II. Population Estimates

Kimley-Horn and Associates, Inc. (KHA) compiled population data maintained for Augusta County to serve as the foundation for subsequent efforts to update the Comprehensive Plan. Population estimates, representing past and present conditions, were collected from nationally recognized research centers and used to formulate population projections. A summary of these population estimates through the year 2030 and the recommendations for incorporating population projections into the Augusta County Comprehensive Plan Update are presented below.

A. Population Estimates

A population estimate is an indirect measurement of past or present conditions based on a series of direct measurements, or indicators. These measurements collectively form the framework for reasonably estimating interim year populations between the federal decennial censuses. Direct measurements for estimating population may include tax return information, number of recorded births or deaths, migration statistics, number of licensed drivers, estimated housing stock, and civilian group quarters (household) population. Generally, population estimates are considered more accurate than future year population projections because they are based on current data.

The Demographics and Workforce Section of the University of Virginia's Weldon Cooper Center is responsible for producing Virginia's official population estimates for counties and independent cities. Annual population estimates published by this research center for a fourteen year period (1990–2004) are included in **Figure 1**. As documented by the research center, this information is calculated using a ratio-correlation statistical method developed from a prediction equation based on regression analysis, a statistical technique that measures the relationship between one or more independent variables and a dependent variable. The Weldon Cooper Center generates a new prediction equation once every ten years using decennial population data collected by the U.S. Census Bureau.

Historical population estimates published by the Weldon Cooper Center were compared against similar information maintained by the Real Estate Center at Texas A&M University and the U.S. Census Bureau to validate observed growth trends and formulate future year projections. Information presented by these two research centers is calculated using a tax return method (county/independent city series) and generates slightly different statistics than those developed by the Weldon Cooper Center. However, historical growth trends presented by the Weldon Cooper Center appear to be valid based on information presented by the two independent research centers.

B. Population Projections

A population projection is a conditional ("if, then") statement about the future based on a set of assumptions developed from a base year population and observed growth trends. In this analysis, a linear extrapolation curve based on observed annual

population estimates between 1990–2004 and a linear trend line for future year population projections using a least squares method are utilized. By using a least squares method, it is possible to minimize the sum of the squared deviations (or vertical distances) between the observed values and computed estimates to anticipate future population. Projections were developed for all three historical population data sets presented by the research centers. Population projections, organized by five year increments (2005–2030), are presented in **Figure 1**.

The Virginia Employment Commission (VEC) is responsible for producing Virginia's official future year population projections for counties and independent cities. However, it is the experience of county staff that VEC estimates have proven to be significantly lower than actual growth experienced in Augusta County. Thus, the county is electing to investigate other sources of population projections for use in the Comprehensive Plan update process. The VEC population projections for 2010–2030 are included in the attached table for reference.

The results of this analysis support the county's observation that the VEC population projections are low compared to the linear extrapolation curves developed for all three of the existing population data sets.

C. Recommendation

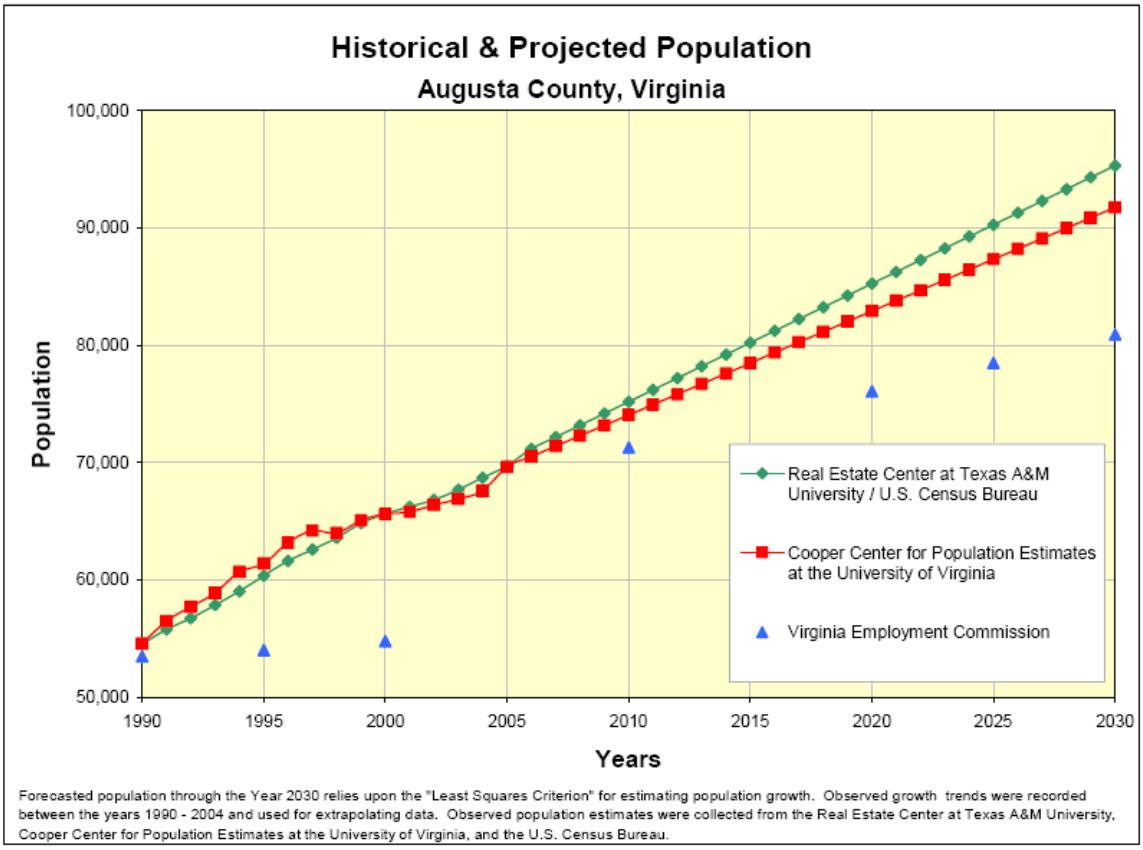
Based on the analysis described above, it has been recommended that Augusta County begin with population statistics from the Weldon Cooper Center data set as they develop the Comprehensive Plan Update. These population estimates are validated by independent research centers and officially recognized by the Commonwealth of Virginia. Furthermore, the trend line for population projections calculated using the Weldon Cooper Center data set is more consistent with those developed for the Real Estate Center at Texas A&M University and U.S. Census Bureau data sets.

Also, it is recommended that the county refine the Weldon Cooper Center population projections (as necessary) when possible. Influential factors that should be considered by county staff may include:

- The holding capacity of vacant, undeveloped land for accommodating new growth (especially steep slopes and environmentally-sensitive areas)
- The community's tolerance to growth and the potential for self-imposed limits
- Available capacity of public infrastructure and services to support anticipated growth
- Market rate absorption and the impact of economic conditions on growth in the community

These physical, policy, and market forces could impact build-out population, buildout year, or growth rates assumed for these preliminary population calculations, and should be reviewed carefully to provide a comprehensive projection.

Figure 1. Historical and Projected Population for Augusta County 1990-2030



Forecasted population through the Year 2030 relies upon the "Least Squares Criterion" for estimating population growth. Observed growth trends were recorded between the years 1990 - 2004 and used for extrapolating data. Observed population estimates were collected from the Real Estate Center at Texas A&M University, Cooper Center for Population Estimates at the University of Virginia, and the U.S. Census Bureau.

Augusta County Historical & Projected Population
Comparison of Available Data Sets *

	Real Estate Center at Texas A&M University	Cooper Center for Population Estimates at the University of Virginia	Virginia Employment Commission	U.S. Census Bureau
1990	54,600	54,600	53,500	54,600
1991	55,800	56,500	-	55,800
1992	56,700	57,700	-	56,700
1993	57,900	58,900	-	57,900
1994	59,000	60,700	-	59,000
1995	60,400	61,400	54,000	60,400
1996	61,600	63,200	-	61,600
1997	62,600	64,200	-	62,600
1998	63,600	64,000	-	63,600
1999	64,800	65,100	-	64,800
2000	65,600	65,600	54,800	65,600
2001	66,200	65,800	-	66,200
2002	66,800	66,400	-	66,800
2003	67,700	66,900	-	67,700
2004	68,700	67,600	-	68,700
2005	69,700	69,600	-	69,700
2010	75,200	74,000	71,300	75,200
2015	80,200	78,500	-	80,200
2020	85,300	82,900	76,100	85,300
2025	90,300	87,300	78,500	90,300
2030	95,300	91,700	80,900	95,300

* = All population estimates and projections are rounded to the nearest hundred people.