

**Fairfax County Employment Forecast
Methodology
For COG Round 8 Technical Report**

By

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FAIRFAX COUNTY EMPLOYMENT FORECAST METHODOLOGY

The Policy and Plan Development Branch of the Department of Planning & Zoning used the established top-down/bottom-up method used in previous rounds of the Cooperative Forecast to prepare the Round 8 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 2040, 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). COG's regional econometric model was used to provide targets for the County's employment forecasting process. This econometric model was prepared by George Mason University (GMU) and provided regional control totals for the Round 8 Cooperative Forecast based on projections by Global Insight.

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 the first quarterly report; (2) Fairfax County Department of Neighborhood & Community Services (DNCS) population forecast; and (3) COG's econometric model's regional employment forecast.

The VEC employment data is organized by major employment sectors. VEC had been using the two digit Standard Industrial Classification (SIC) Codes for all employment sectors. In January 2002 VEC began to report their data according to the North American Industry Classification System (NAICS). This change impacted several employment sectors where job groupings were changed or new sectors were established such as information, financial activities, and leisure and hospitality. VEC adjusted its historic data going back to 1990 from SIC Codes to NAICS and provided numbers of jobs by the new sectors. This change could not provide the long term trends for many sectors but provided short term trends for Round 8 growth projections. Sector level historic trends were established using this data. These employment sectors are as follows:

- Construction
- Manufacturing
- Transportation and utilities
- Wholesale trade
- Retail trade
- Information

- Financial activities
- Professional and business services
- Education and health services
- Leisure and hospitality
- Other services
- Federal government
- State & local government

The VEC data were used to provide a historic record of employment for Fairfax County from 1990 through 2008. 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, education and health services, the Fairfax County Department of Neighborhood and Community Services (DNCS) population forecast was multiplied by historic, industry-specific ratios of employees per thousand population to estimate future growth.

For those employment sectors which are associated with regional employment growth such as professional and business services and financial activities, 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 based employment categories used by COG, by means of the conversion table included as Attachment I.

BOTTOM-UP FORECAST

After the "top-down" methodology established Countywide forecast targets for each five-year forecast period through 2040, 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 an 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:

- 2005 Dunn 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.
- Fairfax County Department of Planning & Zoning Comprehensive Plan development potential data bases including Capital Improvement Projects (CIP) and Land Development System (LDS).
- Other data on institutions such as hospitals, schools, George Mason University, the Fort Belvoir army base, and local governments. This data was based on short-term and long-term development plans obtained by staff from the Fairfax County Department of Planning & Zoning (DPZ), who contacted each agency.
- Fairfax County Department of Public Works & Environmental Services' data for pipeline projects including under construction and in approval process.

In 2008-09 the COG Transportation Planning Department updated the traffic analysis zones (TAZ) with input from local jurisdictions. Staff from the Fairfax County Department of Planning & Zoning worked with other county agencies, including the Department of Transportation and the Department of Neighborhood & Community Services, in reviewing and adjusting the boundaries of the TAZs. Several new TAZs were created based on new development patterns. Also, development center boundaries were adjusted to better match with TAZ lines. The new TAZs and adjustment of existing TAZ boundaries increased Fairfax County's TAZs from 344 to 526. However, the TAZ adjustment process created a new challenge with respect to merging the base year 2005 employment data into the new zone system. The county's Geographic Information System (GIS) was used to facilitate allocation of jobs to each TAZ.

COG provided the local jurisdictions with employment data at the TAZ level from Dunn and Bradstreet (D&B) to use for the 2005 base year. A general review indicated that the Dunn and Bradstreet data was not of a quality which could be used as base information for 2005 employment for each of the County's 526 Traffic Analysis Zones (TAZ's). As a result, the Policy & Plan Development Branch performed a detailed and comprehensive review of the base year 2005 data using the County's Geographic Information System (GIS). Non-residential data of built gross floor area for each parcel was grouped into COG employment categories of office, retail, institutional and industrial use. This built gross floor area was converted into an estimate of jobs per building, using factors for employees per square foot. This exercise provided employment capacity estimates by each existing building. Each building's employment was adjusted based on vacancy rates provided by EDA. This extensive review and comparison of the two data sources, Dunn & Bradstreet and DPZ land use based employment, was performed for each traffic analysis zone (TAZ) and resulted in improved data for 2005 employment.

The Department of Tax Administration keeps detailed records of non-residential uses in the County. These records were used as the basis for 2005 to 2010 job growth. The Fairfax County Economic Development Authority (EDA) also provided data on existing, under construction, and planned office, hotel and industrial buildings. In addition, EDA provided information on absorption trends and space currently available for lease. Analysis of the EDA data provided the basis for estimating employment distribution resulting from office, industrial and hotel absorption between 2005 and 2010.

The Department of Public Works & 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 2010 to 2015. Zoning data resulting in land use change or an increase in the density for future developments was retrieved from the DPZ land development system known as the Zoning and Planning System (ZAPS). These data sources helped in estimating potential growth from 2010 to 2015 and, in some cases, to 2020.

The Base Realignment and Closure (BRAC) Act of 2005 will have a significant impact on the southern part of the County where the Fort Belvoir army base is located. Originally 22,000 jobs were to be moved to Fort Belvoir by 2011. Later, a decision was made to reallocate 6,400 jobs from Fort Belvoir to the Mark Center in the City of Alexandria. This and other decisions reduced Fort Belvoir's share to 14,000 jobs. These jobs, and the resulting growth in nearby areas, have been considered in the 2010 to 2020 time frame.

For evaluating long-term potential between 2015 and 2040, the County's Comprehensive Plan was used to establish build-out caps that the 2040 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.

FINDINGS

Table 1 compares Fairfax County's Round 8 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 within approximately one percent of the employment sector growth targets for all forecast years. The Top-Down forecast was conducted earlier than the Bottom-Up forecast. At the time the Top-Down forecast was completed, the severity of the economic downturn was not known. As a result, the Top-Down forecast for the years 2005 and 2010 was more optimistic than the Bottom-Up forecast for those years. However, by the year 2020, the Bottom-Up forecast is for slightly higher employment than the Top-Down forecast.

Table 1 also 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.

Finally, Table 1 indicates that Fairfax County's future share of employment remains between 19% to 20% of the MSA region as a whole. The County's regional share peaks at 20% in 2020 and shows a slight decline to 19.2% by 2040.

**Table 1: Comparison of Fairfax County Round 8
Small Area (TAZ) and Employment Sector Forecasts**

Year	Small Area Forecast	R 8 Employment Sector Forecast)	Job Difference	Percent Difference	COG Rd.8 Forecast	County Small Area forecast as a percent of MSA Rd. 8	County Employment Sector forecast as a percent of MSA Rd. 8
	(Bottom up)	(Top Down)			Regional		
2005	602,000	601,500	500	0.1%	3,052,100	19.7%	19.7%
2010	641,000	646,950	-5,950	-0.9%	3,214,700	19.9%	20.1%
2015	684,800	695,789	-10,989	-1.6%	3,439,100	19.9%	20.2%
2020	743,700	736,825	6,875	0.9%	3,717,800	20.0%	19.8%
2025	781,600	776,171	5,429	0.7%	3,944,600	19.8%	19.7%
2030	812,500	805,204	7,296	0.9%	4,138,300	19.6%	19.5%
2035	837,900	833,025	4,875	0.6%	4,317,300	19.4%	19.3%
2040	861,800	858,487	3,313	0.4%	4,481,600	19.2%	19.2%

Fairfax County's employment is forecasted to reach 861,800 jobs by 2040. This represents an additional 260,000 jobs in the County's economy over the thirty-five year period from 2005 to 2040 (see Table 2). Of the major land uses, office-related employment is forecasted to have the highest amount of growth, increasing by nearly 61 percent and providing an estimated 197,000 additional jobs. This large increase in office employment shows that the County will continue to be a prime location for office development.

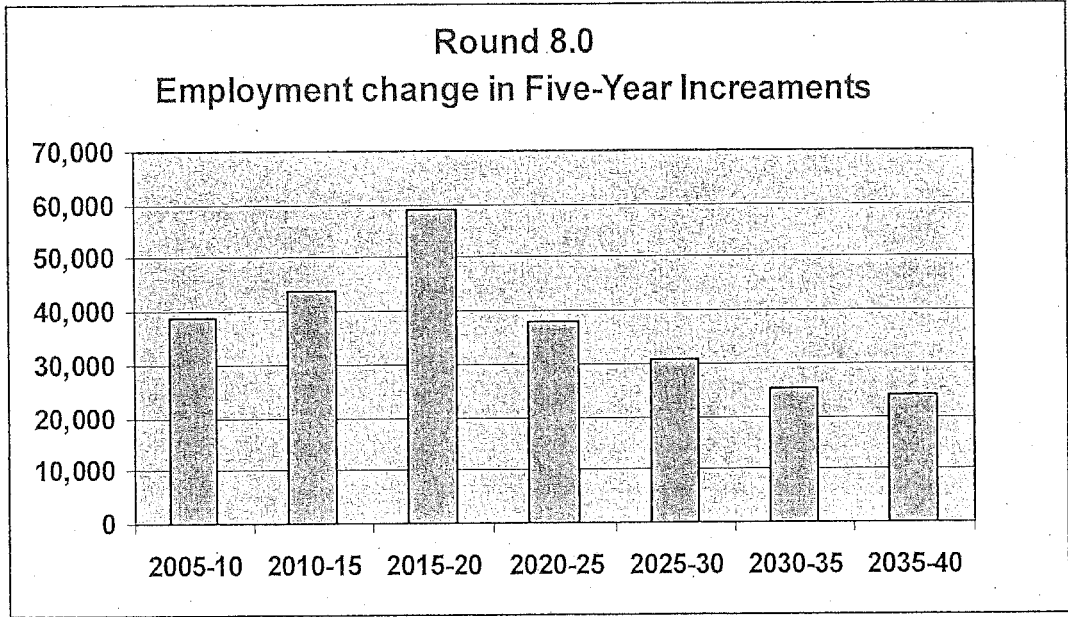
The County's industrial sector is relatively small, and future industrial employment is tied largely to warehousing and distribution activities which serve the regional employment base. The County's industrial employment will increase by 17 percent. Retail activities, which are population-related, are expected to increase by 27 percent. Retail employment should add 28,000 jobs to reach more than 132,000 workers by 2040. Government/Institutional employment is forecasted to increase by 16,700 jobs or by about 19 percent. The majority of this growth is in federal jobs due to the relocation of Department of Defense personnel. In Fairfax County, most of the additional jobs will be located at Ft. Belvoir, both at the Main Post and at the Fort Belvoir North Area (formerly known as the Engineer Proving Ground). The Other category is composed largely of self-employed workers, which includes residentially based employment and is forecast to grow by 6,335 or 22 percent.

**Table 2: Fairfax County change in Employment
by Employment Type for Round 8 (2005-2040)**

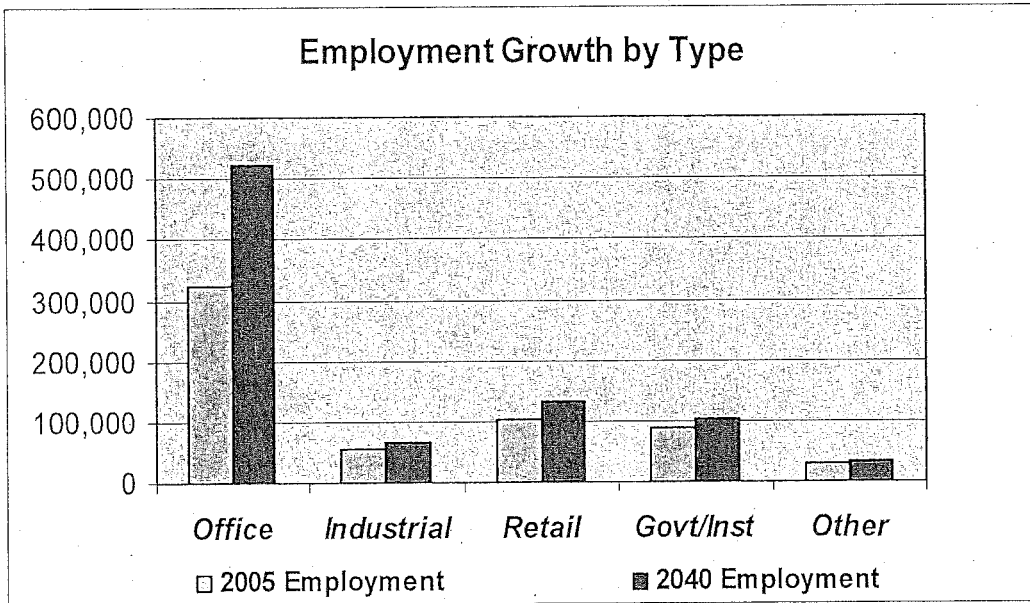
Type	2005 Employment		2040 Employment		Employment Real Growth (2005-2040)	% Increase (2005-2040)
Office	325,735	54%	523,194	61%	197,459	61%
Industrial	56,722	9%	66,604	8%	9,882	17%
Retail	104,311	17%	132,678	15%	28,367	27%
Govt/Inst	87,672	15%	104,377	12%	16,705	19%
Other	28,514	5%	34,849	4%	6,335	22%
<i>Total</i>	601,930	100%	861,702	100%	259,772	43%

Employment Change in Five-Year Increments:

Job growth slowed between 2005 to 2010 due to economic conditions in the region and the country at large. Although the County added almost 39,000 jobs during this 5 year period, most of this growth was in the early part of the 5 year period. In the latter part of this period, not only did the growth stop, but some of the gains were lost. However, growth is expected to return and continue through the time period of 2010-15, though at a slower pace. Significant job growth is expected between 2015 to 2020, with the growth slowing in later years as the county approaches its build out potential.

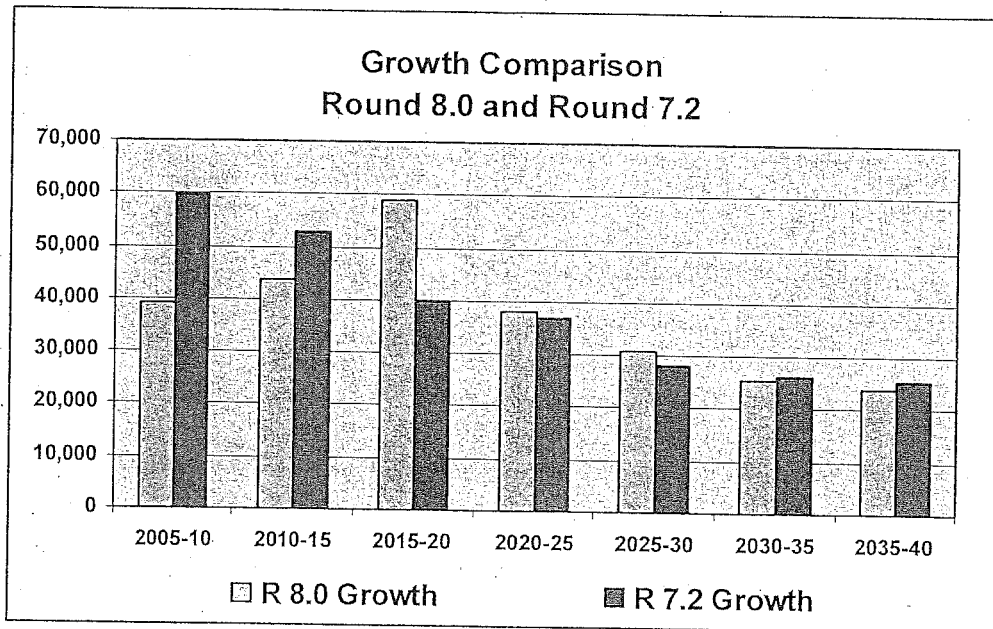


A comparison of jobs by land use indicates that the County will have significant growth in office jobs. Retail and government jobs are impacted by growth in population along with other factors.



Employment Growth Changes Between Round 7.2 and Round 8.0

Round 8.0 employment reflects the impact of the recent economic downturn on local job growth. The previous Round 7.2 was based on an econometric model used in round 7.0, which reflected the economic trends and growth of early 2000. Review and comparison of growth in these two rounds show that the current slump in economic activity does not have a long term impact on growth. Job growth in later years of the respective rounds is quite similar for both rounds. Job growth that was expected between 2005 to 2010 is delayed between 2015 and 2020.



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%