



*Prince William County
Forecast Methodology*

Cooperative Forecasting and
Data Subcommittee

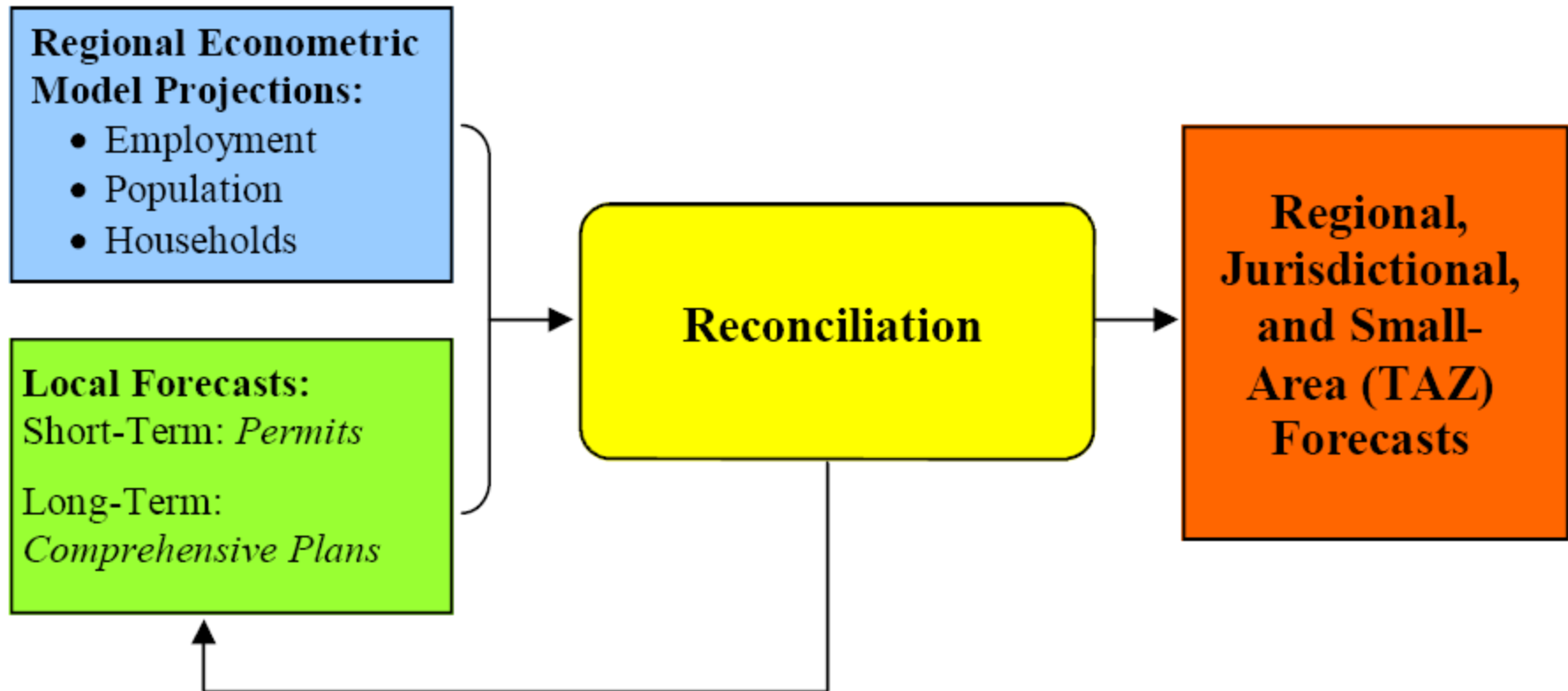
June 4, 2013

Overview

- Housing
- Population
- Employment



COG Forecast Process



Background – Population & Households

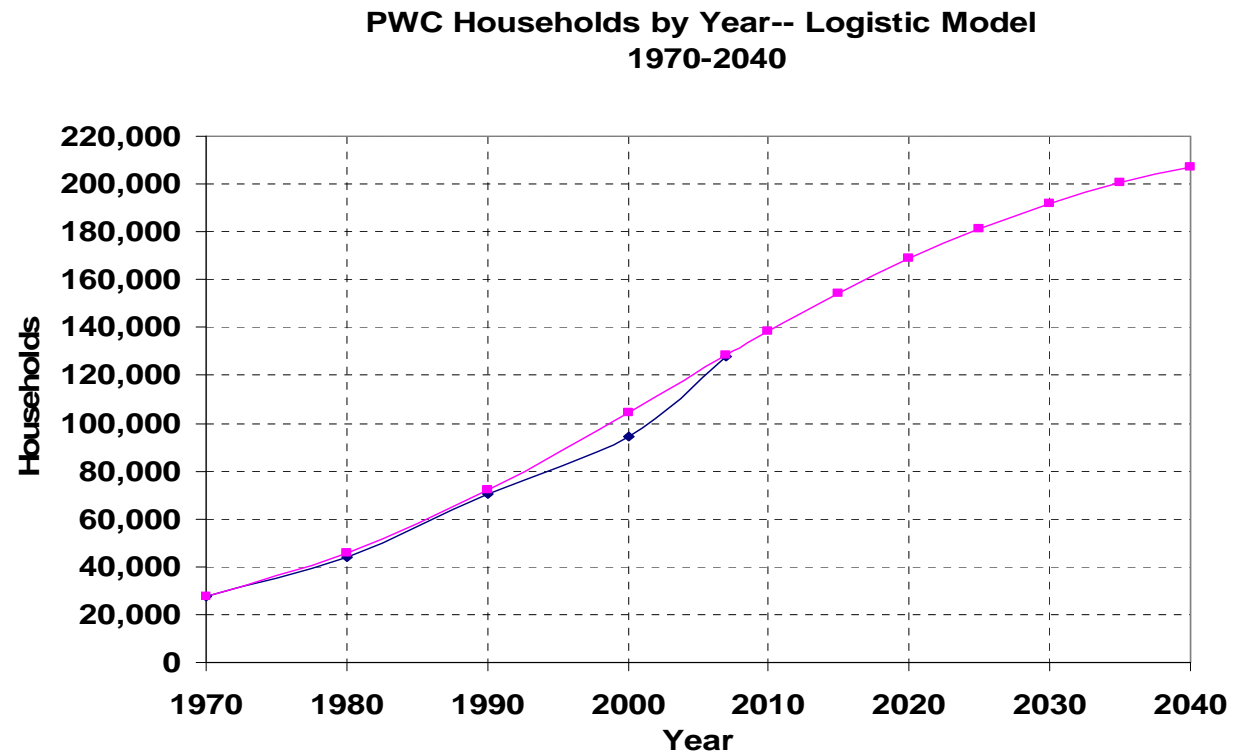
- PWC Population & Household data are reconciled at the Decennial Census
 - ◆ 2010 Census difference with PWC Data was approximately 1.5%
- PWC has established methodology to determine Population & Households for interim years (Prince William Report & Standard Data Set)
 - ◆ Building Occupancy Permits from permit tracking system
 - ◆ Permits are geo-coded by census tracts and precincts
 - ◆ Vacancy Rate and Household size applied from 2010 Census at the tract level
- PWC Population & Household data are the basis for forecasts



Logistic Model

| Year | Households |
|------|------------|
| 1970 | 27,760 |
| 1980 | 43,790 |
| 1990 | 70,253 |
| 2000 | 94,570 |
| 2008 | 131,690 |

| Annual Change in Households Logistic Model | |
|---|-------------|
| 1971-1980 | 1,500-2,200 |
| 1981-1990 | 2,200-2,900 |
| 1991-2000 | 3,000-3,400 |
| 2001-2010 | 3,400-3,300 |
| 2011-2020 | 3,300-2,700 |
| 2021-2030 | 2,700-1,900 |
| 2031-2040 | 1,900-1,300 |



Source: US Census Bureau and PWC Standard Data Set (Dec 2008)

Date: 6/4/2013



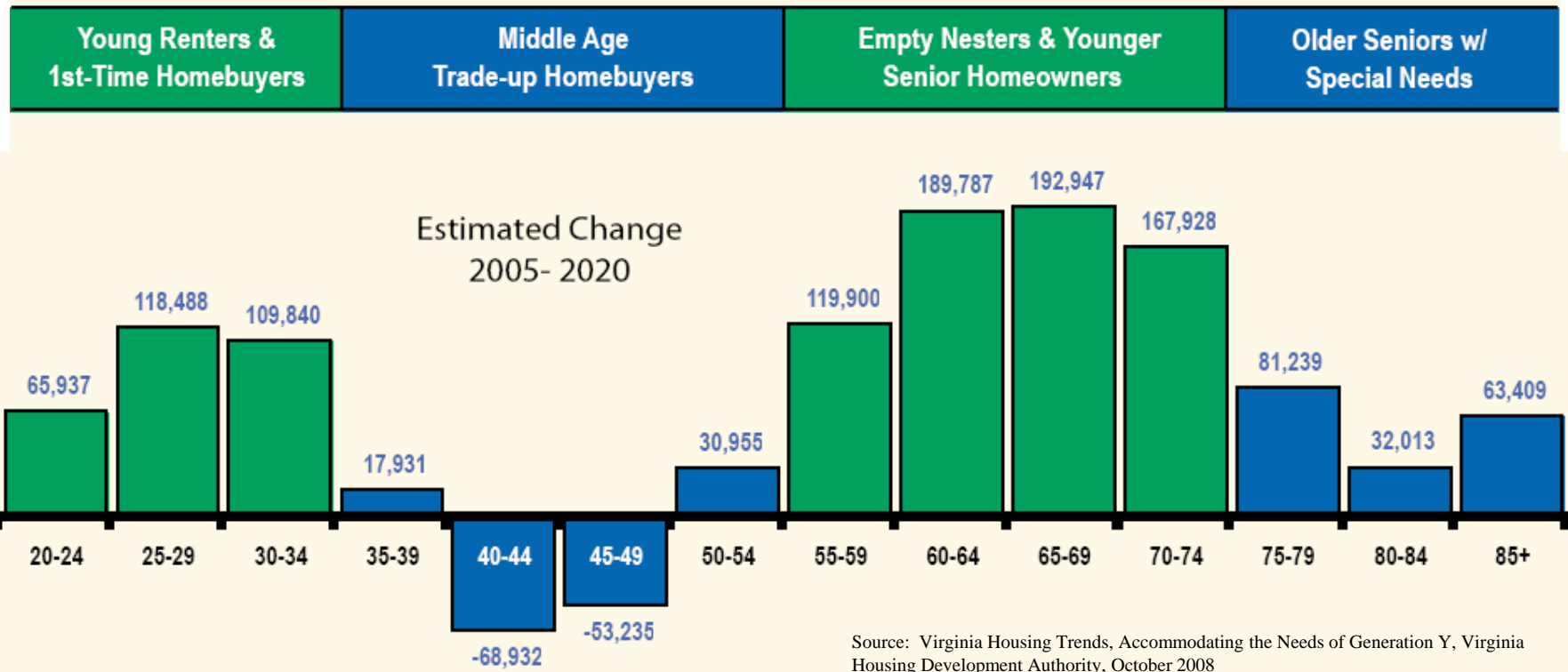
Household Type Distribution

- Establish housing unit cap by type based on build-out analysis of Comprehensive Plan
- Single-family detached: logistic curve to show gradual moderation of growth
- Townhouses: Straight-line growth to cap
- Multi-family: Remainder of units based on the above



Housing Type Trends

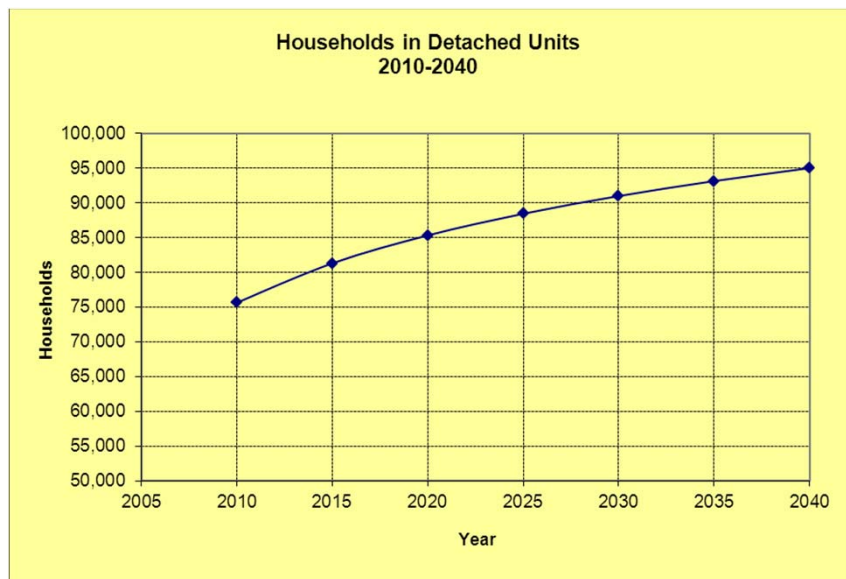
Virginia's Adult Population by Age



Date: 6/4/2013



Household Type Distribution



| Year | Households (Percent) | | | |
|------|----------------------|----------|-----------|------------|
| | Total | Detached | Townhouse | Multi-unit |
| 2010 | 100.0% | 57.8% | 26.4% | 15.8% |
| 2015 | 100.0% | 54.7% | 24.9% | 20.4% |
| 2020 | 100.0% | 52.0% | 24.0% | 23.9% |
| 2025 | 100.0% | 49.7% | 23.5% | 26.7% |
| 2030 | 100.0% | 48.0% | 23.4% | 28.7% |
| 2035 | 100.0% | 46.7% | 23.4% | 29.9% |
| 2040 | 100.0% | 45.8% | 23.7% | 30.5% |

| Year | Households (Number) | | | |
|------|---------------------|----------|-----------|------------|
| | Total | Detached | Townhouse | Multi-unit |
| 2010 | 130,785 | 75,626 | 34,547 | 20,612 |
| 2015 | 148,516 | 81,293 | 36,984 | 30,240 |
| 2020 | 164,013 | 85,313 | 39,422 | 39,278 |
| 2025 | 177,802 | 88,432 | 41,859 | 47,511 |
| 2030 | 189,653 | 90,980 | 44,296 | 54,377 |
| 2035 | 199,538 | 93,134 | 46,734 | 59,671 |
| 2040 | 207,580 | 95,000 | 49,171 | 63,409 |

Date: 6/4/2013



Distribution of Households

- For 2010 estimate of HH determine and apply Vacancy Rate from Census Tract that most closely aligns geographically with the PWC TAZ
- All subsequent years assume vacancy rate based on 2010 estimate
- Distribution
 - ◆ Establish build-out per TAZ (comprehensive plan adjusted to 2040)
 - ◆ Calculate # of new households for 5-year periods based on control totals
 - ◆ Distribute growth among TAZs proportionally based on capacity of TAZ



Population

- Determine Household Size by Type (SFD, TH, MF)
 - ◆ Used blocks of homogenous household type from 2010 Census to determine average household size by type
 - ◆ Applied averages county-wide by type

| PREMT | Data | Total | HH SIZE |
|-------------------------|-------------------|--------|-----------|
| MFA | Sum of POPULATION | 17518 | 2.2398670 |
| | Sum of HOUSEHOLDS | 7821 | |
| MHP | Sum of POPULATION | 1724 | 3.3870334 |
| | Sum of HOUSEHOLDS | 509 | |
| SFA | Sum of POPULATION | 42053 | 3.0365369 |
| | Sum of HOUSEHOLDS | 13849 | |
| SFD | Sum of POPULATION | 190152 | 3.3173183 |
| | Sum of HOUSEHOLDS | 57321 | |
| Total Sum of POPULATION | | 251447 | 3.1628553 |
| Total Sum of HOUSEHOLDS | | 79500 | |



Distribution of Population

- Calculate population based on average household sizes by type from 2010 census
- Add group quarters population by PWC TAZ based on 2010 census and project growth in group quarters
- Reconcile variance from control total numbers by applying an adjustment factor for all TAZs for each 5 year period



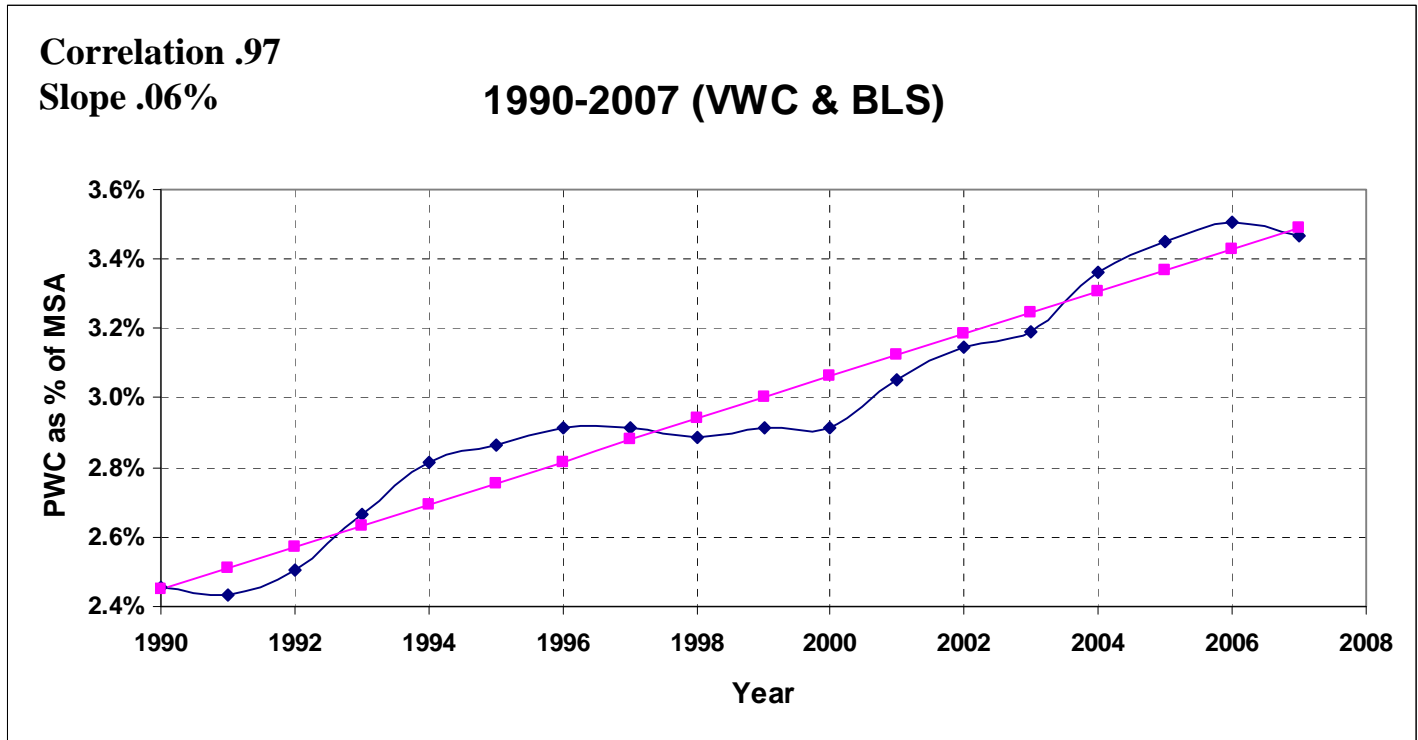
Employment Data for PWC

- At-Place Employment from VEC and InfoUSA
- Military Employment – InfoUSA
- Self-Employment uses 5% additional employees
- Geocoded VEC and InfoUSA and reconciled
- Reconcile to control total for 2010



PWC Employment as Percent of MSA

| Year | PWC/MSA |
|------|---------|
| 1990 | 2.45% |
| 1991 | 2.43% |
| 1992 | 2.51% |
| 1993 | 2.67% |
| 1994 | 2.81% |
| 1995 | 2.86% |
| 1996 | 2.92% |
| 1997 | 2.91% |
| 1998 | 2.89% |
| 1999 | 2.92% |
| 2000 | 2.92% |
| 2001 | 3.05% |
| 2002 | 3.15% |
| 2003 | 3.19% |
| 2004 | 3.36% |
| 2005 | 3.45% |
| 2006 | 3.51% |
| 2007 | 3.47% |



Source: Virginia Workforce Commission and Bureau of Labor Statistics



Distribution of Employees by Type

| Employment Sector | COG Land Use Employment Categories | | | |
|---------------------------------|------------------------------------|--------|--------|-------|
| | Industrial | Retail | Office | Other |
| Total | | | | |
| Manufacturing | 100% | | | |
| Agriculture & Mining* | 100% | | | |
| Construction | 34% | | 66% | |
| TCPU | 25% | | 70% | 5% |
| Wholesale Trade | 90% | 5% | 5% | |
| Retail Trade | | 96% | | 4% |
| F.I.R.E. | | | 98% | 2% |
| Business Services | | | 98% | 2% |
| Health Services | | | 70% | 30% |
| Personal Services* | | 100% | | |
| Hotel & Motel | | 10% | 10% | 80% |
| Auto & Miscellaneous Repair* | | 100% | | |
| Recreation & Amusements* | | 100% | | |
| Miscellaneous & Other Services* | | | 80% | 20% |
| State Government | | | 40% | 60% |
| Local Government | | | 40% | 60% |
| Federal Government (Civilian) | | | 40% | 60% |
| Federal Government (Military) | | | 65% | 35% |
| Omitted/Self-Employed | 15% | 10% | 5% | 70% |

Source: Allocation Percents -- Fairfax County Round 6.0 for sectors with asterisk *, Round 7.0 for others.

Modified by PWC



COG 8.1 Control Totals

Prince William County, Virginia
Households, Population, and Employment Projections, 2010 to 2040
Submission for COG Round 8.1

| Prince William County Round 8.1 Totals | | | | | | | |
|--|---------|---------|---------|---------|---------|---------|---------|
| Households | | | | | | | |
| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
| Single Family | 75,626 | 81,293 | 85,313 | 88,432 | 90,980 | 93,134 | 95,000 |
| Townhouse | 34,547 | 36,984 | 39,422 | 41,859 | 44,296 | 46,734 | 49,171 |
| Multi-family | 20,612 | 30,240 | 39,278 | 47,511 | 54,377 | 59,671 | 63,409 |
| Total Households | 130,785 | 148,517 | 164,013 | 177,802 | 189,653 | 199,539 | 207,580 |
| Population | | | | | | | |
| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
| Total Population | 402,002 | 452,230 | 494,534 | 530,721 | 561,953 | 588,358 | 610,324 |
| Employment | | | | | | | |
| | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 |
| Industrial | 26,959 | 30,392 | 33,757 | 36,587 | 39,419 | 42,054 | 44,552 |
| Retail | 34,989 | 41,631 | 48,850 | 55,991 | 63,870 | 72,240 | 81,257 |
| Office/Commercial | 32,872 | 39,850 | 47,595 | 55,475 | 64,297 | 73,833 | 84,253 |
| Other | 20,590 | 22,905 | 25,074 | 26,748 | 28,320 | 29,637 | 30,734 |
| Total Employment | 115,410 | 134,778 | 155,276 | 174,801 | 195,906 | 217,764 | 240,796 |

Employment data by type are preliminary and may change subject to COG guidance.

Date: 6/4/2013



Distribution of Employment by Type

| USECODE | Description | Office | Retail | Industrial | Other |
|---------|--------------------------------|--------|--------|------------|-------|
| 434 | Govt. Owned Med. or HR Office | 100% | | | |
| 435 | Office Condo, Gen. Med. or HR | 100% | | | |
| 436 | Office Condo, Mdcl/Dntl MR/HR | 100% | | | |
| 490 | Other Office | 100% | | | |
| 510 | Finance, Ins, RE Services | 100% | | | |
| 520 | Personal Services (barber,...) | | 100% | | |
| 530 | Motor Vehicle Repair | | 100% | | |
| 540 | Other Repair Services | | 100% | | |
| 550 | Veterinary Hospitals | 10% | | 5% | 85% |
| 590 | Other Consumer/Business Servic | 50% | 50% | | |
| 610 | Cemetery | 5% | | | 95% |
| 620 | Hospital and Health Facilities | 10% | | 5% | 85% |
| 630 | Post Office | 10% | | | 90% |
| 640 | Police Station | 30% | | | 70% |
| 650 | Fire and Rescue Stations | 30% | | | 70% |
| 660 | Correctional Institutions | 30% | | | 70% |
| 670 | Military Installations | 30% | | | 70% |
| 680 | Welfare/Charitable Services | 10% | | | 90% |
| 690 | Other Public Services | 10% | | | 90% |
| 710 | Church | | | | 100% |
| 720 | Civic/Social Associations | 10% | | | 90% |
| 730 | Libraries | 10% | | | 90% |
| 740 | Permanent Exhibitions | 10% | | | 90% |
| 750 | School | 10% | | | 90% |
| 751 | Nursery Schools | 10% | | | 90% |
| 752 | Public School | 10% | | | 90% |
| 753 | Private School | 10% | | | 90% |

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