



May 23, 2022

POPULATION FORECAST: METHODOLOGY & RESULTS

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METHODOLOGY

In this brief report, RKG Associates, Inc. prepared a population forecast and related analysis to help inform the Envision Hanover Comprehensive Plan update. This report depicts an assumed growth rate, compared with two other projections that provide context. Those alternative methodologies include a baseline forecast from the Weldon Cooper Center at the University of Virginia, which is the Commonwealth's state data center and produces annual population estimates and projections for all Virginia counties, cities, and planning districts. This report also includes an alternative population projection for Hanover County based on residential development trends over the past 20 years, broken down into six different subareas (Figure 1). The County's Board of Supervisors selected a reasonable growth rate between these high and low ranges.

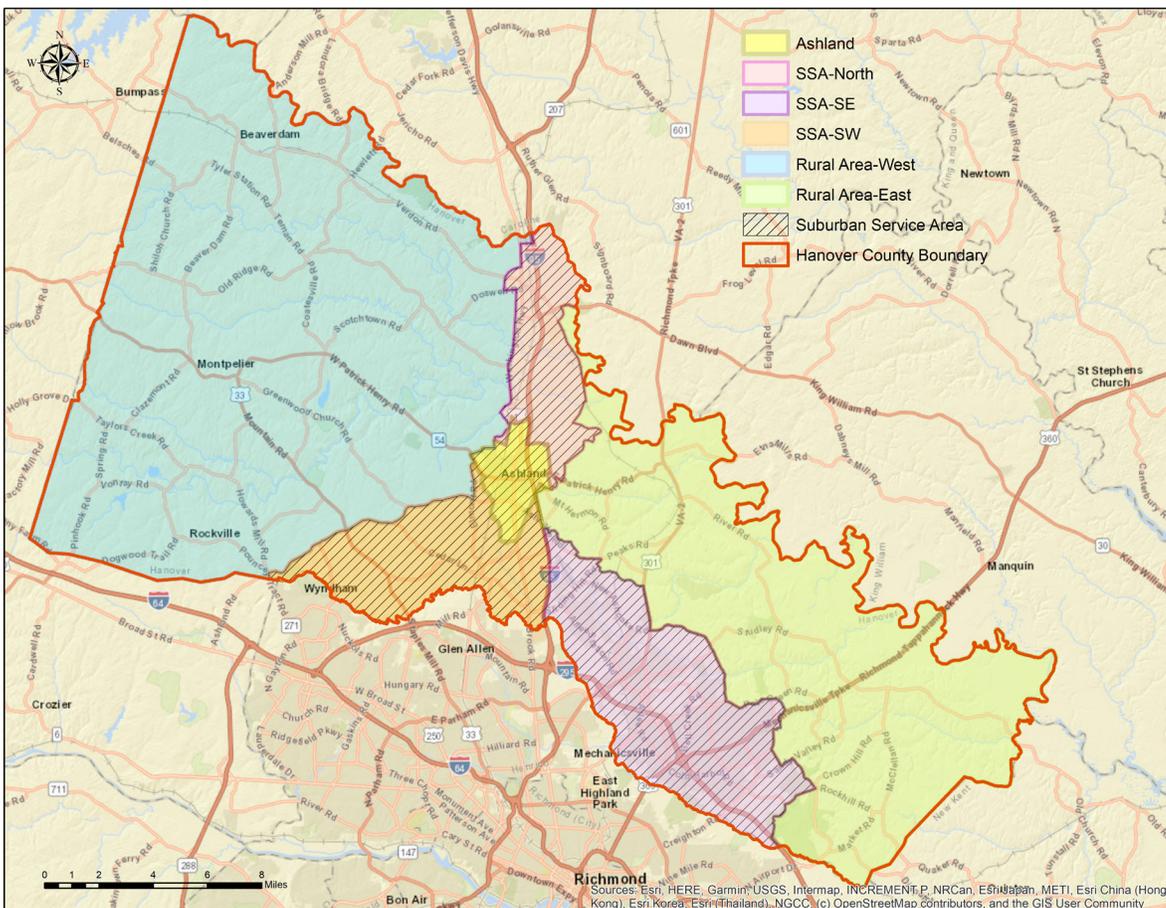
RESIDENTIAL SUBAREAS

- Town of Ashland
- Suburban Service Area North
- Suburban Service Area Southwest
- Suburban Service Area Southeast
- Rural Area West
- Rural Area East

This report also documents subarea development activity from the County's real property assessment records, which report the 'year-built' for each new housing unit (both ownership and rental) once they are issued a final occupancy permit and a property assessment record is created for real estate taxing purposes.

Using 2020 Census estimates as the start year, RKG projected future changes in housing construction based on housing development activity during the 2010 to

FIGURE 1: HANOVER COUNTY HOUSING SUBAREAS



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RESIDENTIAL SUBAREAS, cont.

2020 period. Subarea housing development activity was broken out by type of residential unit (e.g., single-family detached, townhouses, condominiums, apartments, etc.) to document the predominant housing types being constructed in each subarea.

The past decade started with a deep economic recession caused by the mortgage and financial crisis, also known as the 'Great Recession,' which occurred during the 2009-2010 period. Following the recession, a prolonged period of housing growth occurred throughout most of the country, starting around 2012 and continuing until today, with only a brief market interruption caused by the COVID-19 pandemic during part of 2020.

To convert future housing development into future population projections, the consultants used specific household and housing characteristics within each subarea. Those variables included: (1) average household size, (2) estimated housing vacancy rates, and (3) population living in group quarters. The population of persons living in group quarters include those living in correctional facilities for adults, student housing, nursing facilities, inpatient hospice facilities, and military barracks. People living in group quarters were added to the population living in traditional ownership- and

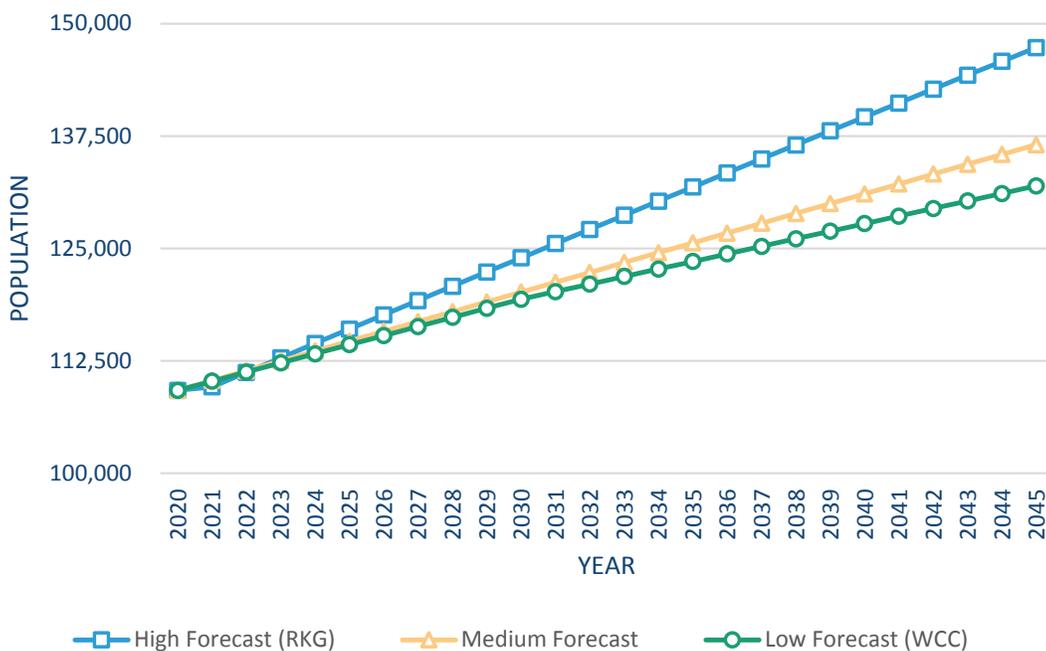
renter-occupied housing units, after adjusting for housing vacancy rates in each subarea.

PROJECTION RESULTS

While developing a reasonable population forecast, RKG examined two alternative approaches. The Weldon Cooper Center produced a population projection that indicates a .77% increase from the 2020 base year to 2045. Then RKG created an alternative development-based projection that produced a higher population growth rate of 1.4%. This estimate accounts for the fact that some subareas will grow faster than others and they will reflect the specific population and housing characteristics of their subarea.

With this context, the Hanover County Board of Supervisors selected a 1% rate as a reasonable growth expectation for long-range planning purposes. The Board of Supervisor's 1% growth rate assumption is roughly the median between Weldon Cooper's forecast and RKG's development-based projections. Over 25 years, this results in a 2045 population of 136,536, for an increase of 27,307 in new population. This annual growth rate is not compounded annually but calculates to an average annual rate of 1% over the 25-year forecast period.

FIGURE 2: 2020-2045 POPULATION FORECAST



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RECONCILIATION OF POPULATION FORECASTS TO LAND CAPACITY

The following analysis attempts to reconcile future population forecasts with Hanover County's available land resources. The analysis focuses on the County's three Suburban Service Areas known as SSA-Southeast, SSA-Southwest, and SSA-North.

HOW MUCH POPULATION DOES A 1% ANNUAL FORECAST PRODUCE OVER 25 YEARS?

RKG Associates applied the 1% annual growth rate and distributed this population to the County's six different geographic housing submarkets. While each submarket has the potential to capture some share of future population and housing growth, the vast majority of this growth is likely to be captured within the three suburban service areas, since there is infrastructure present in each to support new development. According to the 1% forecast, over 87% of the County's forecasted populations increase (27,307 pop.) is expected to be captured in the suburban service districts. The remaining 3,465 population will be spread out in scattered development in the Town of Ashland and the two rural areas.

WHAT ARE THE IMPLICATIONS OF 1% AVERAGE ANNUAL GROWTH OUT TO 2045?

Utilizing a series of household and population metrics for each subarea, RKG compared future population changes to the availability of existing land resources to support the 1% growth forecast. The implication was that areas experiencing strong growth pressures could only continue to grow if there were sufficient land resources available to accommodate new development. Once land resources are exhausted in one subarea, either growth patterns shift to other subareas, or changes are made in allowable densities to permit higher density development to occur.

Because the County is trying to minimize development in the County's two rural areas (east and west), future growth is being directed to the three existing suburban service areas. The capacity of these SSAs to accommodate future growth is based on their available land resources. The County's planning department conducted a thorough inventory of existing land that could be developed in the future. This included vacant land, but also land with structures on them valued at less than \$250,000.

The land capacity analysis did not attempt to net out land acres that were impacted by environmental features such as steep slopes, wetlands, brownfield conditions, and

TABLE 1: 1% GROWTH FORECAST

Population Forecast and Land Capacity Estimates Hanover County, VA

% Developable Gross Acre

50%

Planning Sub Area	Gross Acres	Net Acres	Forecast Density	Avg.	Population Capacity	2045 Pop. Forecast	Acres Suplus/ (Deficit)
			2.5 Units/AC	Persons Per/HH			
SSA-SE	3,479	1,740	4,349	2.730	11,872	15,651	(554)
SSA-SW	4,668	2,334	5,835	2.500	14,588	3,253	1,814
SSA-North	378	189	473	2.272	1,074	4,938	(680)
	8,525	4,263	10,656		27,533	23,842	579

Source: RKG Associates, Inc. and Hanover Planning Department, 2022.

Planning Sub Area	2045 Pop. Forecast	Avg.	Forecast Households	Net Acres	Consumption	Acres	Consumption	Acres	Consumption	Acres
		Persons Per/HH			1 Units/AC	Suplus/ (Deficit)	2.5 Units/AC	Suplus/ (Deficit)	3 Units/AC	Suplus/ (Deficit)
SSA-SE	15,651	2.730	5,733	1,740	5,733	(3,993)	2,293	(554)	1,911	(171)
SSA-SW	3,253	2.500	1,301	2,334	1,301	1,033	520	1,814	434	1,900
SSA-North	4,938	2.272	2,173	189	2,173	(1,984)	869	(680)	724	(535)
	23,842		9,208	4,263	9,208	(4,945)	3,683	579	3,069	1,193

Source: RKG Associates, Inc. and Hanover Planning Department, 2022.

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WHAT ARE THE IMPLICATIONS OF 1% AVERAGE ANNUAL GROWTH OUT TO 2045?, cont.

other conditions that would remove them from future development. However, the planners did assume that the gross total acres would only be 50% developable and the remaining 50% would be undevelopable. This is considered a conservative estimate, which reduces the available acreage to support future growth, and represents a “worst case” scenario regarding the ability of the existing Suburban Service Area to accommodate growth over the ensuing 20-year period.

As shown in Table 1, the gross acres measured in the three subareas is 8,525 acres, of which, 4,263 acres (50%) are assumed to be developable. Based on an average density of 2.5 units per acre, the existing land supply could accommodate 27,533 new residents, based on average household sizes in each subarea. According to the 1% forecast to 2045, the County would only need land to support 23,842 new residents in the three SSAs. As a result, there would be surplus of 579 land acres after meeting this population forecast based on the 2.5 units/AC assumption. It is important to note that population demands in SSA-SE and SSA-North would exceed the available land supply, but in theory, the land surplus available in SSA-SW (1,814 acres) would be significant enough to absorb this growth and still result in a surplus.

WHAT HAPPENS TO THE LAND SURPLUS IF RESIDENTIAL DENSITIES CHANGE?

As shown in the lower half of Table 1, if residential densities are reduced to just 1 dwelling unit per acre, there is not enough land in the suburban service areas to support the 1% population forecast to 2045. In fact, an additional 4,945 acres would be required to support a low-density development pattern of this type. At 2.5 units per acre, as shown above, there is a 579-acre net land surplus, even though SSA-SE and SSA-North exhaust their land supplies. Finally, at 3 units per acre, the demand for land is reduced slightly as densities increase and the net land surplus stands at 1,193 acres in 2045.

WHAT ARE THE POLICY IMPLICATIONS TO THESE POPULATION FORECASTS?

What the analysis clearly shows is a dwindling land supply in suburban service areas may be sufficient to accommodate the next 25 years of 1% population growth, but the supply is quite limited unless adjustments are made in the future to allow for additional growth. As alluded to earlier in the analysis, if one subarea’s

land supply is exhausted, it is possible, although not guaranteed, that future development will be attracted to other SSAs with land capacity and infrastructure available. At the same time, it is very likely that as land resources get scarce in one SSA, the purchase price of land per acre or per lot will start to increase. This will force developers to request increased housing density (units per acre) to keep their unit price of land in line with the cost of housing. If that does not happen, the price of housing in Hanover County will start to rise with the increased scarcity and cost of land. Ultimately, this could put pressure on Hanover County’s rural areas as developers seek expansion of the suburban service areas, which abut them.

METHODOLOGY FOR THE DEVELOPABLE LAND ANALYSIS

Hanover County staff reviewed property records in GIS to identify developable lands for the capacity analysis of available land. County staff assumed that property was developable under the following criteria:

Smaller Parcels Zoned A-1 within SSA Designated for Residential/Mixed-Use Development: Includes parcels that are 4 – 20 acres in area, are currently zoned A-1, are located within the SSA in areas currently designated for residential/mixed-use development on the General Land Use Plan, and have an improved value of \$225,000 or less.

Larger Parcels Zoned A-1 within the SSA Designated for Residential/Mixed-Use Development: Includes parcels that are more than 20 acres in area, are currently zoned A-1, and are located within the SSA in areas currently designated for residential/mixed-use development on the General Land Use Plan (no maximum improved value).

R-1, R-2, and R-3 Parcels Outside of Subdivisions: Includes parcels that are zoned R-1, R-2, and R-3 that are 4 acres or more in area, are not within a subdivision, and have an improved value of \$225,000 or less.

Remove Parcels Encumbered by a Conservation Easement: Excludes parcels encumbered by a known conservation easement.

Remove Parcels Owned by Governmental Entities: Excludes parcels owned by governmental entities (including the Hanover County School Board, National Park Service, etc.) and recreational- and conservation-based non-profit organizations.