necessary to develop the City's population and employment forecasts. If you have any questions concerning the City's forecasts, please contact Mr. Rosenbaum at 703-838-3866 ext. 323.

Introduction

Alexandria is an independent city (or county equivalent) in the state of Virginia and as such prepares its own forecasts independently from any other county in the state or the state itself. The City's forecasts were influenced by the Washington Metropolitan Council of Government's Round 7.0 Economic Model. The model's requirement for a balance between population and employment caused the City's forecasts to be manipulated to bring population and employment into closer agreement. The number of forecasted housing units were increased to achieve this goal.

The forecasts are based on a bottom up methodology. For the near-term five year forecasting periods, changes in population and employment are based on actual site-specific development projects, including those under construction, those with planning permits and those in the planning process. For later five year periods, the forecasting approach considers the propensity for change on individual sites and within individual neighborhoods or planning areas. (As an older community within a constrained geographic area, Alexandria has a very limited amount of green field sites for development.) Vacant brown field sites or sites with out-dated or obsolete uses are considered likely sites for redevelopment. This is especially true when the obsolete sites involve existing site improvements that are worth less than the land they sit on. The timing of the redevelopment is based on the expected demand for housing or commercial development, the schedules of developers and the location of the sites. Sites located in high demand areas are generally projected to be developed first.

Household and Population Forecasts

Housing units, households and population were forecasted for the City using data from the 2000 U.S. Census as a base. The date of the Census was April 1, 2000, so it was assumed that each five year period for which a forecast was made would begin on April 1.

Alexandria's forecasts, especially for the near-term five year periods, are the product of housing that is in the pipeline. By "in the pipeline", we mean developments that are either under construction, have planning permits or are going through the permit process. This includes projects that either because of their complexity or size may not be completed in a single five year period. An example is the thousands of housing units that will be built on Potomac Yard. Some other major housing projects that are in the pipeline are the 550 unit Northhampton I & II condominium, the 695 unit Mill Race rental and condominium project, the 317 unit Post at

Carlyle townhouse and condominium high-rise project and the 227 townhouses at Potomac Greens.

While the vast majority of the City's population resides in housing units, there is a small number of people living in group quarters and institutions. The increase in group quarters population is expected to be small and is forecasted to be only 175 people over the thirty year forecast period. The increase in the City's group quarter population reflects the desire of some of the local colleges to have new dormitories in the City. The sheriff's office is projecting a small increase in the capacity of the Alexandria jail and that also is included in the increase of population in group quarters.

For the latter part of the forecasting period, development of new housing will occur on land that is redeveloped from other out-dated uses. Sites where the assessed value of the improvements is less than the value of the land are considered vulnerable to redevelopment. An example of such outdated or obsolete uses are warehousing and industrial uses on land near existing housing. In many cases such uses will be replaced by housing, particularly in the current market. Another example of outdated uses are older shopping centers in Alexandria some of which will be redeveloped to include mixed use development of retail and housing. In addition, some of the older low density housing developments will be replaced with higher density housing. Even though housing densities were assumed to rise in some cases, the densities chosen were generally similar to near-by housing.

The new housing on the brown field and obsolete sites, as well as any other new housing units in the forecast, are converted to households by multiplying the projected number of new units by a vacancy rate. Two vacancy rates were calculated for each Traffic Analysis Zone (TAZ), one for single family units and one for multi-family units. The rates for each TAZ are based on the vacancy rates of the census tract in which the TAZ is located. Data from the 2000 U.S. Census is used for the census tract rates. An exception to this rule is the new development on Cameron Station (TAZ 1380) where the average vacancy rates for the City in 2000 is used. City rates are used for Cameron Station because all of the housing in TAZ 1380 was new and still being absorbed in 2000 leading to an abnormally high vacancy rate.

Households are converted to population by applying two conversion rates based on average household size. One rate is for households in single family housing and the other rate is for households in multi-family housing. These rates are based on average household sizes for a number developments in the City as reported by the 2000 U.S. Census. The average household size for households in new single family units is assumed to be 1.88 people and the average size of households in new multi-family units is assumed to be 1.64 people.

In 2000 the U.S. Census reported that Alexandria's average household size was 2.04 people, but the City's average household size was not used for converting households to population for two reasons. First, detached houses in 2000 were 15% of all housing in the City and detached houses also contained the largest households. In the future, it is unlikely that a large number of detached houses will be built and such houses will be a small part of the total number of single family houses that are being forecasted. Second, many old multi-family housing units are inexpensive and have attracted large households looking for affordable housing. Given the thirty year period

of the projections it is not expected that many of the new multi-family units will have reached the same stage in their life-cycle as the older apartments and so will not be attracting large households.

As the thirty year period of the forecasts progresses, existing multi-family units will be aging and entering a stage in their life-cycle when they will become more affordable to larger households. As a result it might be expected that the number of old and affordable units in Alexandria will increase resulting in a rise in population. This, however, will not occur. Although, some existing multi-family units will be reaching a state where they are old and affordable, other old units will be removed from the City's stock of affordable multi-family housing through renewal, redevelopment or condominium conversion, balancing any additions.

As can be seen from the following tables, over the thirty year period starting in 2000, the City's population will grow by nearly a third (32.0%). Although this may appear to be a very large gain, during the single decade of the 1990s the U.S. Census found that the City's population grew by 15.4% from 11,183 people to 128,283. The growth rate forecasted for the 2000 - 2030 period is conservative and should be viewed as realistic for a City that already is densely populated.

The difference between Alexandria's Round 7 household and population forecasts and the Round 6.4 forecasts is most apparent in the latter years. This difference is due to a recognition in Round 7 that past forecasts had a tendency to reduce the rate of new development over time even though there is no reason to believe the demand for housing in Alexandria will decline. This tendency was corrected in Round 7, although the amount of household and population growth in the 2025 to 2035 period was especially large in order to help balance employment and population in the Washington Metropolitan region.

TABLE 1: HOUSEHOLDS AND POPULATION - ROUND 7

	2000	2005	2010	2015	2020	2025	2030
Households	61,889	66,321	70,964	74,577	76,661	80,492	86,450
Population	128,283	135,856	143,903	149,421	153,205	159,513	169,361

TABLE 2: CHANGE IN HOUSEHOLDS AND POPULATION - ROUND 7

	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020-2025	2025-2030
Households	4,432	4,643	3,613	2,084	3,831	5,958
Population	7,573	8,047	5,518	3,784	6,308	9,848

TABLE 3: % CHANGE HOUSEHOLDS AND POPULATION - ROUND 7

	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020 - 2025	2025 - 2030
Households	7.2%	7.0%	5.1%	2.8%	5.0%	7.4%

Population	5.9%	5.9%	3.8%	2.5%	4.1%	6.2%

TABLE 4: COMPARISON OF ROUND 6.4'S FORECAST OF HOUSEHOLDS AND POPULATION AND ROUND 7'S FORECASTS

	2000	2005	2010	2015	2020	2025	2030
Round 7 Population	128,283	135,856	143,903	149,421	153,205	159,513	169,361
Round 6.4 Population	128,283	136,500	142,900	145,900	147,800	150,000	151,700
% Difference in Population	0.0%	-0.5%	0.7%	2.4%	3.7%	6.3%	11.6%
Round 7 Households	61,889	66,321	70,964	74,577	76,661	80,492	86,450
Round 6.4 Households	61,889	66,200	70,000	71,800	73,000	74,300	75,300
% Difference in Households	0.0%	0.2%	1.4%	3.9%	5.0%	8.3%	14.8%

Employment Forecasts

Growth in Alexandria's employment is seen as a function of new office development and to a lesser extent an increase in retail and hotel development. Industrial employment is unlikely to play a major role in the future of Alexandria.

Employment growth in the short term is based on commercial development that is either being constructed, has a planning permit or is in the planning process. In the long term, underdeveloped sites in areas that already have commercial or industrial development were chosen for new commercial projects. It is assumed that the zoning on these sites will remain the same as it is today or if zoned industrial will be zoned for commercial or mixed use development. The rate of development was assumed to be approximately 350,000 sq. ft. to 590,000 sq. ft. per year. This range of new construction is believed to be attainable because the City was able to average more than 500,000 sq. ft. of new commercial development annually for the period between 1980 through 2000.

The base for Alexandria's employment forecast is a Dun & Bradstreet report, as reviewed and corrected by the Planning Department to eliminate major errors and to ensure that the local government employment was at the proper locations. Although the Dun & Bradstreet data is for various dates in 2000, the employment forecasts are for five year periods beginning on April 1st so that they will match the household and population forecasts.

After calibration, the Dun & Bradstreet employment base data was classified into four categories: office, retail, industrial and other by the Washington Metropolitan COG. Alexandria's Department of Planning and Zoning added forecasted employment to the four

employment categories. In almost all cases the classification of new employment was obvious, but when there was a question concerning classification, the Washington Metropolitan COG was consulted.

For the 2000 to 2005 period, office employment in Alexandria rose by 13,287 people, much more than for any of the following five year periods (See Table 4). The 26.7% increase in office employment during this five year period was largely do to the completion of the U.S. Patent and Trademark Office in early 2005. This agency's new office space housed more than half of the additional office employees in Alexandria during the 2000 to 2005 period.

In the spring of 2005 commercial projects in Alexandria space either under construction, with a planning permit or going through the planning process equaled 3,055,377 sq. ft. of office space, 361,628 sq. ft. of retail space and 229,334 sq. ft. of hotel space. The most notable major project in the western part of Alexandria is the Mark Winkler Company's planned 1,765,049 sq. ft. of office space to be located off Beauregard Street.

In the south eastern part of Alexandria, the major projects are the Hoffman office project of 438,000 sq. ft. and the Mill Race office project of 221,850 sq. ft. Both of these projects are at the eastern end of Eisenhower Avenue. The Eisenhower East area is expected to see additional office and retail development during the forecast period, due to the synergy created by the Carlyle project and enhanced access to the area. The most important improvement to access will be a new exit from the Capital Beltway onto Mill Road. The Mill Road exit is part of the new Wilson Bridge project.

In Alexandria, the conversion of square feet to employment is derived by using the following conversion factors. For each 1,000 gross sq. ft. of office space there will be 3.5 employees, for each 1,000 gross sq. ft. of retail space there will be 2 employees and for each hotel room there will be 0.6 employees. The conversion rates for offices and hotels come from surveys conducted by the City of Alexandria. The retail conversion rate is from the Institute of Transportation Engineers' trip generation data.

TABLE 5: CHANGE IN EMPLOYMENT IN ALEXANDRIA - ROUND 7

	2000	2005	2010	2015	2020	2025	2030
Office	49,835	63,122	69,253	79,040	88,924	97,684	104,417
Retail	20,161	21,017	22,642	23,399	23,732	24,083	24,517
Industrial	10,931	10,931	10,772	10,202	9,266	8,957	8,439
Other	10,350	10,527	10,584	10,584	10,584	10,584	10,584
Total	91,277	105,597	113,251	123,225	132,506	141,308	147,957

TABLE 6: AMOUNT CHANGE IN EMPLOYMENT FOR FIVE YEAR PERIOD - ROUND 7

	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020- 2025	2025 - 2030
Office	13,287	6,131	9,787	9,884	8,760	6,733
Retail	856	1,625	757	333	351	434
Industry	0	-159	-570	-906	-339	-518
Other	177	57	0	0	0	0
Total	14,320	7,654	9,974	9,311	8,772	6,649

TABLE 7: PERCENTAGE CHANGE IN EMPLOYMENT - ROUND 7

	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020 - 2025	2025 - 2030
Office	26.7%	9.7%	14.1%	12.5%	10.0%	6.9%
Retail	4.2%	7.7%	3.3%	1.4%	1.5%	1.8%
Industry	0.0%	-1.5%	-5.3%	-8.9%	-3.6%	-5.8%
Other	1.7%	0.5%	0.0%	0.0%	0.0%	0.0%
Total	15.7%	7.2%	8.8%	7.6%	6.6%	4.7%

As shown in Table 8 below, the employment forecasts of Round 7 and Round 6.4 diverge in the later years. Round 7 forecasts approximately 5% more growth during the 2020s. This is an intentional change and it was done because the slowing of employment growth in Round 6.4 was based on a lack of obvious sites for new commercial development. In Round 7 it is assumed that many sites with obsolete uses could be economically redeveloped in the last decades of the forecast period.

TABLE 8: A COMPARISON OF THE NUMBER OF EMPLOYEES FORECASTED BY ROUND 6.4 AND ROUND 7.

	2000	2005	2010	2015	2020	2025	2030
Round 7 Employees	91,300	105,597	113,251	123,225	132,506	141,308	147,957
Round 6.4 Employees	91,300	105,600	114,900	122,100	129,800	134,800	141,000
% Difference in Round 7 & 6.4	0.0%	0.0%	-1.4	0.9%	2.1%	4.8%	4.9%

ARLINGTON COUNTY

I. Introduction

Arlington's Round 7 forecasts show that between 2000 and 2030:

- population will increase by 31% from 190,313 to 249,587,
- households will increase by 38% from 86,901 to 119,853,
- while employment will increase by 51% from 182,576 to 275,798.

Please see Table X-1 for five-year population, household and employment forecasts.

Arlington County's forecasts are prepared by the Planning Research and Analysis Team (PRAT), which is part of the Department of Community Planning, Housing and Development. These forecasts are based on the County's General Land Use Plan (GLUP), which is the main policy document that outlines the County's vision for development. Although the GLUP is amended each year, its basic premise of concentrating development near transit stations and corridors while protecting single family neighborhoods is a long standing Arlington vision. Therefore, the GLUP is a very solid foundation upon which to base Arlington's development forecasts.

Significant input to the forecasts was provided by Planning Division and Arlington Economic Development (AED) staff. In addition, PRAT received guidance and feedback from an interdepartmental committee comprised of staff from all County departments (including Parks, Economic Development, Housing, Management and Finance, and Environmental Services/Transportation) that use the forecast numbers. These figures were developed in the winter of 2002/2003 and spring of 2003.

Arlington uses a "Bottom-Up" method for preparing forecasts. Specifically, Arlington prepares forecasts at the Census block level for all of the County's major planning areas. These block-level forecasts are summed to the Transportation Analysis Zone (TAZ) level and then to the County level. More general forecast assumptions are made for parts of the County outside of the major planning areas. See Section II below for more details on assumptions.

The Round 7 projections show faster population and household growth and slower employment growth than previous rounds of forecasts. These trends are primarily a result of assumptions that residential development will outpace office development in the short- and mid-term.

II. Household and Population Forecasts

Arlington's household and population forecasts are based on an analysis of existing and future residential development in the County, along with assumptions about residential vacancy rates and average household sizes. Household and population forecasts were prepared separately for blocks designated Low Residential on the County GLUP and blocks planned for medium and high density development in the County's main planning areas. Only minor changes resulting from modest single-family infill development were assumed for the blocks designated Low Residential. For the remaining blocks—located in the two Metro corridors (Rosslyn-Ballston and Jefferson Davis corridors), East Falls Church, Shirlington, Columbia Pike, Nauck, and Lee

Highway/Cherrydale—PRAT did a block-by-block analysis of the existing residential development and development capacity.

Methodology for Low Residential Areas

Arlington used block-level 2000 Census housing unit, household, and population data as our baseline. For blocks designated Low Residential in the GLUP (1,132 blocks, or 60% of all blocks), we assumed household and population growth or decline could arise from two situations:

> **1) Development of infill housing on vacant and pipestem lots**. Using ArcView GIS (geographic information system), we identified which parcels in Low Residential blocks had the potential for infill development. We assumed all vacant and pipestem lots would be developed by the end of the forecast period and we randomly assigned vacant parcels to a five-year interval. We assumed a zero vacancy rate for the infill and pipestem development. We used the 2000 block-level average household size for new single-family development.
>
> **2) Changes in average household size.** Using 2000 Census data, we identified blocks that had a high proportion of households headed by persons over age 64. We assumed that these blocks would experience an increase in average household size over the forecast period as younger households moved in. Again using 2000 Census data, we identified blocks that had a high proportion of households headed by persons between the ages of 45 to 54. We assumed that the average household sizes in these blocks would decline over the forecast period as these households aged in place. In both of these cases, we assumed a gradual increase/decrease over the forecast period.

The remaining Low Residential blocks remain unchanged through the forecast period.

While the Low Residential blocks account for 60% of all blocks in the County, they account for a relatively small share of the population. In 2000, 33% of all households were in these Low Residential blocks; in 2030, only 27% of all households are forecast to be located in these blocks.

Methodology for Planning Areas

We used a more detailed methodology for forecasting households and population in Arlington's major planning areas. These planning areas include Arlington's seven Metro Station Areas (Rosslyn, Court House, Clarendon, Virginia Square, Ballston, Crystal City and Pentagon City), East Falls Church, Shirlington, Columbia Pike, Nauck/Four Mile Run and Lee Highway/Cherrydale. PRAT used *modified* 2000 Census population, household and housing unit data as the base for our household and population forecasting in the County's major planning areas. We examined the 2000 Census data for each block in the planning areas and made corrections to the Census housing unit data when we observed errors, such as missing apartment buildings or incorrect unit counts of multi-family buildings. We generated corrected household and population figures by applying the vacancy rate and average household size for the block to

the new housing unit count. The result was 2000 baseline figures of 86,901 households and 190,313 people, compared with 86,352 households and 189,453 people from the 2000 Census. There were four main steps to forecasting households and population in Arlington's planning areas[2]:

1) **Determine development capacity on each block.** For each of the 741 Census blocks in Arlington's planning areas, we determined i) the existing residential and commercial development and ii) the development potential under the County GLUP.

2) **Review pipeline development and assign to appropriate blocks.** Pipeline development refers to all projects complete between 2000 and Fall 2003 when we completed the forecasts, all projects under construction, all projects that were approved by the County Board but had not yet started construction, and pending projects being reviewed by County staff but not yet receiving Board approval. Table X-2 lists major residential pipeline projects.

3) **For blocks with remaining development capacity, determine how and when the block will be developed.** In coordination with Planning and Economic Development staff, PRAT reviewed each block in the planning areas that had remaining capacity. We made assumptions about how the block would be development (i.e. residential, commercial, mixed-used) based on the existing GLUP, current and on-going small area plans, and market trends. Additional assumptions were made about when the development would occur (i.e. what five-year interval the development should be applied to).

4) **Apply appropriate vacancy rates and average household sizes.** We use vacancy rates to calculate household from housing units (Households = (1-vacancy rate) * Housing Units) and average household sizes to calculate population (Population = Average Household Size * Households). We analyzed residential vacancy rates from the 2000 Census for each of the major planning areas and for different housing types (i.e. single-family detached, single-family attached, small multi-family and large multi-family). We assumed these vacancy rates fluctuate over the forecast period based on a review of past trends in residential vacancy rates for the Washington DC region and the nation. By the end of the forecast period, as the County reaches buildout, we assumed vacancy rates would reach their lowest points. See Table X-3 for vacancy rate assumptions. We also examined the 2000 Census data by planning area and housing type for average household sizes. We assumed that the relative household sizes for each household type would not change over the forecast period. Because the mix of housing types is forecast to change (i.e. to have more units in multi-family buildings) then the overall average household size drops over the forecast period. We attempted to account for the growth of the immigrant population in parts of the County by assuming slightly increasing average household sizes. Table X-4 summarizes the average household sizes used for the forecasts.

For our Round 7 forecasts, we did not do a detailed analysis of the group quarters population. We assumed that the group quarters population remained a constant percentage (2.2%) of the

[2] The first three steps are identical for our employment forecasting (see Section III).

total population. Our next set of forecasts will assess the group quarters population in more depth.

III. Employment Forecasts

Arlington County's Round 7 employment forecasts use the year 2000 as a base. Planning staff conducted a review of federal and state data sources in order to identify the most appropriate data source(s) for the base figure at the County level. Following this analysis, staff determined that year 2000 employment for the county was 188,376. This figure is based on Bureau of Economic Analysis (BEA), Virginia Employment Commission (VEC) ES 202, and Census County Business Patterns data. See figure E-1 for a summary of this analysis.

The base figure is generally for the first quarter of 2005. In order to comply with changes recommended by COG and the Round 7 econometric model, this figure was reduced by 5,800 jobs and 182,576 is now accepted as the final base for Round 7 forecasts. Arlington staff will revisit this base figure again in subsequent rounds of forecasts.

Dun and Bradstreet (D&B) data provided by COG was useful in this research, but data inconsistencies including errors overstating the employment with several employers in the County, missing data for some known employers, insufficient public sector data, and address errors rendered the information too far below other identified County totals to be used as a source for the County base. County staff derived local, state and federal government employment in the County through its own research. For local employment, much of this work was done through calls directly to government agencies. County staff from Arlington Economic Development conducted research to identify federal workers in Arlington at the submarket level.

Development input for Round 7 employment forecasts for Arlington County were derived using the similar methods as those for Household and Population forecasts:

1. Determine development capacity on each block.
2. Review pipeline development and assign to appropriate blocks.
3. For those blocks with remaining development capacity, determine how and when the block will be developed.
4. Determine what type of development is likely (office, hotel, retail, or government/institutional) and apply vacancy rates and employment generation per square feet factors to the new development.

The factors applied during the fourth step of the forecasting process were derived from industry review, figures from Arlington Economic Development, and internal data analysis.

Geography:
D&B data was the only dataset available to County staff that included geocoded employment records. Staff therefore used D&B data as a base for figures at the Transportation Analysis Zones (TAZ) level, and added government sector employment to appropriate TAZs. In order to ensure that the total employment for the County matched the County base for the year 2000, TAZ totals from D&B were scaled up to meet the County base figure. This scaling process

added employment only to those TAZs that had either large employment figures, or were within County revitalization districts. See figure E-2 for a more detail of these changes by TAZ.

Vacancy Rates:
Vacancy rates that affect employment in Arlington are most likely to be office rates. Although there is some vacancy among retail establishments in Arlington, it is largely due to tenant turnover or site redevelopment. Therefore, no vacancy rate was used when generating employment forecasts for retail square footage.

Industrial employment including gas stations and automobile service areas is a small but vital part of Arlington's economy. Due to the limited number of these establishments in Arlington, and the high demand on their services, no vacancy rate was applied to industrial employment space. Similar logic follows for institutional employment; therefore no vacancy rate was used for institutional employment in these forecasts. Although occupancy can vary, no vacancy rate was applied to hotel land uses in terms of employee generation.

Arlington Economic Development provided direct office vacancy rates for the years 1994 to 2000 and rates with sublet from 2001 to 2003 (forecast calculations were completed in the fall of 2003, so data for 2003 includes the first three quarters only). Submarket rates for the years 2002 and 2003 (through fall of 2003) were also obtained. Collectively, this data revealed that sublet vacancy rates are higher than direct rates, direct rates in the County have been relatively low compared to the region for the past eight or nine years and vacancy rates vary among submarkets within Arlington. No reliable source of office vacancy projections was identified for Arlington by County staff. Therefore, an average of recent rates was applied to each submarket within the County for all forecast years. Forecasted development outside of identified submarkets was assigned the County figure. See table E-3 for the assigned office vacancy rates used in Arlington County's Round 7 forecasts.

Space Conversion Factors:
Arlington's conversion factors of gross floor area (GFA) to employees are consistent throughout the forecast period for Round 7. These factors are as follows:

- Office: 250 sf (square feet) per employee
- Retail: 450 sf per employee
- Institutional/Industrial/Other: 650 sf per employee
- Hotel: 1 employee per room

These factors are based on regional research as well as input from Arlington Economic Development staff in 2003. Although development in Arlington is largely office, retail or hotel, it was necessary to create a lookup chart to determine what types of business establishments fall into which of these four categories for space conversion. That lookup table is attached for reference as table E-4.

IV. Impact of Major Transportation Improvement Projects on the Round 7.0 Cooperative Forecasting Process

Arlington is not affected by any of the major CLRP projects slated for construction before 2030. One transportation concern that does affect Arlington is the constraints on Metrorail. Our Round 7 forecasts do not take potential limits to Metrorail capacity but as development continues this will be a growing concern. Subsequent forecasts will address this topic as necessary.

V. Forecasting Note

Arlington County's Round 7 forecasts were revised in the summer of 2005 following initial approval by the COG Cooperative Forecasting Subcommittee. These revisions were a result of review by the region's planning directors and COG transportation staff. Specifically, the 2000 employment base decreased by 5,800 jobs, households were increased by 1,400 in 2025 and 3,200 in 2030 while population increased by 2,900 in 2025 and 6,700 in 2030.

No changes were made in the County's General Land Use Plan as a result of these changes. Although the final forecasts depicted here agree with COG models, they do not comply with development capacity as depicted in the County's General Land Use Plan. Therefore, the Round 7 forecasts do not equate to "build-out" of the County, and actual development and resulting population and households may be slightly below the figures set forth here.

VI. Supporting Tables and Graphs

Table X-1. Round 7 Forecasts
Arlington County,
Virginia

	2000*	2005	2010	2015	2020	2025	2030	Change 2000 - 2030	% Change 2000 - 2030
Population	190,313	198,267	212,229	223,304	233,092	241,676	249,587	59,274	31.1%
Households	86,901	92,145	99,573	105,923	111,451	116,035	119,853	32,952	37.9%
Employment	182,576	195,205	217,834	237,781	254,416	263,578	275,798	93,222	51.1%

*2000 figures are from the following sources: Population, Households and Housing Units (20000 Census *adjusted for observed errors in housing unit counts*); Employment (Dun & Bradstreet, Bureau of Economic Analysis, ES-202 (state unemployment insurance) data, and County Business Patterns).

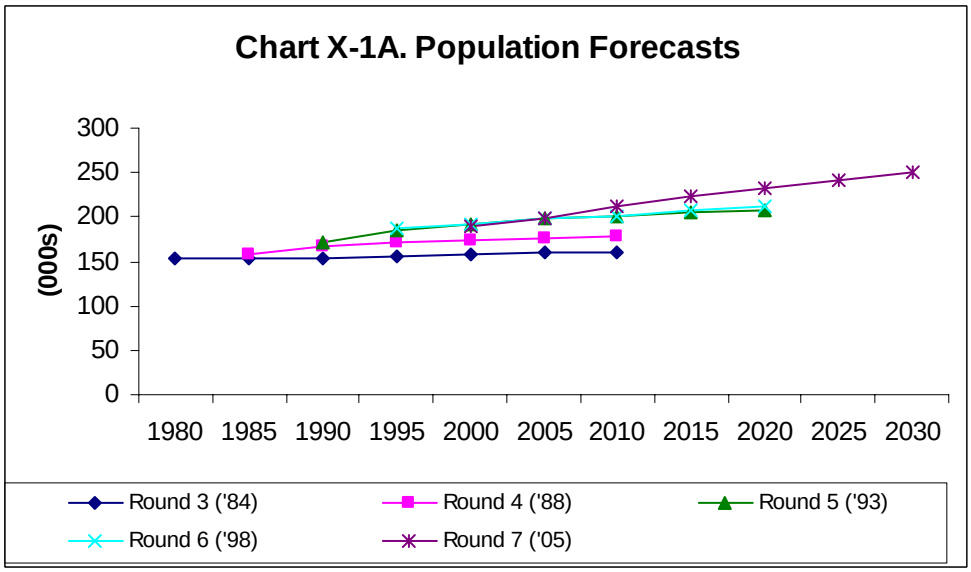


Chart X-1A. Population Forecasts
(000s)
300
250
200
150
100
50
0
1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030
Round 3 ('84)
Round 4 ('88)
Round 5 ('93)
Round 6 ('98)
Round 7 ('05)

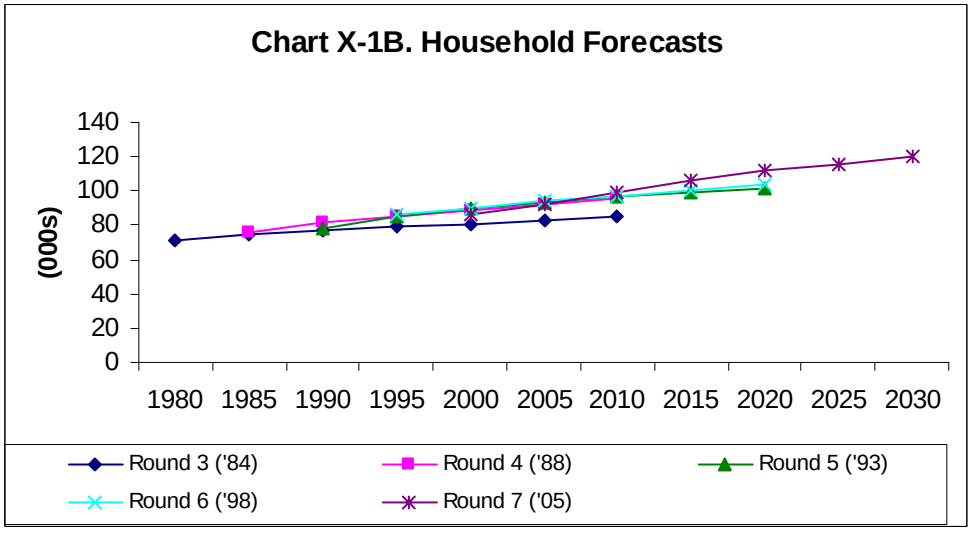


Chart X-1B. Household Forecasts
(000s)
140
120
100
80
60
40
20
0
1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030
Round 3 ('84)
Round 4 ('88)
Round 5 ('93)
Round 6 ('98)
Round 7 ('05)

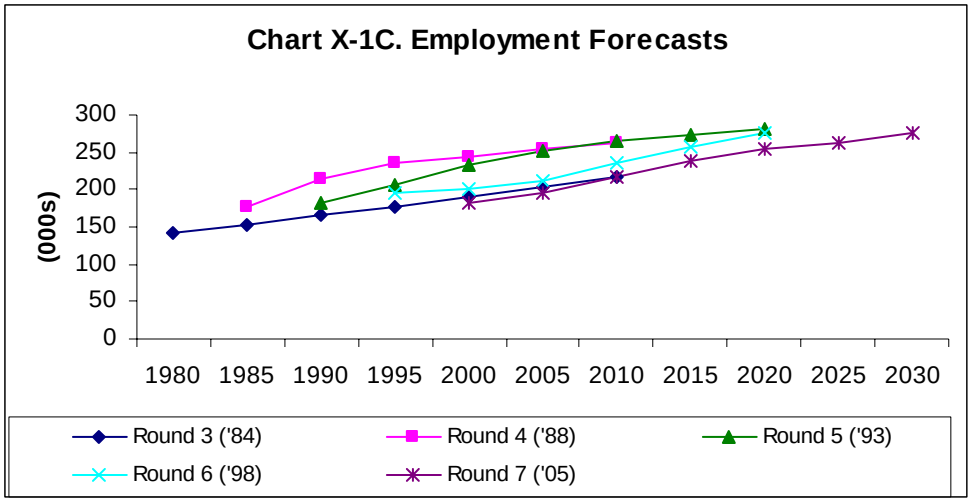


Chart X-1C. Employment Forecasts
(000s)
300
250
200
150
100
50
0
1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030
Round 3 ('84)
Round 4 ('88)
Round 5 ('93)
Round 6 ('98)
Round 7 ('05)

Table X-2. Residential Pipeline Development (Major Projects only)
Arlington County, Virginia

Project Name	Planning Area	Residential Units
Complete Between 2000 and 2003		
The Metropolitan at Pentagon City	Pentagon City	321
Pentagon Row	Pentagon City	500
Ballston Place	Virginia Square	383
Lexington Square Condos	Virginia Square	367
The Gallery at Rosslyn	Rosslyn	314
The Meridian Phase III	Court House	273
The Jefferson	Clarendon	252
The Gallery at Virginia Square	Virginia Square	231
Virginia Square Apartments	Virginia Square	225
Warwick House II	Crystal City	212
Avalon at Arlington Square/Arna Valley View	None	943
Wilson Boulevard Apartments	Court House	202
Market Common Clarendon	Clarendon	387
The Atherton	Virginia Square	119
Library Courts	Ballston	84
The Hartford	Clarendon	70
Birchwood Apartments	Virginia Square	53
Bromptons at Clarendon I and II	Clarendon	37
The Residence at Memorial Overlook	Rosslyn	35
Monument Place/Bromptons at Monument Place	Rosslyn	32
Under Construction as of Fall 2003		
Fairfield at Clarendon	Clarendon	417
The Continental	Ballston	411
The Metropolitan at Pentagon Row	Pentagon City	326
The Hudson	Clarendon	293
Lofts at Crystal Towers	Crystal City	215
The Metropolitan at Arlington	None	190
The Berkeley at Ballston	Ballston	83
1633 N Colonial Terrace	Rosslyn	34
Approved but Not Under Construction as of Fall 2003		
Liberty Center Phase I and II	Ballston	513
Quincy Plaza	Virginia Square	499
The Dakota on Center Park	Crystal City	479
Village at Shirlington Residential	Shirlington	400
Camden Potomac Yard	Crystal City	386
WRIT Rosslyn	Rosslyn	224
1800 Wilson Boulevard	Rosslyn	154
Residences at Station Square	Clarendon	308
The Odyssey	Court House	306
Alexan Shirlington Residential	Shirlington	245

Woodbury Park North	Court House	207
USPS Clarendon	Clarendon	194
Waterview	Rosslyn	185
Eighteen 81	Rosslyn	176
Monroe Street Property	Virginia Square	79
Hunters Park	Lee Hwy	74
1101 Lee Highway	Rosslyn	60
Monroe Apartments	Columbia Pike	53
Bromptons at Cherrydale	Lee Hwy	46
Pending (Not Yet Approved)		
Land Bay D	Crystal City	396
One Metropolitan Park	Pentagon City	390
North Troy Street Apartments	Court House	371
Rosslyn Ridge	Rosslyn	245
Indian Spice/Wilson/Pollard site	Virginia Square	144
Westmoreland Street Residential	East Falls Church	128
Pizza Hut/Clemente LLC site	Virginia Square	92
3409 Wilson Boulevard	Virginia Square	90

Source: Arlington Planning Division, as of Fall 2003.

Note: Projects names and densities may have changed since the time the forecasts were prepared.

Table X-3. Vacancy Rates by Planning Area and Housing Type (2000 - 2030)
Arlington County, Virginia

Vacancy Rates (2000)

	Overall	SFH-detached	Townhouse	Small building (< 20 units)	Large building (20+ units)
Arlington County	4.5%	2.3%	3.0%	2.8%	7.7%
Metro Station Areas					
Rosslyn		n/a	6.8%	4.3%	8.2%
Court House		0.9%	0.0%	1.6%	8.5%
Clarendon		0.8%	2.9%	4.0%	10.0%
Virginia Square		2.6%	6.2%	5.1%	14.1%
Ballston		3.0%	3.1%	2.0%	7.9%
R-B Corridor		1.8%	3.8%	3.4%	9.7%
Crystal City		3.5%	n/a	2.5%	11.9%
Pentagon City		22.9%	9.1%	n/a	12.4%
Other Areas					
Columbia Pike		1.9%	2.7%	1.2%	2.5%
Shirlington		n/a	5.1%	n/a	7.1%

Source: U.S. Census Bureau, 2000 Census of Population and Housing
n/a=not available (no units of that type)

Vacancy Rates (2005)

	Overall	SFH-detached	Townhouse	Small building (< 20 units)	Large building (20+ units)
Arlington County	5.5%	2.8%	3.6%	3.5%	9.4%
Metro Station Areas					
Rosslyn		n/a	8.3%	5.2%	10.0%
Court House		1.1%	0.0%	2.0%	10.4%
Clarendon		0.9%	3.6%	4.9%	12.3%
Virginia Square		3.1%	7.6%	6.3%	17.2%
Ballston		3.7%	3.8%	2.5%	9.6%
R-B Corridor		2.2%	4.7%	4.2%	11.9%
Crystal City		4.3%	n/a	3.1%	14.5%
Pentagon City		27.9%	11.1%	n/a	15.1%
Other Areas					
Columbia Pike		2.3%	3.3%	1.4%	3.1%
Shirlington		n/a	6.2%	n/a	8.7%

Vacancy Rates (2010)

	Overall	SFH-detached	Townhouse	Small building (< 20 units)	Large building (20+ units)
Arlington County	5.8%	3.0%	3.8%	3.7%	10.0%
Metro Station Areas					
Rosslyn		n/a	8.7%	5.5%	10.5%
Court House		1.2%	0.0%	2.1%	11.0%
Clarendon		1.0%	3.8%	5.2%	12.9%
Virginia Square		3.3%	8.0%	6.6%	18.2%
Ballston		3.9%	4.1%	2.6%	10.1%
R-B Corridor		2.3%	4.9%	4.4%	12.5%
Crystal City		4.5%	n/a	3.3%	15.3%
Pentagon City		29.5%	11.7%	n/a	16.0%
Other Areas					
Columbia Pike		2.4%	3.5%	1.5%	3.2%
Shirlington		n/a	6.6%	n/a	9.2%

Vacancy Rates (2015)

	Overall	SFH-detached	Townhouse	Small building (< 20 units)	Large building (20+ units)
Arlington County	4.6%	2.4%	3.0%	2.9%	7.9%
Metro Station Areas					
Rosslyn		n/a	6.9%	4.4%	8.3%
Court House		0.9%	0.0%	1.7%	8.7%
Clarendon		0.8%	3.0%	4.1%	10.3%
Virginia Square		2.6%	6.3%	5.3%	14.4%
Ballston		3.1%	3.2%	2.1%	8.0%
R-B Corridor		1.9%	3.9%	3.5%	10.0%
Crystal City		3.6%	n/a	2.6%	12.1%
Pentagon City		23.4%	9.3%	n/a	12.7%
Other Areas					
Columbia Pike		1.9%	2.8%	1.2%	2.6%
Shirlington		n/a	5.2%	n/a	7.3%

Vacancy Rates (2020)

	Overall	SFH-detached	Townhouse	Small building (< 20 units)	Large building (20+ units)
Arlington County	2.8%	1.4%	1.8%	1.8%	4.8%
Metro Station Areas					
Rosslyn		n/a	4.2%	2.7%	5.1%
Court House		0.6%	0.0%	1.0%	5.3%
Clarendon		0.5%	1.8%	2.5%	6.3%
Virginia Square		1.6%	3.9%	3.2%	8.8%
Ballston		1.9%	2.0%	1.3%	4.9%
R-B Corridor		1.1%	2.4%	2.1%	6.1%
Crystal City		2.2%	n/a	1.6%	7.4%
Pentagon City		14.2%	5.7%	n/a	7.7%
Other Areas					
Columbia Pike		1.2%	1.7%	0.7%	1.6%
Shirlington		n/a	3.2%	n/a	4.4%

Vacancy Rates (2025 and 2030)

	Overall	SFH-detached	Townhouse	Small building (< 20 units)	Large building (20+ units)
Arlington County	2.2%	1.1%	1.4%	1.4%	3.8%
Metro Station Areas					
Rosslyn		n/a	3.3%	2.1%	4.0%
Court House		0.5%	0.0%	0.8%	4.2%
Clarendon		0.4%	1.4%	2.0%	4.9%
Virginia Square		1.3%	3.0%	2.5%	6.9%
Ballston		1.5%	1.5%	1.0%	3.8%
R-B Corridor		0.9%	1.9%	1.7%	4.8%
Crystal City		1.7%	n/a	1.2%	5.8%
Pentagon City		11.2%	4.4%	n/a	6.1%
Other Areas					
Columbia Pike		0.9%	1.3%	0.6%	1.2%
Shirlington		n/a	2.5%	n/a	3.5%

Note: Projected vacancy rates were applied to all new residential units as well as selected existing units.

Table X-4. Average Household Sizes by Planning Area and Housing Type (2000 - 2030)

Arlington County, Virginia

Overall Average Household Size

	2000	2005	2010	2015	2020	2025	2030
Avg. HH Size	**2.14**	**2.10**	**2.08**	**2.06**	**2.05**	**2.04**	**2.04**

Average Household Sizes by Unit Type (2000)

	Single-family detached		Townhouse		Small building (<20 units)		Large building (20+ units)	
	Number of units	Avg. Household Size	Number of units	Avg. Household Size	Number of units	Avg. Household Size	Number of units	Avg. Household Size
Arlington County	27,027	2.62	8,941	2.13	18,256	2.31	30,989	1.62
Metro Station Areas								
Rosslyn	74	2.23	234	1.91	1,460	1.94	4,020	1.5
Court House	214	2.44	150	2.55	1,457	1.76	3,141	1.5
Clarendon	655	2.57	166	1.75	192	1.55	403	1.42
Virginia Square	607	2.51	227	2.22	387	1.97	640	1.7
Ballston	607	2.72	738	2.17	1,754	2.75	4,715	1.42
R-B Corridor		2.49		2.12		1.99		1.51
Crystal City	249	2.01	33	2	153	2.03	2,693	1.56
Pentagon City	27	2.93	150	2.17	133	2.06	4,543	1.44
Other Areas								
Columbia Pike	986	2.85	647	2.42	2,058	2.13	4,799	1.73
Shirlington	19	4.58	391	1.47	955	1.89	806	1.65

Source: U.S. Census Bureau, 2000 Census of Population and Housing.

Table E-1. Suggested 2000 Benchmark Based on BEA, VEC, and Census 2000 Data
Arlington County, Virginia

Employment Sector	Total	Source
Wage and salary employment	183,129	BEA
Agriculture	261	VEC
Construction	4,133	VEC adjusted to meet BEA total*
Manufacturing	3,384	VEC adjusted to meet BEA total*
Transportation and public utilities	14,706	VEC adjusted to meet BEA total*
Wholesale Trade	2,686	VEC adjusted to meet BEA total*
Retail Trade	18,389	VEC adjusted to meet BEA total*
Finance, Insurance, and Real Estate	7,272	VEC adjusted to meet BEA total*
Services	75,377	VEC adjusted to meet BEA total*
Government and government enterprises	56,925	BEA
Federal, civilian	32,048	BEA
Military	15,044	BEA
State and local	9,833	BEA
State government	503	BEA
Local government	9,330	BEA
Total Wage and Salary Employment	**183,132**	
Self-employed	**5,244**	Census 2000
Total Employment	**188,376**	Sum of Total Wage and Salary Employment and Self-Employment
Adjusted Round 7 Base Figure	**182,576**	**See Note**

*Adjustment factor =1.087

Source: Arlington County Research and Analysis Team calculations (June 2003)

Note: This figure, a 5,800 reduction of Arlington's base, was adjusted to comply with COG econometric and traffice models.

Table E-2. Base Year TAZ Employment Figures
Arlington County, Virginia

TAZ	Dun and Bradstreet Private Sector	State and Local	Federal	Amount Added in Analysis	**Preliminary Total**	**Final Total After Adjustment***
1230	139		15,819	3,697	**19,655**	**19,050**
1231	13		101		**114**	**110**
1232	217				**217**	**210**
1233	8				**8**	**10**
1234	315		1,904	514	**2,733**	**2,650**
1235	598	26	2,048	619	**3,291**	**3,190**
1236	5,444	0	1,771	1,671	**8,886**	**8,610**
1237	10,088	9	783	2,520	**13,400**	**12,990**
1238	3,310	21	808	959	**5,098**	**4,940**
1239	2,603		126	632	**3,361**	**3,260**
1240	1,291			299	**1,591**	**1,540**
1241	2,085		1,499	830	**4,414**	**4,280**
1242	6,417		11,351	4,116	**21,884**	**21,210**
1243	3,699			857	**4,555**	**4,420**
1244	3,124		1,823	1,146	**6,093**	**5,910**
1245	4,247	63	854	1,196	**6,360**	**6,160**
1246	201				**201**	**190**
1247	414	346			**760**	**740**
1248	136	98	952	275	**1,461**	**1,420**
1249	2,740			635	**3,375**	**3,270**
1250	837	157			**994**	**960**
1251	2,102		897	695	**3,693**	**3,580**
1252	652	423		249	**1,324**	**1,280**
1253	5,034	2,367	40	1,724	**9,165**	**8,880**
1254	2,003	109	3	490	**2,605**	**2,520**
1255	112				**112**	**110**
1256	650	730	347	400	**2,127**	**2,060**
1257	1,232	45	499	412	**2,188**	**2,120**
1258	270	5			**275**	**270**
1259	127	86			**213**	**210**
1260	643	63	58	177	**941**	**910**
1261	913	27		218	**1,158**	**1,120**
1262	879	343	797	468	**2,487**	**2,410**
1263	339	70		95	**504**	**490**
1264	4,934	182	334	1,262	**6,712**	**6,510**
1265	5,108	98	3,150	1,936	**10,292**	**9,970**
1266	2,757	50	83	669	**3,559**	**3,450**
1267	522				**522**	**510**
1268	701				**701**	**680**
1269	68				**68**	**70**
1270	361				**361**	**350**
1271	44				**44**	**40**

TAZ	Dun and Bradstreet Private Sector	State and Local	Federal	Amount Added in Analysis	**Preliminary Total**	**Final Total After Adjustment***
1272	382				**382**	**370**
1273	240	26			**266**	**260**
1274	856	464		306	**1,625**	**1,580**
1275	1,961	153	56	503	**2,673**	**2,590**
1276	1,877	724	2	603	**3,206**	**3,110**
1277	590	117	4		**711**	**690**
1278	75	78			**153**	**150**
1279	838	243		250	**1,331**	**1,290**
1280	226	132			**358**	**350**
1281	417	110			**527**	**510**
1282	39	8	855		**902**	**870**
1283	501	16			**517**	**500**
1284	1,391			322	**1,713**	**1,660**
1285	3,349	138	72	824	**4,383**	**4,250**
1286	129				**129**	**130**
1287	157				**157**	**150**
1288	260	603			**863**	**840**
1289	310	77			**387**	**380**
1290	136				**136**	**130**
1291	243	96			**339**	**330**
1292	113	25			**138**	**130**
1293	124	146			**270**	**260**
1294	694	20			**714**	**690**
1295	551	278			**829**	**800**
1296	80	26			**106**	**100**
1297	62				**62**	**60**
1298	3,326	262	27	837	**4,452**	**4,320**
1299	79				**79**	**80**
1300	180				**180**	**170**
1301	67	154			**221**	**210**
1302	74				**74**	**70**
1303	213	96	32		**341**	**330**
1304	297	67			**364**	**350**
1305	410	74			**484**	**470**
1306	422	256			**678**	**660**
1307	785				**785**	**760**
1308	35				**35**	**30**
1309	61	26			**87**	**80**
1310	83				**83**	**80**
1311	34	99			**133**	**130**
Totals	**99,043**	**9,832**	**47,095**	**32,406**	**188,376**	**182,580**

Source:

Dun and Bradstreet and Arlington County Research and Analysis Team.

*Arlington's employment base was reduced by 5,800 to comply with COG econometric and traffice models.

Due to rounding, the figure here, 182,580 is slightly higher than the actual total of 182,576.

Table E-3. Office Vacancy Rates by Submarket or Planning Area for the years 2000 - 2030 Used for Round 7 Forecasts
Arlington County, Virginia

Submarket	Vacancy
Arlington	12%
Ballston	14%
Virginia Square	14%
Clarendon/CourtHouse	10%
Rosslyn	12%
Crystal City	12%
Pentagon City	5%
Lee Highway/Cherrydale	12%
Nauck	12%
Columbia Pike	12%
Shirlington	12%

Retail, Hotel and Industrial assume 0% vacancy for all areas.

Source: Arlington County Economic Development, COSTAR, and Planning Staff.

Table E-4. GFA per Employee Conversions for Round 7 Forecasts
Arlington County, VA

Type of Business/Employment Center	Square Feet Per Employee
Retail	**450**
Banks	
Convenience Stores	
Food and Grocery Stores	
Hair or Beauty Salon	
Hardware	
Malls	
Pharmacy/Drug Store	
Restaurants	
Strip and Community Shopping Centers	
Offices	**250**
Industrial	**650**
Communication Related (switching centers, etc.)	
Construction and Contractors	
Gas Stations	
Auto Sales	
Auto Service and Repair	
Manufacturing	
Printing and Publishing	
Other Utility Related	
Wholesale Warehouse and Storage	
Institutional/Other	**650**
Cemetaries	
Civic, Social and Fraternal Uses	
Colleges and Universities	
Correctional Institutions	
Fire Stations	
Golf Courses	
Horticulture/Nursury	
Hospital and Health Facilities	
Houses of Worship	
Indoor Recreation Facilities	
Libraries	
Military Institutions	
Nursery Schools	
Nursing Homes	
Other Institutional/Public Uses	
Parks	
Museums	
Theatres	
Police Stations	
Post Offices	
Private Schools	

Source: Arlington County Planning Research and Analysis Team

Table E-5. Non Residential Pipeline Development (Major Projects only)
Arlington County, Virginia

Project Name	Planning Area	Office Square Feet	Retail Square Feet	Hotel Rooms	Other Square Feet
Complete Between 2000 and 2003					
1515 N Court House Rd.	COURT HOUSE	244,279	12,831	0	0
1801 N. Lynn St.	ROSSLYN	347,295	6,565	0	0
4100 Fairfax Drive	BALLSTON	249,430	11,414	0	0
4501 Fairfax Drive	BALLSTON	192,000	7,250	0	0
Ballston Common: Ballston Tower	BALLSTON	230,361	0	0	0
Ballston Gateway	VIRGINIA SQUARE	122,904	13,784	0	0
Clarendon Market Common Phase II	CLARENDON	0	22,753	0	0
Court House Metro Plaza	COURT HOUSE	41,814	11,393	0	0
CVS Drug Store	CRYSTAL CITY	0	10,125	0	0
Gold's Gym	VIRGINIA SQUARE	0	28,429	0	0
Hampton Inn and Suites	CRYSTAL CITY	0	0	161	0
Harris Teeter	OUTSIDE METRO	0	51,444	0	0
Hilton Garden Inn	COURT HOUSE	0	2,400	189	0
Market Common Clarendon - Retail	CLARENDON	0	234,571	0	0
One Virginia Square	VIRGINIA SQUARE	121,002	0	0	0
Pentagon Row: A, Morgan	PENTAGON CITY	0	79,191	0	0
Pentagon Row: B, Beauregard	PENTAGON CITY	0	87,001	0	0
Pentagon Row: C, Burnside	PENTAGON CITY	0	49,841	0	0
Pentagon Row: D, McClellan	PENTAGON CITY	0	83,967	0	0
Quincy Crossing	VIRGINIA SQUARE	110,000	9,100	0	0
Quincy Tower	OUTSIDE METRO	234,250	13,100	0	0
The Hartford: Offices	CLARENDON	207,125	15,617	0	0
The Market Place	CLARENDON	0	39,620	0	0
Virginia Square Plaza	VIRGINIA SQUARE	154,684	5,005	0	0
Under Construction as of Fall 2003					
FDIC Phase 2 Office	VIRGINIA SQUARE	410,364	5,108	0	0
Hunters Park	LEE HIGHWAY	0	4,600	0	0
Westin Hotel	BALLSTON	0	0	336	0
Approved but Not Under Construction as of Fall 2003					
Air Force Association Addition	OUTSIDE METRO	17,531	0	0	0

Project Name	Planning Area	Office Square Feet	Retail Square Feet	Hotel Rooms	Other Square Feet
One Potomac Yard	CRYSTAL CITY	641,069	8,489	0	0
4401 Wilson Boulevard	BALLSTON	248,401	12,000	0	0
The Regent	BALLSTON	248,962	14,401	0	0
Village at Shirlington Residential - Building 3	SHIRLINGTON	0	12,546	0	0
Shirlington Library and Theater	SHIRLINGTON	0	0	0	54,396
The Villages at Shirlington	SHIRLINGTON	0	24,217	0	0

Shirlington Village Condominiums	SHIRLINGTON	0	23,120	0	0
USPS Clarendon (Pheonix at Clarendon)	CLARENDON	74,475	9,660	0	27,650
Station Square at Clarendon	CLARENDON	64,545	21,515	0	0
Waterview	ROSSLYN	358,172	3,324	160	0
Rosslyn Metro Center	ROSSLYN	255,000	12,000	0	0
3803 Fairfax Drive (expansion)	VIRGINIA SQUARE	43,000	0	0	0
Pending (Not Yet Approved)					
Clarendon Center (both blocks)	CLARENDON	294,000	16,000	0	0
NRECA Phase II	BALLSTON	248,000	12,000	0	0
Demar Office	COURT HOUSE	100,000	5,000	0	0
Court House Square Office	COURT HOUSE	203,000	23,000	0	0
Court House Plaza Hotel	COURT HOUSE	0	10,000	324	0
Monument View Office	CRYSTAL CITY	463,000	0	0	0
Potomac Yard Land Bay C	CRYSTAL CITY	1,200,000	14,000	0	0
Potomac Yard Land Bay D	CRYSTAL CITY	372,000	10,000	0	0
Potomac Yard Land Bay E	CRYSTAL CITY	363,000	6,000	0	0
Rosslyn Central Place	ROSSLYN	450,000	222,000	0	0
GMU Phase II	VIRGINIA SQUARE	0	0	0	248,000
GMU Phase III	VIRGINIA SQUARE	203,000	23,000	0	0

Source: Arlington Planning Division, as of Fall 2003.
Note: Projects names and densities may have changed since the time the forecasts were prepared.

FAIRFAX COUNTY

EMPLOYMENT FORECAST METHODOLOGY

The Policy and Plan Development Branch of the Department of Planning and Zoning used the established top-down/bottom-up method used in previous rounds of the Cooperative Forecast to prepare the Round 7 employment forecast. The "top-down" method evaluated the County's employment sector trends to derive forecast assumptions which established the County's forecasted share of regional employment growth. After the "top-down" methodology established countywide forecast targets for each five-year period through 2030, the "bottom-up" methodology began with an analysis of specific development activity information in order to identify short-term trends within each of the County's development centers. The County's Comprehensive Plan was used to establish long-term job potential.

The short-term trends and long-term potential formed parameters for distributing the Countywide growth targets to each employment center and then to each traffic analysis zone (TAZ). Due to time constraints, the draft output of COG's regional econometric model was used for the initial iteration of the County's employment forecast; however the final iteration of the County's employment utilized the final COG model output.

The following summarizes the "top-down" and "bottom-up" methodologies. It also discusses how the forecasted employment will affect future public and private sector job growth in Fairfax County based on the allocation by the five major land use categories -- office, industrial, retail, and government / institutional and other uses.

TOP-DOWN FORECAST

The "top-down" view of Fairfax County's economy was primarily developed utilizing three data sources: (1) Virginia Employment Commission's (VEC) quarterly employment report for Fairfax County for the month of March, from first quarterly report; (2) Fairfax County Department of Systems Management for Human Services (DSMHS) population forecast; and (3) COG's econometric model's regional employment forecast.

The VEC employment data is organized by major employment sectors as defined by the two digits Standard Industrial Classification (SIC) Codes for all employment sectors. From January 2002 VEC started to report their data in North American Industry Classification System (NAIC) with three digit codes. However, this change had no impact on Round 7 trends analysis as the base year was 2000 and it was reported in SIC codes. Sector level historic trends were established using this data. These employment sectors are as follows:

- Construction
- Manufacturing
- Transportation, communications and public utilities (T. C. P. U)
- Wholesale trade
- Retail trade
- Finance, insurance and real estate (F. I. R.E.)
- Services
    - health services
    - business services

    - other services
- Government
    - federal civilian government
    - military government
    - state & local government

The VEC data were used to provide a historic record of employment for Fairfax County from 1980 through 2000. The VEC reports are based on a quarterly survey of firms which pay unemployment insurance for all establishments with one or more employees. This data generally excludes self-employed workers, such as those providing consulting or retail sales out of their homes. The excluded self-employed jobs were accounted for through COG's econometric model as a percentage of "known" (VEC) employment. The uniformed military personnel estimate was determined by contacting military facilities.

By using this historical record of County employment and additional labor market research, it was possible to determine short and long term employment trends and sectoral relationships with population and employment. These relationships include (a) the growth in employment sectors which are associated with the County's population growth, and (b) the growth in employment sectors which are associated with regional employment growth, indicating trends in the County's historic regional share of an employment sector.

For those employment sectors which are influenced by population growth such as retail trade and health services, the Fairfax County Department of Systems Management for Human Services (DSMHS) population forecast was multiplied by historic, industry-specific ratios of employees per thousand population to estimate future growth in these employment sectors.

For those employment sectors which are associated with regional employment growth such as business services and F.I.R.E., market share assumptions were formulated for each of these employment sectors based on an analysis of long-term trends in the County's market share. The market share assumptions were then applied to COG's econometric model's regional employment forecast by employment sector to estimate future jobs for Fairfax County within each of these sectors. Sector level employment was converted to land use base employment categories used by COG, using a conversion table (see attachment I).

BOTTOM-UP FORECAST

After the "top-down" methodology established Countywide forecast targets for each five-year forecast period through 2030, the "bottom-up" methodology began with an analysis of short-term trends and long-term potential for each employment center. This analysis formed parameters for distributing employment under the Countywide growth targets to each TAZ within a employment center.

The small area or "bottom-up" view of employment growth used a wide range of data sources to analyze short-term trends and long-term potential. The data sources included:

- 2000 Dun and Bradstreet Employment Data for the County provided by COG
- Fairfax County Department of Tax Administration's real-estate data for non-residential buildings
- Virginia Employment Commission (VEC) Employment Data for the County

- Fairfax County Economic Development Authority's office, hotel and industrial inventories and leasing activity data
- National Capital Planning Commission's (NCPC) data on Federal Capital Improvement Program (CIP) projects within Fairfax County
- Fairfax County Department of Planning and Zoning Comprehensive Plan development potential data bases including Capital Improvement Projects (CIP) and Land Development System (LDS)
- Other data compiled by the staff of the Fairfax County Department of Planning and Zoning (DPZ) on, institutions such as hospitals, schools, George Mason University and army base, Fort Belvoir and local government short-term and long-term development plans by contacting each agency
- Fairfax County Department of Public Works and Environmental Services' data for pipeline projects including under construction and in approval process

COG provided employment data at TAZ level from Dun and Bradstreet (D&B) to jurisdictions to use for 2000 base year data. A general review of data indicated that the Dunn and Bradstreet data was not at a quality which could be used as base information for the 2000 employment for each of the County's 344 Traffic Analysis Zones (TAZ's). As a result, the Policy and Plan Development Branch performed a detail and comprehensive review of the base year 2000 data by using the County's Geographic Information System (GIS). Non-residential data for each parcel level were grouped into COG employment categories of office, retail, institutional and industrial use. Each non-residential parcel's square footage was converted into an estimate of jobs per parcel using employees per square foot factors (see attachment II). This exercise provided employment capacity estimates by each existing building. Each building's employment was adjusted based on vacancy rates provided by EDA. The result was a land used based employment estimate for the 2000 base year. An extensive review and comparison of two data sources, Dun & Bradstreet and DPZ land use base employment was performed for each traffic analysis zone (TAZ). This process provided an improved data for 2000 employment.

The Fairfax County Economic Development Authority (EDA) also provided existing, under construction, and planned office, hotel and industrial building data. In addition, EDA provided information on absorption trends and space currently available for lease. The analysis of the EDA data provided the basis for estimating employment distribution resulting from office, industrial and hotel absorption for the 2005 timeframe.

Department of Public Works and Environmental Services (DPWES) provided data on pipeline projects that includes buildings recently completed, under construction, site plans submitted, approved and bonded. This information was used to establish most of the growth from 2005 to 2010. Zoning data resulting in land use change or an increase in the density for future developments was retrieved from DPZ land development system known as Zoning and Planning System (ZAPS). These data sources provided the growth potential from 2010 to 2015.

NCPC's information on the Federal CIP provided substantial data on the distribution of Federal government job growth over the short-term and mid-range. The most significant of these expansions was at Ft. Belvoir. In addition, other information was also solicited directly from local and state agencies on existing employment growth and distribution, as well as future employment increases related to facility expansions in Fairfax County.

For evaluating long-term potential between 2015 and 2030, the County's data bases on Comprehensive Plan were used to establish build-out caps that the 2030 forecast per TAZ should not exceed.

The "bottom-up" process required several iterations with moderate adjustments to the geographic distribution to closely match the "top-down" growth targets.

Table 1 compares Fairfax County's Round 7 Small Area, (bottom-up process) and Employment Sector Forecasts (top-down process) and the County's percentage of the region's employment. It indicates that the small area forecast is approximately within one-percent of the employment sector growth targets for all forecast years. In addition, the table provides a comparison of the relative share of regional employment denoted by the County's small area forecast versus the employment sector forecast. The small area forecast and the employment sector forecast have almost the same regional share of employment for each forecast year.

Table 1: Comparison of Fairfax County Round 7 Small Area (TAZ) and Employment Sector Forecasts

Year	Small Area Forecast (Bottom up)	Employment Sector Forecast (Top Down)	Job Difference	Percent Difference	COG Rd.7 Forecast Regional MSA	County Small Area forecast as a percent of MSA Rd. 7	County Employment Sector forecast as a percent of MSA Rd. 7
2000	550,251[3]	552,422[4]	-2,171	-0.39%	2,845,200	19.34%	19.42%
2005	600,522	600,041	481	0.08%	3,050,600	19.69%	19.67%
2010	683,921	686,801	-2,880	-0.42%	3,372,500	20.28%	20.36%
2015	729,596	737,162	-7,566	-1.04%	3,620,600	20.15%	20.36%
2020	774,503	783,572	-9,069	-1.17%	3,842,300	20.16%	20.39%
2025	814,235	825,312	-11,077	-1.36%	4,047,000	20.12%	20.39%
2030	844,597	855,675	-11,078	-1.31%	4,236,900	19.93%	20.20%

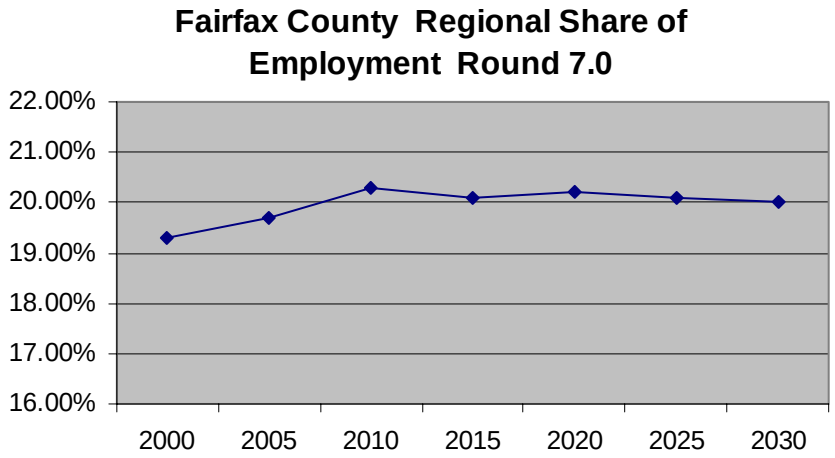
Notes:
1) COG Round 7.0 for Metropolitan Statistical Area (MSA) was adopted by the COG Board in October, 2005
2) This forecast does not include Base Relocation and Closing (BRAC) impact as it was approved by the Federal government after this data was finalized and submitted to COG. However, the growth in this data includes some of the potential utilized by BRAC.

[3] Total does not include employment added by COG for adjusted 2000 employment to 577,000.

[4] VEC actual reported employment for March 2000 adjusted by adding self-employment and military.

FINDINGS

The Round 7.0 employment forecast indicates that Fairfax County's future regional share of employment remains around 19% to 20% of the MSA region. County's regional share grows slightly above 20% by 2010 but it declines after that and remains around 20% thereafter. There is a slight decrease in regional share from 2025 to 2030 when County approaching built-out, indicates that outer jurisdictions growth will absorb jobs and increase their share of employment. This analysis does not include employment added by COG to the base year 2000 and the Base Relocation and Closing (BRAC) impact. However, some of the potential for development at Engineering Proving Grounds (EPG) and Fort Belvoir is accounted for growth that is utilized by BRAC. BRAC was approved by the Federal Government after the local jurisdictions submitted their data to COG for Round 7.0.



Fairfax County's employment is forecast to reach 844,597 jobs by 2030. This will be a 53% increase over 2000 employment and represents an additional 294,345 jobs in the County's economy over the thirty year period (see table 2). Of the major employment forecast components, office-related employment is forecasted to have the greatest increase, increasing by nearly 70% and provide an estimated 207,432 additional jobs. This large increase in office employment shows that the County will continue to be a prime location for office development. The County's industrial sector is relatively small, and future industrial employment is tied largely to warehousing and distribution activities which serve the regional employment base. The County's industrial employment will increase by 19%. Retail activities, which are population-related, are forecast to increase by 40%. Retail employment should add 36,987 jobs to total more than 129,763 workers by 2030. Government/Institutional employment is forecast to increase by 21,102 jobs or by about 27%. The majority of this growth is increases in Federal jobs. Most of this federal growth will be due to the relocation of military personnel affected by the nationwide base closure and consolidation policy through which additional jobs will be located at Ft. Belvoir (both at the main post and the Army's Engineering Proving Ground). The Other category is composed largely of self-employed workers, which includes residentially based employment and is forecast to grow by 18,385 jobs or by 68%.

Table 2: Fairfax County change in Employment by Activity Type for Round 7 (2000-2030)

Type	2000 Employment		2030 Employment		Employment Real Growth (2000-2030)	% Increase (2000-2030)
Office	**298,179**	**54%**	**505,611**	**60%**	**207,432**	**70%**
Industrial	**53,687**	**10%**	**64,126**	**8%**	**10,439**	**19%**
Retail	**92,776**	**17%**	**129,763**	**15%**	**36,987**	**40%**
Govt/Inst	**78,707**	**14%**	**99,809**	**12%**	**21,102**	**27%**
Other	**26,902**	**5%**	**45,287**	**5%**	**18,385**	**68%**
Total	**550,251**	**100%**	**844,596**	**100%**	**294,345**	**53%**

Attachment 1

Round 7 Conversion Table
Sector Employment to COG Land Use Employment

SECTOR	Industrial	Retail	Office	Institution	Others	Total
Manufacturing	100%					100%
Construction	34%		66%			100%
TCPU	25%		70%	5%		100%
Wholesale Trade	90%	5%	5%			100%
Retail Trade		96%			4%	100%
F.I.R.E.			98%		2%	100%
Business Services			98%		2%	100%
Health Services			70%	28%	2%	100%
Other Services		18%	68%	10%	4%	100%
Omitted/Self-Employment	15%	10%	5%	5%	65%	100%
Federal Civilian Govt.			40%	60%		100%
Military Govt.			65%	35%		100%
State & Local Govt.			40%	60%		100%

Attachment II

Non-residential Employment Factors

Land Use Code	Description	GFA sq ft/Employee
	Group Quarters	
71	Rooming and boarding houses	500
75	Religious quarters	500
76	Nursing homes	500
79	Other group quarters NEC (except military and correctional)	500
81	Motel without restaurant and/or other commercial amenities	1300
82	Motel with restaurant and/or other commercial amenities	1300
83	Hotel without restaurant and/or other commercial amenities	1300
84	Hotel with restaurant and/or other commercial amenities	1300
85	Tourist home	1300
89	Other Transient Lodging, NEC	1300
	Industrial Production	
111	Planned industrial park	450
112	Industrial conglomeration	450
121	Durable manufacturing	450
126	Durable manufacturing (where in a condominium devl.)	450
127	Durable manufacturing (where in a cluster devl.)	450
131	Nondurable manufacturing	450
135	Printing and publishing	450
136	Nondurable manufacturing (where in a condo devl.)	450
137	Nondurable manufacturing (where in a cluster devl.)	450
140	Research and testing, where not in office building or office park	350
146	Research and testing (where in condo devl.)	350
147	Research and testing (where in cluster devl.)	350
160	Contract construction	450
166	Contract construction (where in condo devl.)	450
167	Contract construction (where in cluster devl.)	450
190	Other industrial NEC	450
	Transportation, Communication and Utilities (Non-office)	
214	Motor freight transportation	450
215	Street and highway right-of-way	450
216	Auto parking	0
218	Marine terminals	0
219	Other transportation NEC	450
231	Telephone and telegraph	450
232	Radio and television	450

239	Other communications, NEC	450
211	Railroad	450
212	Rail rapid transit	450
213	Bus	450
217	Air	450
221	Utilities, Electric	450
222	Utilities, Gas	450
223	Utilities, Water	450
224	Utilities, Sewage	450
225	Utilities, Solid waste disposal	450
226	Pipeline rights-of-way and pressure control stations, NEC	450
229	Other Utilities	450
	Warehousing and Wholesale (Business Oriented Activity)	
150	Wholesale, warehousing and storage	450
151	Mini-warehouses	450
156	Wholesale, warehousing and storage (where in a condo devl.)	450
157	Wholesale, warehousing and storage (where in a cluster devl.)	450
	Retail Trade	
311	Neighborhood shopping center	400
312	Specialty shopping center	400
313	Community shopping center	400
314	Regional shopping center	400
315	Super regional shopping center	400
316	Promotional shopping center	400
317	Town shopping center	400
318	Condo shopping center	400
320	Building materials, hardware, farm equipment	400
331	Department stores	400
332	Discount stores	400
333	Variety or junior department stores	400
334	Apparel and accessories	400
335	Furniture, house furnishings	400
336	Drug stores	400
337	Condo retail	400
341	Supermarket	400
342	Supermarket plus general merchandise	400
343	Convenience grocery	400
349	Other food NEC (including fruit, meat, fish, etc.)	400
351	Restaurant with alcohol includes a wide range of buildings with a high ratio	150
352	Restaurant without alcohol typified by a high ratio of seats to the building	150
353	Carry-out Kitchen distinguishing characteristic is that there are not seats	150
354	Carry-out with seating generally a fast food operation where the food is partially ready before	150
359	Other eating and drinking NEC	150
361	Motor vehicle sales (new and used)	400
362	Gasoline and service station	10 EMP
363	Gasoline sale only	10 EMP

364	Gasoline sales and car wash	10 EMP
365	Service station out of operation, but not yet converted to another use.	400
369	Other automotive, marine, aircraft, and accessories NEC	400
390	Other retail NEC	400
520	Personal services	400
530	Motor vehicle repair when provided separately from motor vehicle sales deal	400
540	Other repair services	400
550	Veterinary hospitals	400
590	Other consumer and business service land uses NEC	400
821	Private recreation facilities INDOOR	500
	Office Buildings and Selected Services	
410	Office Park	300
421	General low rise office	300
422	Medical and/or dental low rise office	300
425	Condominium office (general, low rise)	300
426	Condominium office (medical and/or dental, low rise)	300
427	Cluster office (general, low rise)	300
428	Cluster office (medical and/or dental, low rise)	300
429	Converted residential office (ex-dwellings which have been totally converted)	300
431	General medium or high rise office	300
432	Medical and/or dental medium or high rise office	300
433	Government leased medium or high rise office	300
435	Condominium office (general, medium or high rise)	300
436	Condominium office (medical and/or dental, medium or high rise)	300
490	Other office NEC	300
510	Finance, insurance, real estate and professional services	300
620	Hospital and health facilities (except nursing homes)	300
	Government Services and Institutional (other than office buildings)	
423	Government leased low rise office	250
424	Government owned low rise office	250
434	Government owned medium or high rise office	250
610	Cemeteries	0
630	Post offices	500
640	Police Stations	500
650	Fire and rescue stations	500
660	Correctional institutions	500
670	Military institutions	500
680	Welfare and charitable services	500
690	Other public and quasi public service land uses NEC	500
710	Churches, synagogues	5 EMP
720	Civic, social, fraternal, professional, business associations	500
730	Libraries	500
740	Permanent exhibitions	500
751	Nursery schools	500
752	Public elementary, intermediate, secondary, high and special	500

	class schools	
753	Private schools	500
754	College, universities	500
755	Special training schools	500
759	Other educational services NEC	500
760	Places of public assembly	500
	Culture and Recreation	
92	Private open space with a planned development or subdivision	0
93	Private open space, not in a planned development or subdivision	0
790	Other cultural and entertainment service and uses NEC	500
811	Private recreation facilities and parks OUTDOOR (except for homeowner association)	500
812	Commercial recreation facilities and parks OUTDOOR open to the public	500
813	Government owned open to public with or without fee OUTDOOR	500
822	Commercial recreation facilities and parks INDOOR open to public	500
823	Government owned open to public with out without fee INDOOR	500
831	Private golf course	500
832	Commercial golf course	500
833	Government owned golf course	500
841	OUTDOOR swimming pools (except homeowners association pools)	500
842	INDOOR swimming pools (except homeowners association pools)	500
850	Boating Marinas	0
851	Condominium Boat slips	0
950	Permanent conservation areas	0
	Resource Production	
910	Agriculture activities and related services	0
920	Forestry activities and related services	0
930	Horticultural activities	0
941	Sand and gravel quarrying	0
949	Other resource production and extraction	0

Introduction

Fairfax County Department of Systems Management for Human Services (DSMHS) annually prepares forecasts of population, households and housing units. The forecasts are prepared using the Fairfax County Comprehensive Plan as a guide and include the Towns of Herndon, Vienna and Clifton. Cities are not included in the forecasts as they are separate jurisdictions in Virginia. The Fairfax County Department of Planning and Zoning (DPZ) provides input on special areas of the county where development of housing units may exceed the county's base Comprehensive Plan due to likelihood of plan options being exercised. These county forecasts, adjusted by Metropolitan Washington Council of Government (MWCOG) staff, form the underlying base for the round 7.0 forecasts contained in this report.

The population, households, and housing unit estimates and forecasts, prepared by DSMHS, are produced using a computer model know as the Urban Development Information System (UDIS). The DSMHS forecast process generally follows a bottom-up approach, incorporating residential development activity and estimating additional potential by determining under-utilized residential land based on planned residential densities according to the Fairfax County Comprehensive Plan. Both short-term and long-term forecasts are produced, each with different methods, with long-term forecasts building upon the short-term figures. DSMHS forecasts reflect projections as of January 1 of each year.

Forecast Methodology

Short-Term Forecasts
The DSMHS short-term forecast horizon is five years into the future. Active residential development is the primary influence on short-term forecasts. Fairfax County's short-term forecasting method assumes that housing units in the "development pipeline" are expected to be built before units that are not presently in that process. Furthermore, housing units in the process of being developed are expected to be completed according to their stage within the process as of January 1.

The general stages considered are:

1) units under construction;
2) units with building permits issued but not started;
3) units shown on an approved site plan;
4) units shown on a site plan under review;
5) units shown on a development plan proffered as a condition to a rezoning approval; and
6) units shown on a proposed development plan submitted with a rezoning application under review.

Short-term population and household forecasts are derived from the housing unit forecasts. DSMHS determines small area housing unit vacancy rates from an analysis of active and inactive water accounts and rental complex management surveys. Small area household size assumptions are developed from Census and survey data. These vacancy rate and household size assumptions are applied to housing unit forecasts to calculate

households (occupied housing units) and household population. Group quarter's population is acquired by contacting the individual facilities. Group quarter's population is added to the household population to get the total population for the county. The vacancy rates and group quarters population are held constant for the long-term forecasts.

Long-Term Forecasts

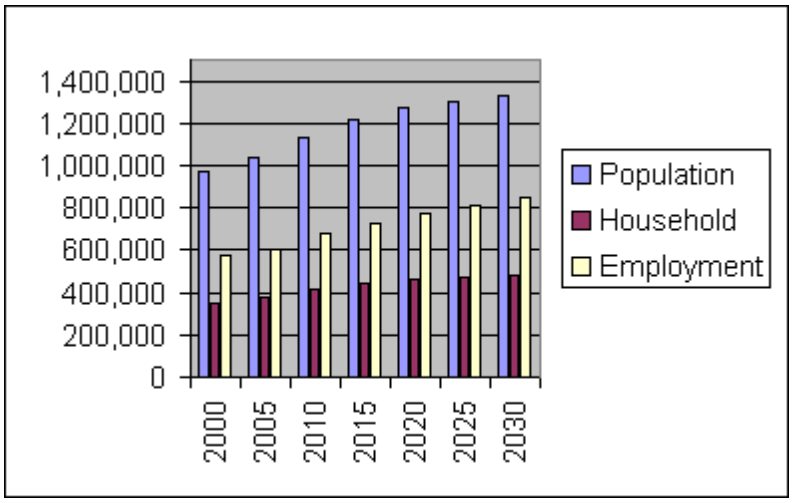
The DSMHS long-term forecast horizon is beyond five years in the future. After housing units in the development process are forecast to be completed, areas either reach buildout (no additional capacity exists for residential development according to planned land uses and densities in the currently adopted Comprehensive Plan) or have additional capacity for residential development remaining on vacant or underutilized land. Additional housing capacity beyond the base plan is forecast over the long-term using information about plan options and recent development activity occurring within the area. DSMHS calculates long-term population and household forecasts by applying vacancy rate and household size assumptions to the long-term housing unit forecasts.

Based on general planned land use designations from the Comprehensive Plan effective January 2004, buildout is expected to occur between 2010 and 2015 for land planned for medium to higher density residential development (townhouses and multifamily). Lower density residential development is expected to continue throughout the forecast period (through 2025).

Although DSMHS forecasts are constrained by the current Fairfax County Comprehensive Plan, the number of housing units at residential buildout is likely to change over time for a variety of reasons. Comprehensive Plan updates, redevelopment, conversion of land uses, and other factors will likely allow housing development to continue beyond the current general capacities suggested by the present Fairfax County Comprehensive Plan. However, the areas that will be re-planned and/or redeveloped and the extent of these changes are presently unknown. Consequently, the DSMHS forecasts for the years 2015, 2020 and 2025 were increased by MWCOG staff to account for this possible re-planning and redevelopment. The result of these additions increased the Fairfax County 2025 housing unit forecast by approximately 40,000 units. These housing units were allocated across the county in proportion to the area's planned residential development activity and potential.

COG Round 7.0 Cooperative Forecasts for Fairfax County, Virginia
2000 - 2030

	2000	2005	2010	2015	2020	2025	2030
Population	969,800	1,041,200	1,133,000	1,221,000	1,276,300	1,304,000	1,331,200
Household	353,100	377,600	411,500	442,700	462,600	472,600	482,400
Employment	577,000	600,500	683,900	729,600	774,500	814,200	844,600
Group Quarters Population	15,568	13,781	13,781	13,781	13,781	13,781	13,781
Vacancy Rate	1.6	2.2	2.2	2.2	2.2	2.2	2.2
Average Household Size	2.69	**2.72**	**2.72**	**2.73**	**2.73**	**2.73**	**2.73**


1,400,000
1,200,000
1,000,000
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2000
2005
2010
2015
2020
2025
2030
Population
Household
Employment

LOUDOUN COUNTY

Background

Developing the COG Round 7.0 household, population and employment projections for Loudoun County required the analysis of regional and historical trends and the assimilation of an array of inputs and assumptions related to residential absorption, employment growth, household size and vacancy rates. All Round 7.0 population, household, and employment forecasts are based on: Census 2000 baseline; existing development; future development consistent with the adopted Revised Comprehensive Plan and area plans that constitute development policies for guiding future growth in the County; transportation improvements, including the proposed Metro line extension along the Greenway); and other approved and/or planned land and transportation developments. These factors were considered along with anticipated market conditions that will guide the timing of future development as the forecast period unfolds.

As the fastest-growing jurisdiction in the Washington region and in the Commonwealth of Virginia, Loudoun County is situated to register sustained growth during the forecast period. Fueling this trend are significant market interest (both residential and commercial), improved accessibility, and the overall strong economy of Northern Virginia.

Growth in Loudoun County in recent years, along with the Board of Supervisors adopting the Revised Comprehensive Plan in 2001, has necessitated a revisit of previous forecasts, prompting an adjustment in them to reflect these trends. The Round 7.0 forecasts, are higher for all three components (households, population, and jobs) than those approved in previous rounds. Table 1 compares the Round 7.0 forecasts with the Round 6.4 forecasts.

Table 1: COG Cooperative Forecasts Loudoun County, Virginia
Round 7.0 v. Round 6.4

Population

Round	2000	2005	2010	2015	2020	2025	2030
6.4	169,599	243,500	311,800	373,700	417,600	445,100	462,100
7.0	169,599	247,300	318,100	379,600	422,900	454,900	480,600
Change	0	3,800	6,300	5,900	5,300	9,800	18,500

Households

Round	2000	2005	2010	2015	2020	2025	2030
6.4	59,900	86,300	110,500	132,500	148,100	157,800	163,900
7.0	59,900	87,500	112,700	134,400	149,700	161,000	170,200
Change	0	1,200	2,200	1,900	1,600	3,200	6,300

Employment (Jobs)

Round	2000	2005	2010	2015	2020	2025	2030
6.4	87,000	114,500	141,600	170,800	199,900	229,000	258,100
7.0	90,500	122,700	153,700	183,800	212,900	242,000	271,200
Change	3,500	8,200	12,100	13,000	13,000	13,000	13,100

Forecast Methodology

1. Residential Forecasts

Loudoun County is divided into 10 planning districts, or Planning Subareas, that are defined in the County's Revised Comprehensive Plan. These subareas were created to assist in establishing immediate short-range priorities for distinct geographic areas within the County, and they serve as the basis for more detailed planning efforts.

Projections of population and households are produced for each of these Planning Sub-areas through a county-wide fiscal impact analysis efforts. These projections serve as control totals for these areas, and their aggregate value constitutes the countywide forecasts of population and households.

Loudoun County uses a housing unit methodology to develop its residential forecasts. This is based on the contention that it is reasonable to forecast the pattern of future residential development within the County based on approved (pipeline) residential projects and adopted land development policies. Assumptions are then made with respect to the timing of future development, and these are based on an analysis of historical development trends as well as current and expected market conditions in both Loudoun County and in the Washington region. This approach yields projections of housing units in the County.

Once this is accomplished, household forecasts are developed by applying anticipated future occupancy rates to these units, and population forecasts are developed by applying future persons per household estimates to the households.

Residential Growth/Absorption

An historical analysis of residential growth in Loudoun County revealed that the last 15 years of residential construction would serve as a reasonable baseline upon which to base future development projections. During this time period,

Loudoun experienced a complete development cycle -- the recession of the early 1990s, the moderate growth of the mid 1990s, and the high growth of the late 1990s. There was a brief slow down in both residential and non-residential development in 2001 and 2002, but both sectors have rebounded in the past few years. Non-residential development has not returned to its pre-2002 levels, but residential development has.

The number of building permits issued annually from 1990 to 2005 ranged from a low of 1,100 in 1991 to a high of 6,657 in 2003, for an average of 4,293 during the period. This figure was lowest in the early 90s, but rebounded following the recession. Analysis by the County's Fiscal Impact Committee has shown that Loudoun has recently issued more than 6,000 residential permits for new construction for several years in a row, and this number has consistently increased. Because of these unprecedented levels of new construction, the healthy economic climate of Northern Virginia, and the position of Loudoun County within Northern Virginia, it is assumed that Loudoun will sustain an average of 6,000 residential permits annually for the next two years, falling to 5,000 permits annually through 2010, and then decreasing annually throughout the forecast period based on the policies in the Revised Comprehensive Plan.

Based on the number and unit-type of residential units approved in re-zonings and in the pipeline, and growth assumptions made by the Fiscal Impact Committee, Loudoun County prepared forecasts of new residential units, by unit type, for the forecast period.

These net units were added to existing (base) units in the housing inventory to arrive at a total housing forecast in each of the five-year intervals in the forecast period.

Households

Households are defined as occupied housing units. To obtain the number of households, occupancy rates were applied to the housing unit forecasts. Housing units were broken down into three main unit types: single family detached (SFD), single family attached (SFA), and multifamily (MF).
Different occupancy rate estimates were used for each of these three unit types:

SFD: 95 %
SFA: 95 %
MF: 85 %

Population

Persons per household factors were assumed for each of the three unit types and applied to the corresponding household values to develop the population forecasts. The persons per household factors were based on information obtained from the US Census Bureau. The persons per household factors, by unit type, were:
SFD: 3.13
SFA: 2.64
MF: 1.9

Table 2 shows the residential forecasts for Round 7.0 and the resultant persons per household value (all unit types) for every forecast year.

Table 2: Round 7.0 COG Cooperative Residential Forecasts
Loudoun County, Virginia

	2000	2005	2010	2015	2020	2025	2030
Units	61,160	92,400	119,400	142,700	159,100	170,700	180,400
Households	59,900	87,500	112,700	134,400	149,700	161,000	170,200
Population	169,599	247,300	318,100	379,600	422,900	454,900	480,600
Persons per HH	2.83	2.83	2.82	2.82	2.82	2.83	2.82

2. Employment

This forecast is based on a analysis of regional development and employment dynamics, trends in the industry composition of Loudoun's growing business base, and consideration of new employment projects in the pipeline.

Overview

Loudoun County is experiencing some of the tremendous employment growth that is moving westward from Washington along the Dulles Toll Road and Greenway. This phenomenon, coupled with the changing composition of the region's industrial base -- to information technology and technology services -- is likely to cause Loudoun County to absorb an increasing share of the region's employment growth.

Like the population of the county, employment in Loudoun boomed after the opening of Dulles International Airport in the early 1960s and has continued at an accelerated pace over the past 15 years. In 1990, Loudoun County had 13 million square feet of nonresidential space, compared to the current inventory of just over 61 million square feet. In 2005, 3.8 million square feet of nonresidential construction was permitted.

Methodology

Although Loudoun's Round 6.4 Employment Forecast reflected some of these trends, it did not reflect the magnitude of employment increases that the County is currently experiencing or that is anticipated to continue. The methodology for Round 7.0 employment forecasting efforts included the following elements:

In 2002, Dun and Bradstreet data for Loudoun County was compared to other sources of employment information including Loudoun County business license information, Virginia Employment Commission ES-202 data, information on home-based businesses, and internal databases maintained by Loudoun County Department of Economic Development in support of our existing business service program.

Employment for 2002 was plotted using the County's geographic information system (GIS) and then field checked. This served as the revised baseline for the Round 7.0 projections.

Employment projections were based on an analysis that projected commercial, industrial and institutional space based on projects that were under construction or in the pipeline. Employment factors derived by Loudoun County's Fiscal Impact Committee were used where applicable:

High Density Office:
    2.6 employees per 1,000 SF
Low Density Office:
    2.2 employees per 1,000 SF
Retail:
    1.1 employees per 1,000 SF
Light Industrial:
    1.2 employees per 1,000 SF
Heavy Industrial:
    2.0 employees per 1,000 SF
Other:
    1.19 employees per 1,000 SF

For other projects, such as schools, employment estimates were derived from program capacity projections. Dulles Airport employment estimates were gathered from discussions with Metropolitan Washington Airports Authority (MWAA) regarding employment growth anticipated due to current and projected airport expansion plans. Home-based employment activity was extrapolated from population estimates using current Loudoun County Commissioner of the Revenue information.

Findings

Loudoun's employment growth is anticipated to increase at approximately 5,800 jobs each year. As a long-term projection, this forecast may be conservative in the out years.

The Round 7.0 Employment Forecast is similar to Round 6.4. The main difference is the quicker than anticipated rebound from the recession of 2001. Loudoun has enjoyed one of the lowest unemployment rates in the Commonwealth over the last few years and it is anticipated that this trend will continue for the near term.

New employment development in Loudoun County includes numerous industrial and other (schools, hospitals, hotels, airport support facilities) projects. Loudoun County accounts for 11 percent of the Northern Virginia region's rentable commercial and industrial space. However, Loudoun has a higher percentage of Flex and Industrial space than other Northern Virginia jurisdictions as a result of serving Washington Dulles International Airport.

In addition to identified projects in Loudoun's employment pipeline, some future increases in employment are attributed to speculative office and industrial space under construction. Office vacancy rates have been high since to recession of 2001 due to the construction of these speculative projects, but it is anticipated vacancy rates will decline with the county's low unemployment rates.

As one of the fastest growing County in the US, Loudoun County is also anticipating significant employment increases in retail sales, public safety, and other government services to support the increasing population, as well as more retail, personal services, and, especially, business services to support the growing business base.

Table 3 shows the employment analysis for the Round 7.0 employment forecasts for Loudoun County

Table 3: Employment Forecast Analysis: COG Round 7.0
Loudoun County, Virginia

Comparison of Round 6.4 and Round 7.0 Employment Forecast

	2000	2005	2010	2015	2020	2025	2030	Change 2000 – 2030	
								Number	Percent
Round 6.4	87.0	114.5	141.6	170.8	199.9	229.0	258.1	171.1	196.67%
Round 7.0	90.6	122.7	153.8	183.8	212.9	242.0	271.2	180.6	199.34%
Difference (#)	3.6	8.2	12.2	13	13	13	13.1		
Difference (%)	4.1%	7.2%	8.6%	7.6%	6.5%	5.7%	5.1%		

Note: Employment in thousands

Analysis of Round 7.0 Employment Forecast

	2000	2005	2010	2015	2020	2025	2030
Total Employment	90.6	122.7	153.8	183.8	212.9	242.0	271.2
New Emlyment		32.1	31.1	30	29.1	29.1	29.2
% Change		35%	25%	20%	16%	14%	12%

Note: Employment in thousands

PRINCE WILLIAM COUNTY

INTRODUCTION

Prince William County's forecasts were officially prepared by both the Office of Information Technology's Geographic Information Systems Division and the Planning Department. Personnel from the two agencies noted above, Public Work's Transportation Division, and Economic Development were involved in the forecasting process.

Prince William County includes the Towns of Dumfries, Haymarket, Occoquan, and Quantico within its boundaries, as well as Quantico Marine Base. Prince William County has attempted to coordinate with the towns and the marine base but no official contact or information exchange system has been established. Prince William County does not include the Cities of Manassas and Manassas Park.

Forecasts for households, population, and employment were developed for the time frame of 2000 through 2030 at five year intervals. Each five year period has an effective date of April 1 in order to coincide with the official U.S. Census Bureau decennial census date. The forecasts were prepared using both a top-down and bottom-up methodology. First, top-down analyses of households and population were performed. This involved the evaluation of the County's past and present household and population growth trends. The top-down method also involved an analysis of the residential build-out capacity of the County based on the County's long range land use adopted with the Comprehensive Plan. Using the past and present growth trends and the residential cap, a logarithmic trend curve was created. Based on these analyses, household and population forecast targets were established for each five-year period through 2030. Once forecast targets were established using the top-down method, the bottom-up approach was implemented. The bottom-up approach for forecasting households and population involved identifying the location and amount of housing development permitted since 2000, as well as gathering information on development plans in the pipeline and recent rezonings. This information was used as a basis for identifying the short-term housing and population growth potential for the traffic analysis zones and the overall County. The establishment of long-term housing and population forecasts for the traffic analysis zones and the overall County were based on the adopted Comprehensive Plan's long range land use designations and the associated development densities/intensities, zoning classifications, and an identification of the location and amount of vacant land.

Forecasted targets for employment from 2005 to 2030 were then established. Before proceeding further into the discussion on employment, it should be noted that the term commercial will be used frequently throughout this document. Commercial is defined as any retail, office, industrial, or other business entity. Employment forecast targets were developed. They were developed under the assumption that the ratio of jobs to households would gradually increase between 2005 and 2030. After employment forecast targets were developed, the bottom-up approach was implemented. The bottom-up approach for employment involved identifying the location of commercial developments that had occurred since 2000, as well as gathering information on development plans in the pipeline. This information was used as a basis for identifying

where and how much employment growth occurred or would likely occur in the short-term. The adopted Comprehensive Plan's long range land use designations, zoning classifications, as well as the identification of the location and amount of vacant land available were used to establish long-term potential for the traffic analysis zones and overall county employment growth.

The household, population, and employment forecasts that were produced by Prince William County were submitted to COG for their review. COG ran a regional econometric model and the model showed an imbalance between employment and housing for the region. Due to this imbalance, adjustments to regional jurisdiction forecasts were necessary. Adjustments were made to jurisdictions by implying the assumption that comprehensive plan amendments would likely occur by 2030. In past forecasting rounds, the forecasts were restricted to the current comprehensive plan and its policies. The need and reality of amendments occurring to the Comprehensive Plan is recognized, but where such amendments will occur and what will be built can not be predicted. Since the forecasts are updated yearly, adjustments have always been made to the forecasts to reflect CPA amendments as they are approved. To further account for the regional housing and employment imbalance, adjustments were also made by adding self-employed at home workers to the 2000 employment base and forecasted years. In past rounds, counts of self-employed at home workers were not included in the base year or the forecasted years because they were not part of federal, state, and private employment data sets. During past rounds, the regional jurisdictions and COG felt it was necessary to have data that was fairly consistent with these other employment data sources. However, during the Round 7.0 process, decisions were made by COG and the regional jurisdictions to include self-employment at-home workers in the employment base figures and forecasts for this round and future rounds.

The adjustments that were made to Prince William County's household and population data were completed by COG. Adjustments were made specifically for 2025 and 2030 household and population forecasts to account for the regional imbalance of employment and housing in the latter years. As a result of this modification, the original household and population assumptions and trending that the County established using the top-down and bottom-up approach are only discernable for the 2000 to 2020 time frame.

COG also modified Prince William County's employment data to account for the regional housing and employment imbalance in the initial forecasts. In modifying Prince William County's employment data COG maintained Prince William County Government's 2030 employment forecast but adjusted the employment totals for each five year period from 2000 to 2025. As a result of COG's adjustments to the base year figures as well as to the forecasts for 2005 through 2025, the rate of employment growth that the County originally forecasted was decreased considerably and the employment to household ratio trend that the County believes will occur was not maintained. Prince William County Government expects more employment growth to occur than what is forecasted in Round 7.0.

HOUSEHOLD AND POPULATION FORECASTS

Data Sources

Historic U.S. Census Bureau data was used for housing and population trend analysis. The 2000 base data for the household forecasts reflects the U.S. Census Bureau's reported total for the County. The 2000 base data for population is the U.S. Census

Bureau's reported total for the County with the addition of 474 persons to account for the Adult Detention Center's group quarter population that the U.S. Census Bureau erroneously placed within the City of Manassas jurisdiction boundary due to geocoding error. The Adult Detention Center (jail) is planned for expansion under the current five year Capitol Improvement's Program (CIP). In order to have accurate forecasts to reflect the expansion it was deemed necessary to increase the 2000 base data to accurately reflect this group quarter facility.

Local sources of data that were used to develop the current household and population estimates and forecasts included:

- Permit data from Prince William County Public Works
- Site & subdivision plans
- Approved rezonings from Prince William County's Planning Department
- Comprehensive Plan designations and zoning classifications
- Prince William County GIS data

The County maintains a GIS database that includes information on the housing units permitted, the location of the permitted housing units, and the estimated population associated with each new housing unit. This GIS residential permit database was developed and is maintained by geocoding each permit's housing unit address and estimating the number of households and population associated with each permit. The U.S. Census Bureau's 2000 reported county household size data by housing type, vacancy rates by census tract, population by census block, housing units by census block, and households by census block were used in creating current estimates of households and population. The April 2000 through December 2004 geocoded permits were used as input for deriving the 2005 household and population traffic analysis zone forecasts and for performing a traffic analysis growth trend analysis. The location of housing units in the pipeline and rezonings were mapped using the County's GIS system and the associated traffic analysis zone(s) were then identified. Plans in the pipeline are defined as those housing units under construction, housing units for which building permits have been issued but construction has not yet begun, housing units shown in approved site & subdivision plans, and units associated with rezoning approvals.

Methodology - Households and Household Population

The household and household population forecasts are prepared using both a top-down and bottom-up methodology. The top-down analysis for housing and population involved evaluating the County's past growth trends for households and population. The top-down method also involved an analysis of the residential build-out capacity of the County based on the County's long range land use designations adopted with the Comprehensive Plan. Using the past and present growth trends and the residential cap, a logarithmic trend curve was created. These analyses led to the development of household and population forecast targets for each five-year period through 2030.

Once forecast targets were established, the bottom-up approach was implemented. The bottom-up approach for households entailed deriving household forecasts from the forecasted total number of housing units by housing type. The location, number of units, and type of housing permitted from 2000 through the end of 2004 was identified and then allocated to the appropriate traffic analysis zone. The household estimates for 2000 through 2004 were then derived from the housing unit data under the assumptions that the vacancy rate would be the same as reported at the 2000 census tract level. Household population growth for 2000 through 2004 was then derived from the household forecasts by assuming that single-family, townhome, and multi-family housing types would have the same average household size as reported for the County by the 2000 Census. Next, short-term (January to April 2005, and 2010 and 2015) housing unit forecasts were established using information from development plans in the pipeline and recent rezonings. The number of housing units associated with the pipeline plans and rezoning data were distributed to the appropriate traffic analysis zone. Finally, analyses of growth trends by traffic analysis zones, the identification of the location and amount of vacant land as determined by using the County's GIS system, and the adopted Comprehensive Plan's long range land use designations and the associated development densities/intensities were all used in tandem to distribute housing units to traffic analysis zones. As distributions were being made, the County's targets for the short-term and long-term were taken into account.

Once the housing unit forecasts for the short-term and long-term were established they were converted to household forecasts. The conversion to household forecasts was made by assuming a decreasing vacancy rate over time. The vacancy rates for each five year period are shown in the following table. Prince William County plans to reevaluate vacancy rates in future rounds based on historic trends and current market conditions.

Housing Vacancy Rates							
	2000	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Vacancy Rate	3.6%	3.6%	3.0%	2.7%	2.5%	2.4%	2.3%

Household population forecasts were then derived from the household forecasts under the assumption that a slight decrease over time would occur in average household size by housing type. The following table shows the average household sizes that are forecasted from 2000 through 2030.

Average Household Size							
	2000	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**

Average Household Size	2.94	2.95	2.92	2.89	2.85	2.86	2.84

Methodology - Group Quarters Population

The group quarters data analysis and forecasting initially involved identifying group quarter facilities in the County. After the facilities were identified, an analysis of the U.S. Census Bureau's 2000 Group quarters population data took place. The U.S. Census Bureau's 2000 Group quarters population data was mapped by census block to determine the locations of group quarter facilities that the U.S. Census Bureau had accounted for in the 2000 Census. Prince William County's inventory of Group Quarter's facilities was then cross-checked with the U.S. Census Bureau's data. In this process it was determined that the U.S. Census Bureau had some instances where the group quarters population were geocoded to the wrong census block. The U.S. Census Bureau's reported locations of the facilities were refined by the County by geocoding the locations of the facilities using Prince William County's GIS parcel address data. The 2000 group quarter population associated with each group quarter facility reflects the U.S. Census Bureau's reported group quarter population count. Lastly, the 2000 group quarter populations were allocated to the appropriate traffic analysis zones.

The Adult Detention Center and Quantico Marine Base are the largest group quarter centers in Prince William County. All other group quarters in Prince William County are relatively small. The Adult Detention Center (jail) is planned for expansion under the FY2006-2011 Capitol Improvements Program (CIP). The Adult Detention Center will be at or over-capacity once the expansion is completed. The short-term forecasts reflect this facility expansion. The long-term forecasts show steady growth in its group quarters population to reflect the continued need for more space over time.

Quantico Marine Base is the largest group quarters population center in Prince William County. From 2000 to 2010 growth was forecasted for Quantico Marine Base's group quarter population due to the need for more military personnel at times of war. From 2010 to 2030 the group quarter population growth rate of the marine base was forecasted to be a steady growth rate for each five year period. When the Round 7.0 forecasts were developed there was a lack of information on the impact the Base Realignment and Closure (BRAC) act would have on Prince William County. Therefore, the forecasts for the marine base's group quarters population were very conservative and mainly reflect growth rates that were forecasted to occur exclusive of BRAC. The County anticipates readjusting the Quantico Marine Base group quarters forecasts in future rounds. Apart from the Adult Detention Center and Quantico Marine Base, minimal growth in group quarters populations are forecasted for Prince William County.

Findings

Many residential projects are in the pipeline for Prince William County. Major residential projects in the pipeline are listed in the following table.

Major Projects in the Pipeline
Belmont Bay area mixed use development
Cherry Hill/Harbor Station mixed use development
County Center area mixed use development
Dominion Valley mixed use development

Gainesville Town Center mixed use development
Heritage Hunt mixed use development
Madison Crescent mixed use development
Potomac Club residential development
Potomac Communities Revitalization Plans mixed use development
Wellington Glen mixed use development
Wentworth Green mixed use development

Major transportation projects that will impact the household and population forecasts include the Route 1 corridor improvement projects and Virginia Rail Express (VRE). Forecasts for the Route 1 corridor were adjusted from previous rounds in order to mirror the timing of the Route 1 expansion projects. Virginia Rail Express (VRE) is proposing to expand its service beyond Manassas to Haymarket. This proposed expansion was taken into account during the forecasting process. Due to lack of funding now and in the foreseeable future, the railway expansion to Haymarket is not anticipated to occur until 2030 or thereafter. However, in anticipation of this future expansion of the railway, it is likely that housing developments will be drawn to the area surrounding the railroad well before 2030. Therefore, household growth is forecasted in the vicinity of the railroad expansion.

The high employment, household, and population growth rate that occurred regionally from 2002 through 2005 and continues to occur resulted in underestimations of the County's short-term forecasts in past rounds. The long-term forecasts were also underestimated as a result of this significant growth through 2005. The rapid growth trend that the region and the County has experienced in the past few years and that is predicted to continue in the near term caused the County to increase its growth rates for all the five year periods from 2005 to 2030 in Round 7.0.

Prince William County's initial housing and population forecasts were submitted to COG for review. COG's regional model assumptions required adjustments to regional jurisdiction data. COG modified Prince William County's housing and population data for 2025 and 2030. As a result of this modification, the original household and population assumptions and trending that the County established using the top-down and bottom-up approach are now only discernable for the 2000 to 2020 time frame.

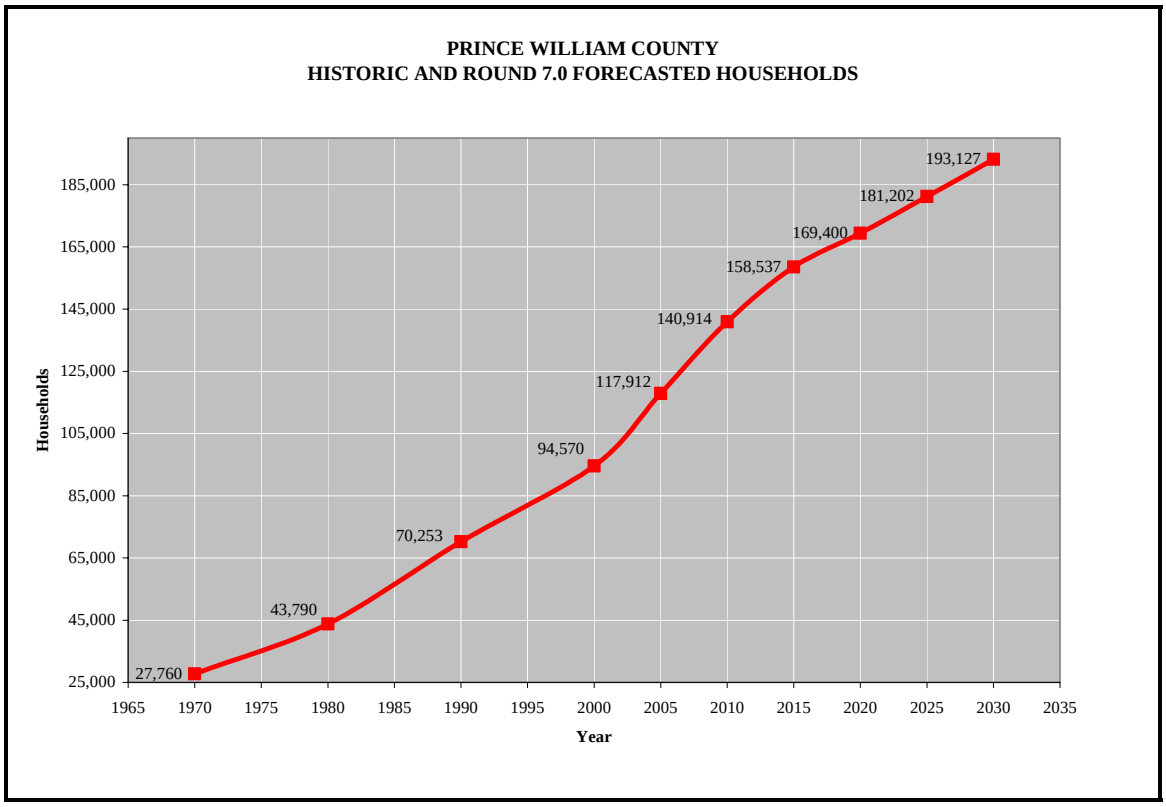
Prince William County's final household and population forecasts for 2000 through 2030 are shown in the table below. The change in population and households for each five year period is also shown in the following table. The charts on the following page are a graphic representation of the historic, current, and forecasted population and households for Prince William County.

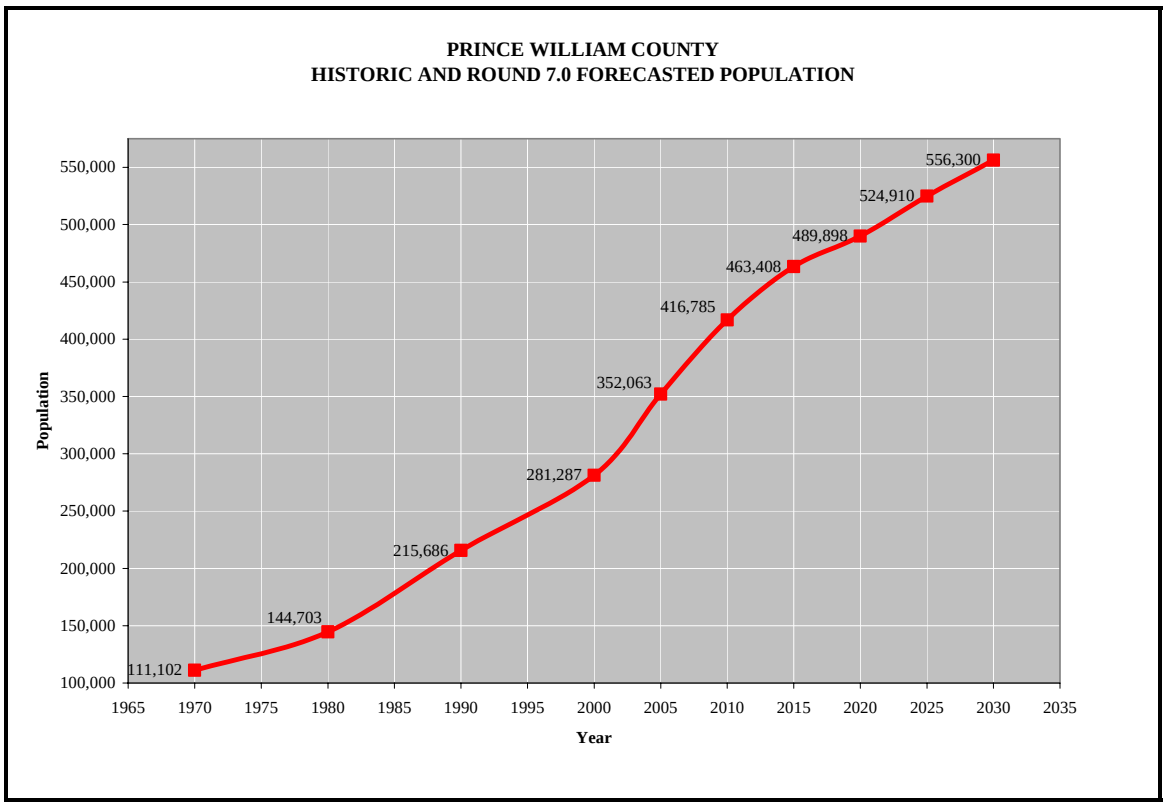
Households and Population							
	2000	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Households	94,570	117,912	140,914	158,537	169,400	181,202	193,127
Household Change in past 5 years	--	23,342	23,002	17,623	10,863	11,802	11,925
Population	281,287	352,063	416,785	463,408	489,898	524,910	556,300

Population Change in past 5 years	--	70,776	64,722	46,623	26,490	35,012	31,390

Prince William County's households are forecasted to reach 193,127 by 2030. This is a little more than twice the number of households that existed in 2000. Prince William County's population is forecast to be over half a million by 2025. By 2030 the County is forecasted to have a population of 556,300, which is almost two times the population in 2000.

The five year change analysis shows the decrease in housing and population growth that the County is predicting will occur for each five year period between 2000 and 2020. The household and population change from 2020 to 2025 and from 2025 to 2030 is forecasted to be higher than the 2015 to 2020 period due to regional housing needs for those time period as predicted by COG's regional econometric model and the assumptions that major comprehensive plans would have occurred by that time. Since the population forecasts are dependent on the adopted Comprehensive Plan and its policies, the housing growth is restricted in some ways after 2015. While we recognize the need and reality of amending the Comprehensive Plan, we cannot predict where such an amendment will occur and what will be built. Since the forecasts are updated yearly, we adjust the forecasts to reflect CPA amendments as they are approved.





Group quarter population is a sub-group of the overall population and forecasts were created for this sub-group. The group quarter population forecasts are listed in the table below.

Group Quarters Population							
	2000	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Group Quarters Population	2,948	3,841	4,731	5,679	6,374	7,202	7,906
Group Quarters Population Change over past 5 year period	--	893	890	948	695	828	704

The group quarter population is forecasted to have steady growth. Most of the growth is associated with the Adult Detention Center and Quantico Marine Base. Apart from the Adult Detention Center and Quantico Marine Base, minimal growth in group quarters populations are forecasted for Prince William County.

EMPLOYMENT FORECASTS

Data Sources

The 2000 base data for the forecasts was derived using multiple sources. Dun and Bradstreet's employment data was used as a starting point. Some modifications to that data were made by Prince William County Government based on local information sources for employment. One of the major modifications to Dun and Bradstreet's data that was made was the addition of government employment. Dun and Bradstreet appears to only account for private industry employment. Therefore, government employment data was obtained from local government sources and used in compiling the 2000 base

data. COG data was also used as a source for the 2000 base data. COG added additional employment that went unaccounted for by Dun and Bradstreet, particularly for self-employed at home workers. Neither Dun and Bradstreet nor Virginia Employment Commission account for self-employed at home workers.

The 2005 to 2030 employment forecasts were derived using the following local government data sources:

- Permit data from Prince William County Public Works
- Prince William County Economic Development Department data
- Site & subdivision plans
- Approved rezonings from Prince William County's Planning Department
- Comprehensive Plan designations and zoning classifications
- Prince William County GIS data

Prince William County's tracking of employment growth from 2000 to the present is not as highly sophisticated as the tracking of residential development at the present time. Prince William County does not currently maintain a GIS database to track commercial construction permitted from 2000 to the present. A non-GIS database is currently used to track employment growth. The locations of new commercial developments were mapped on a case by case basis if the location of the new developments was not known by the forecasting team personnel.

In addition to the local data sources, the short-term forecasts accounted for the recent trends as reflected in the 2000 through 2003 annual average at-place employment figures reported by the Virginia Employment Commission. The following table shows the Virginia Employment Commissions at-place employment data that was available at the time the forecasts were being produced, along with the annual change in at-place employment.

Virginia Employment Commission At-Place Employment

	2000	2001	2002	2003
At-Place Employment	78,084	83,037	85,907	88,775
Annual Change in At-Place Employment	--	4,953	2,870	2,868

COG's estimates and forecasts on self-employed at home workers were included in both the short-term and long-term forecasts.

Methodology

The employment forecasts are prepared using both a top-down and bottom-up methodology. The top-down methodology involved establishing forecast targets for each five-year period through 2030 by assuming that the ratio of jobs to household would gradually increase from 2005 to 2030. The forecasted ratio of jobs to households was predicted to increase from 0.92 to 0.99 for 2000 to 2030 respectively. The top-down methodology also involved an analysis of the build-out capacity of the County based on the County's long range land use plan adopted with the Comprehensive Plan. This top-down approach established forecast targets for each five-year period through 2030. With established forecast targets in place, the bottom-up approach was then implemented.

The bottom-up approach for employment involved classifying employment into four groups: industrial, retail, office, and other. COG's recommendations for employment classifications were based off of NAICS classifications and were reviewed and largely followed for the classification of the County's 2000 employment base data. The 2005 to 2030 forecasts referenced COG's NAICS classification system when it was questionable as to which employment class(es) a business or organization should be placed into.

The bottom-up approach for employment also involved the gathering of information on the location and square footage of newly constructed commercial developments from 2000 through 2004. The square footages were then converted to employment using conversion factors specific to the type of industry. The conversion factors are listed in the table below.

Employment Space Conversion Factors	
	Conversion Factor
Industrial	800 sq.ft./employee
Retail	450 sq.ft./employee
Office	300 sq.ft./employee
Other	No standard

These conversion factors were used as general guidelines, but in some cases they may have been customized. For example, a movie complex is assumed to generate fewer employees than your average retail of 1 employee per 450 square feet, because most of the space in a movie theatre is used for seating. Another example would be high tech industrial data centers. Such data centers employ fewer employees than most industrial establishments**.** Therefore, establishments such as these would have customized conversion factors.

Short-term (2005 through 2015) employment forecasts were derived using various sources and methods. Square footage information from development plans in the pipeline were obtained and converted to employment using the conversion factors as a general guideline. Rezoning cases were examined. If development plans were not available for the rezoning cases, the amount of land acreage rezoned and the allowable densities for development were used to calculate employment. The employment associated with the plans in the pipeline and rezonings were allocated to the appropriate traffic analysis zone. Finally, analyses of growth trends by traffic analysis zones, the location and amount of vacant land as determined from the County's GIS system, and allowable densities based on the County's long range land use plan adopted with the Comprehensive Plan were all used in tandem to distribute employment to meet the County's targets for the short-term and long-term.

<u>Findings</u>

Many projects are in the pipeline that will bring new employment opportunities to Prince William County. Major projects in the pipeline for Prince William County that will increase employment significantly are listed in the following table.

Major Projects in the Pipeline
Belmont Bay area mixed use development
Cherry Hill/Harbor Station mixed use development
County Center area mixed use development
Dominion Valley mixed use development
Gainesville Town Center mixed use development
Heritage Hunt mixed use development
Innovation commercial development
Madison Crescent mixed use development
Potomac Communities Revitalization Plans mixed use development
Quantico Gateway commercial development
Virginia Gateway commercial development
Wellington Glen mixed use development
Wentworth Green mixed use development

In addition to these major projects in the pipeline, Prince William County anticipates that there will be a net increase in employment after 2010 due to the effects of BRAC, particularly in the areas around Quantico and Cherry Hill. Employment growth was anticipated and forecasted for the Quantico and Cherry Hill in previous rounds, but it is now expected to come on sooner than previously anticipated due to the affects of BRAC.

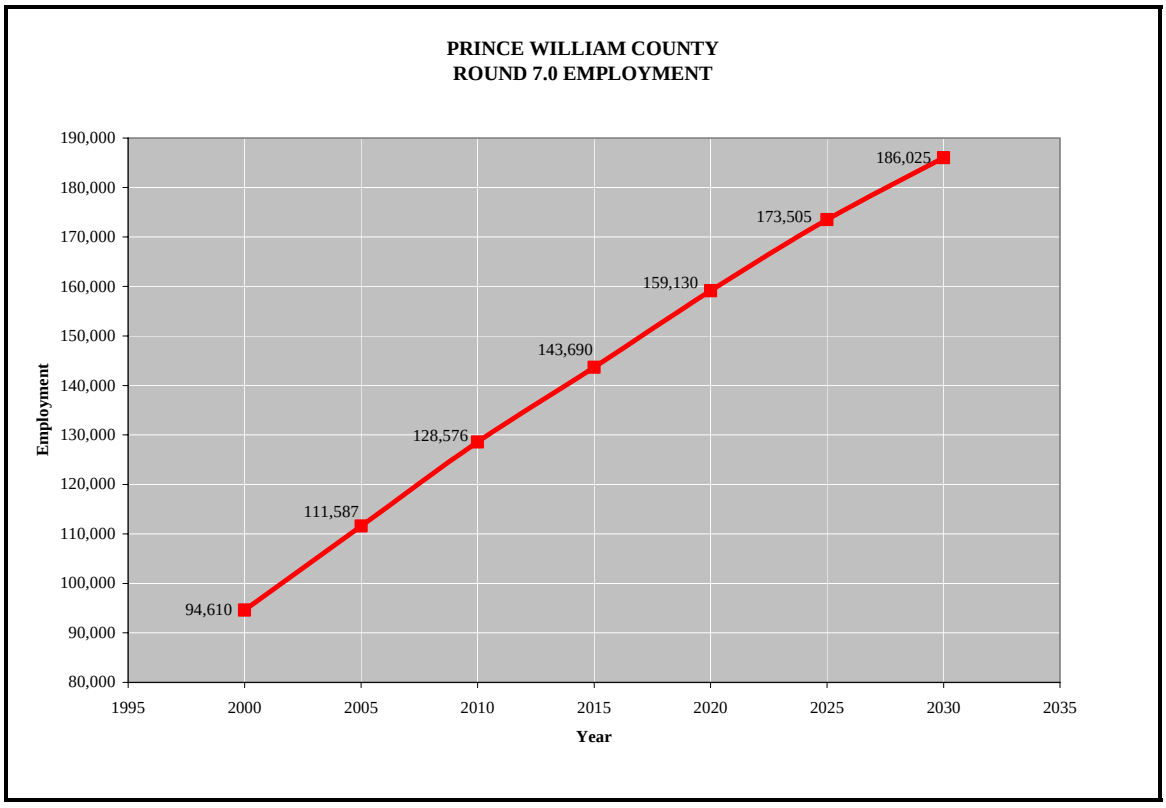
The construction of the 234 Bypass from I-66 to Loudoun County is a major transportation improvement project that will impact Prince William County's employment growth in the long-term because it will shorten the distance to Dulles Airport. The economic growth that is forecasted for the western County is dependent on the construction of this road. Additional interchanges along I-66 and U.S. Highway 29 also need to be built in order for the employment growth to occur in the western portion of the County at the forecasted rates.

Another transportation projects that will impact employment forecasts is the Route 1 corridor improvement project. Forecasts in the Route 1 corridor were adjusted from previous rounds to mirror the timing of the Route 1 expansion projects.

Initial results were reviewed by COG. COG's regional econometric model assumptions required adjustments to regional jurisdiction data. Therefore, COG modified Prince William County's employment data from 2000 to 2030. In modifying Prince William County's employment data COG maintained Prince William County Government's 2030 employment forecast but adjusted the employment totals for each five year period from 2000 to 2025. As a result of COG's adjustments to the base year figures as well as to the forecasts for 2005 through 2025, the rate of employment growth that the County forecasts were decreased considerably and the employment to household ratio trend that the County believes will occur was not maintained. Prince William County Government expects more employment growth to occur than what is forecasted in Round 7.0.

Prince William County's final employment forecasts for 2000 through 2030 are shown in the table and chart below. The change in employment for each five year period is also shown in the following table.

Employment							
	2000	**2005**	**2010**	**2015**	**2020**	**2025**	**2030**
Employment	94,610	111,587	128,576	143,690	159,130	173,505	186,025
Employment Change over past 5 years	--	16,977	16,989	15,114	15,440	14,375	12,520



Prince William County's employment is forecast to reach 186,025 by 2030. This is nearly twice the amount of employment that existed in 2000. The employment growth rate from 2005 to 2010 is expected to be similar to the past five year (2000 to 2005). From 2010 to 2030 employment growth rates are forecasted to decrease.

Out of the four employment classification categories (industrial, retail, office, and other) office employment is forecasted to have the greatest increase from 2000 to 2030. The retail employment sector, which comprised of 30.1% of the County's employment in 2000, was the largest sector for employment in the County in 2000 out of the four sectors. In 2000 office comprised of 27.9% of all employment in the County. A steady rate of growth is forecasted for retail, whereas office employment's rate of growth is expected to increase in the later years. Retail is forecasted to remain the largest employment sector in the County until 2020 when office is forecasted to outpace retail. By 2030 retail is expected to comprise of 30.5% and office is forecasted to comprise of 37.0% out of all employment in the County. The industrial and other employment sectors currently are

the smallest employment bases in the County and they are forecasted to remain the smallest.

CHARLES COUNTY

BACKGROUND

The population, housing unit and employment forecasts for Charles County, Maryland are based on the latest Charles County Comprehensive Plan and other County plans, including the Water and Sewer Plan, adopted by the Charles County government.

The Tri-County Council for Southern Maryland (TCC), the statutory regional planning and development agency for Calvert, Charles and St. Mary's Counties, has developed the small-area land use forecasts at the Transportation Analysis Zone (TAZ) level for the three counties since the 1980s. The TCC staff has developed the current small-area land use forecasts (2010, 2015, 2020, 2025, and 2030) for Charles County in cooperation with the Charles County planning staff and County economic development officials.

Several important factors have been considered during the preparation of this forecast:

- Major new residential development will be located in the planned development districts primarily in north, northwestern and central Charles County, in addition to the already approved development outside of existing subdivisions;

- Approved and programmed development as well as projects "in the pipeline" have been incorporated in the forecast;

- Military facility consolidation and realignment will continue to have its impact on Charles County's population and employment growth, at least in the near future, but the actual numbers are hard to predict;

- Employment growth will occur mainly in the currently developed portions of the County, including the industrial parks and business parks in Waldorf-St.Charles, White Plains-DeMarr Road, La Plata and other areas identified in the Comprehensive Plan; and

- New and improved infrastructure, including roadways, water and sewer lines, and schools, would encourage the future growth within the planned development districts.

POPULATION, HOUSING UNITS, AND HOUSEHOLDS

In the latest update of Charles County Comprehensive Plan, the County states one of its growth management policies as to "maintain an effective growth management system that accommodates population growth at the rate of approximately 2.0 percent but less than 2.5 percent per year." The current population forecast also reflects the trend toward a relatively slower growth rate in the outer years as the base population increases in Charles County.

The Charles County Comprehensive Plan projects a continued gradual decrease in the County's average household size, following in the general demographic trend in the State of Maryland. Therefore, the growth rate in housing units is projected to be higher than the rate of population growth due to the projected decrease in the average household size.

The Charles County planning staff has been recording the residential building permits issues by the County Government. Additional housing units constructed since 2000 are added to the base of the 2000 Census housing unit numbers. High-density housing units are identified and recorded at the TAZ level for the purpose of population and housing unit forecasting.

TCC and Charles County staff validate the near term housing unit data by of using the *PropertyView*, a geographic database that Maryland Department of Planning (MDP) developed and updated at the annual basis. The county population and household control totals, developed by MDP are incorporated in our small-area forecasting process.

EMPLOYMENT

The current employment trend, a service, retail and construction employment dominated economy in Charles County, would expect to continue in the near and intermediate term, while a new trend, which has been a part of the general employment change in the Southern Maryland Region, has started to develop.

With more high technology-oriented and defense-related employment opportunities become available in
both governmental and private sectors due to the continued relocation of defense contractors and information technology consulting firms into Southern Maryland, Charles County employment would expect to gradually diversify in the long term. Healthcare and personal service related employment opportunities increase as well.

Potential policy changes in the future at the State, regional, and county level to encourage more technology and defense related employment growth in Southern Maryland, in conjunction with the further expansion at both the Charles County Community College and the Southern Maryland Higher Education Center in the Region, and the existence of the State's economic development center in the County would provide extra powerful stimulus to shape the future employment in Charles County.

The employment forecast at the place of work for Charles County is based on the historic employment trends, recent policy changes and the Southern Maryland Region's employment characters. Due to the relatively high rate of net migration into Charles County, local employment growth would continue to be slower than the population growth, at least in the near and intermediate term.

The basis for the employment forecast at the place of work is the statistics from the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. The Maryland State Data Center at the Maryland Department of Planning (MDP) has been using the BEA employment data to develop and update the statewide employment forecasts at the jurisdictional level. Other employment data sources include tabulations of employment records filed with the Maryland Department of Labor, Licensing and Regulation (DLLR), Maryland Department of Business and Economic Development (DBED), labor force and employment estimates prepared by MDP, and information from the County Business Pattern published by the US Department of Commerce, and some proprietary database developed by private companies, including the Dun & Bradstreet. The results from various employer surveys taken in Southern Maryland are also incorporated in this employment forecast.

CALVERT COUNTY

BACKGROUND

The population, housing unit and employment forecasts for Calvert County, Maryland are based on Calvert County Comprehensive Plan and other County plans, adopted by the Charles County government and municipal governments of North Beach and Chesapeake Beach.

The Tri-County Council for Southern Maryland (TCC), the statutory regional planning and development agency for Calvert, Charles and St. Mary's Counties, has developed the small-area land use forecasts at the Transportation Analysis Zone (TAZ) level for the three counties since the 1980s. The TCC staff has developed the current small-area land use forecasts (2010, 2020, and 2030) for Calvert County in cooperation with the Calvert County planning staff and County economic development officials. Major employers of the County are contacted.

Several important factors have been considered during the preparation of this forecast:

- Major new residential and employment development will be concentrated in eight Town Centers throughout the County;
- Approved and programmed development as well as projects "in the pipeline" have been incorporated in the forecast;
- Military facility consolidation and realignment will continue to have its impact on Calvert County's population and employment growth, at least in the near future, but the actual impact is expected to be much less than the previous round of BRAC;
- Employment growth will occur mainly in the currently developed portions of the County, including the County Industrial Park and other Town Centers identified in the Plan; and
- New and improved infrastructure, including roadways, water and sewer lines, and schools, would encourage the future growth within the planned Town Center boundary.

POPULATION, HOUSING UNITS, AND HOUSEHOLDS

Calvert County has identified eight Town Centers in the County Comprehensive Plan as the primary development areas for the future growth in the County. The eight Centers are Dunkirk, Owings, North Beach-Chesapeake Beach, Huntingtown, Prince Frederick, St. Leonard, Lusby and Solomons. The Calvert County Comprehensive Plan recommends that future residential development be located in and around the Town Centers. The Plan allows higher density residential development within a one-mile radius of Town Centers when developers purchase Transfer of Development Rights (TDRs).

The current population and housing unit growth projection is based on the adopted zoning code. The estimated growth rate is expected to be slower in the outer years after

2010. The Comprehensive Plan recommends the total population and housing unit numbers to be reduced under the current zoning. As the growth slows down in the outer years, a reduction in the ultimate build-out is possible.

The County expects a continued gradual decrease in the average household size from the current level, following in the general downward trend in the State of Maryland. Therefore, the growth rate in housing units is projected to be higher than the rate of population growth, due to the projected decrease in the average household size.

The Calvert County planning staff has been recording the residential building permits, issues by the County Government. Additional housing units constructed after the 2000 Census are added to the base of the Census housing unit numbers during the development of this small-area land use forecast. Retirement communities, senior centers and other residential places with higher density are identified and recorded at the TAZ level for the purpose of population and housing unit forecasting.

TCC and Calvert County staff validate the near term housing unit data by of using the *PropertyView*, a geographic database that Maryland Department of Planning (MDP) developed and updated at the annual basis. The county population and household control totals, developed by MDP are incorporated in our small-area forecasting process.

EMPLOYMENT

The current employment trend, a service and retail employment dominated economy in Calvert County, would expect to continue in the near and intermediate term, while a new trend, which has been a part of the general employment change in the Southern Maryland Region, has started to develop.

With more high technology-oriented and defense-related employment opportunities become available in
both governmental and private sectors due to the continued relocation of defense contractors and information technology consulting firms into Southern Maryland, Calvert County employment would expect to gradually diversify in the long term. Healthcare and personal service related employment opportunities increase as well.

With help of many economic development programs, Calvert County expects to attract more technology firms to move into the County. Calvert County has also adopted a policy to identify several “target market industries” to attract, including defense-related services, non-defense professional services, computer programming, software development and related services, and administrative services.

Potential policy changes in the future at the county level to encourage more technology and defense related employment growth, in conjunction with the future expansion of both the College of Southern Maryland (Prince Frederick Campus) and the Southern Maryland Higher Education Center, would provide extra powerful stimulus to shape the future employment in the County.

Calvert County Industrial Park, one of 13 Maryland State Enterprise zones and the only one in Southern Maryland Region, is located near the Patuxent River Bridge off MD 231. It has been the area for the County to encourage future economic development taking place.

Solomons has been traditionally a major tourist attraction in Southern Maryland Region, and dominated by the tourism-oriented employment. With growth in this type of employment, marine services and retail employment are expected to grow as well.

Calvert Cliffs Nuclear Power State, a Baltimore Electric and Gas Company subsidiary, is and will continue to be the County's largest single private employer.

Prince Frederick, the Calvert County seat, has had the County's biggest public and private employment concentration. According to the County's Comprehensive Plan, this area will continue to provide the most employment opportunities in governmental, healthcare, educational, professional services, retail, and personal services sectors. A Calvert County Campus of College of Southern Maryland recently opened near Prince Frederick.

Lusby Town Center continues to be among one of the fastest growing areas in the County. It is planned for both residential and employment growth dominated by both office, service, and retail employment.

Dunkirk has been growing into a major residential and employment center in the northern Calvert County. As a town center, Dunkirk will continue to be a major employment area for retail and service jobs.

The employment forecast at the place of work for Calvert County is based on the historic employment trends, recent policy changes and the Southern Maryland Region's employment characters. Due to the relatively high rate of net migration into Calvert County, local employment growth would continue to be slower than the population growth, at least in the near and intermediate term.

The basis for the employment forecast at the place of work is the statistics from the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce. The Maryland State Data Center at the Maryland Department of Planning (MDP) has been using the BEA employment data to develop and update the statewide employment forecasts at the jurisdictional level. Other employment data sources include tabulations of employment records filed with the Maryland Department of Labor, Licensing and Regulation (DLLR), Maryland Department of Business and Economic Development (DBED), labor force and employment estimates prepared by MDP, and information from the County Business Pattern published by the US Department of Commerce, and some proprietary database developed by private companies, including the Dun & Bradstreet. The results from various employer surveys taken in Southern Maryland are also incorporated in this employment forecast.

FREDERICK COUNTY

Methodology for Round 7.0 MWCOG Household, Population and Employment Forecasts.

I. Introduction

The Planning Division of Frederick County is responsible for the preparation of the Round 7 Washington Metropolitan Council of Governments Forecasts. The forecasts were prepared using a multitude of informational sources from such agencies as the Frederick County Division of Planning, Frederick County Office of Economic Development, Frederick County Department of Development Review and Permitting, the City of Frederick, and various Maryland State agencies. The Frederick County Division of Planning's subdivision pipeline database, comprehensive plans, current zoning maps, and knowledge of staff were mainly utilized to prepare the household and population forecasts. The Frederick County and Frederick City Permitting Departments supplied the issued permit information that was used for the short-term household and population estimates. The City of Frederick recently completed an Economic Profile of the City. This study was conducted by HNTB Corporation and the results were used to help analyze the employment information within the City of Frederick. Also used in the employment forecasts, was a jobs database prepared and maintained by the Office of Economic Development for Frederick County.

The forecasts for the entire county and the TAZs were produced on a top down basis. The information for the base 2000 year was received from the US Census and using different state data sources the forecasts was produced. Based on decisions by the Planning staff the econometric model was not used in consideration of our county level forecasts. We decided that relying on the local comprehensive plans, development capacities, and historic trends was a better fit for our methodology.

Keeping the outline of previous forecasting rounds, historic trends and the US Census Data were utilized. One major difference in the methodology of Round 7.0 and previous rounds was the use of GIS. We used GIS to compare the TAZ level data and analyze the distribution of households, population, and employment.

II. Households and Population Forecasts

The base year for the household and population forecasts was obtained by using the 2000 US Census totals. For the 2005 forecast numbers, we used issued permit data. By geo-coding the permit addresses we were able to allocate the distribution of households in the County and then estimate the population based on average household size for each TAZ. For the 2010 and 2015 forecasts, we used our development pipeline database. Factoring in when approval would take place and how many lots had been approved and how many lots were left. For the 2020 to 2030 forecasts, we employed the comprehensive plan and the knowledge of the planning staff. We determined the percentage of each type of zoned land in each TAZ and allocated the households and population based on these percentages. The planning staff had a lot of input at this stage, since many of them have a more intimate knowledge of the projects and plans for their assigned planning region.

The average household size was used to calculate the population totals. We allocated the households using the methodology described above and then used TAZ specific average

household sizes to calculate the population totals. One of the problems we ran into when examining the Round 6.4 numbers was that the average household size associated with the TAZs were not correct. We tried to correct this issue by assigning TAZ level average household sizes based on the US Census and making more localized decisions on how the average household size would change within each TAZ. The group quarter population was received from the US Census. At this time there is no tracking of age-restricted communities, correctional facility expanses, or other such facilities. Because of this, we decided to make the group quarter population, obtained from the 2000 Census, consistent throughout the forecasting period.

III. Employment Forecasts

The employment data tracked through Frederick County is very limited. When creating these forecasts the Planning Division relied on information from the Frederick County Office of Economic Development, Bureau of Labor Statistics, Maryland Department of Planning, Maryland Department of Labor and Licensing, and the Dunn & Bradstreet data. The County base year total was developed by averaging the Maryland Department of Planning, Maryland Department of Labor and Licensing, Bureau of Labor Statistics, Dunn & Bradstreet, and the employment database maintained by the Office of Economic Development. Using the totals received by the Department of Labor and Licensing we applied an annual job growth rate of 4.3% to the 2005 and 2010 employment figures. For the subsequent forecast periods we assumed a decreasing employment rate of 200 less jobs for each forecast period. We applied this rate to the base totals and then averaged these values with the Maryland Department of Planning's employment projections. The averaged result were the employment totals we used for the County. The TAZ level information was calculated by allocating the County totals based on geo-coded information and the comprehensive plan.

Frederick County Round 7 Totals

Year	Households Rnd 7	Household Population Rnd7	Total Population Rnd 7	Total Employment Rnd 7
2000	70,060	190,622	195,277	100,679
2005	79,493	216,221	220,876	122,162
2010	87,708	238,566	243,220	142,412
2015	95,923	260,911	265,566	151,456
2020	104,139	283,258	287,913	158,278
2025	111,181	302,412	307,067	163,464
2030	118,224	321,569	326,224	167,257