

Chapter 4

Demographic Overview

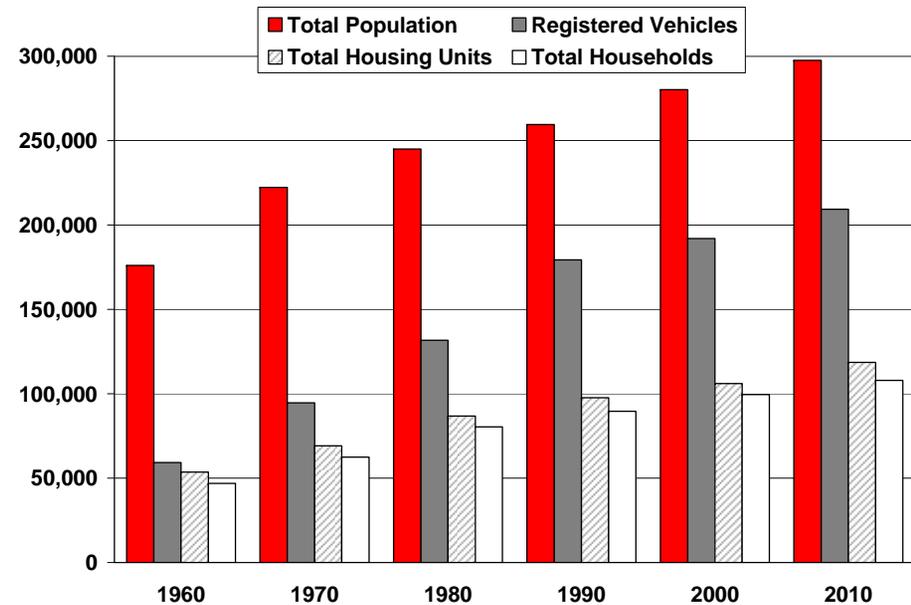
Though discussed in the language of funding and projects, a transportation system has more to do with people than infrastructure. Our transportation system has one simple, fundamental purpose: to serve people, whether for their own personal mobility needs or the mobility of the goods and services they require. Given the link between people and transportation, effective planning requires that we understand the nature of the population we serve, since they are the single most important influence on our transportation system. Where we choose to live, work, and shop, and how we choose to get there are the reasons we have roads, buses, and trains, and why the Council exists.

Population

People travel: for work and play; by foot, car, bus, bike, and train; within their hometown, throughout the County, and across the region. Our transportation system provides people with the ability to live their lives, earn a living, and pursue their interests.

Dutchess County has experienced high rates of population growth during the past 60 years. From 1950 to 2010, the County's population grew by nearly 161,000 or 117 percent (see Figure 4-1).¹ This growth, most pronounced from 1950 to 1970, was spurred by a variety of factors, including high birth rates, economic growth, and regional migration.

Figure 4-1. Total Population, Registered Vehicles, Housing Units, and Households in Dutchess County (1960-2010)



Population and economic growth have greatly influenced the County's land use patterns and transportation system. The popularity of the private vehicle as a travel mode translated into high rates of vehicle ownership among those who had the means and ability to live farther from traditional urban centers. The economic centers of the County underwent a similar shift, with major manufacturing and commercial activities relocating near major highways and closer to the suburban work force.

Dutchess County had a 2010 population of 297,488, which was 6.2 percent higher than reported in 2000 (280,150).² This translated into an average increase of over 1,700 people per

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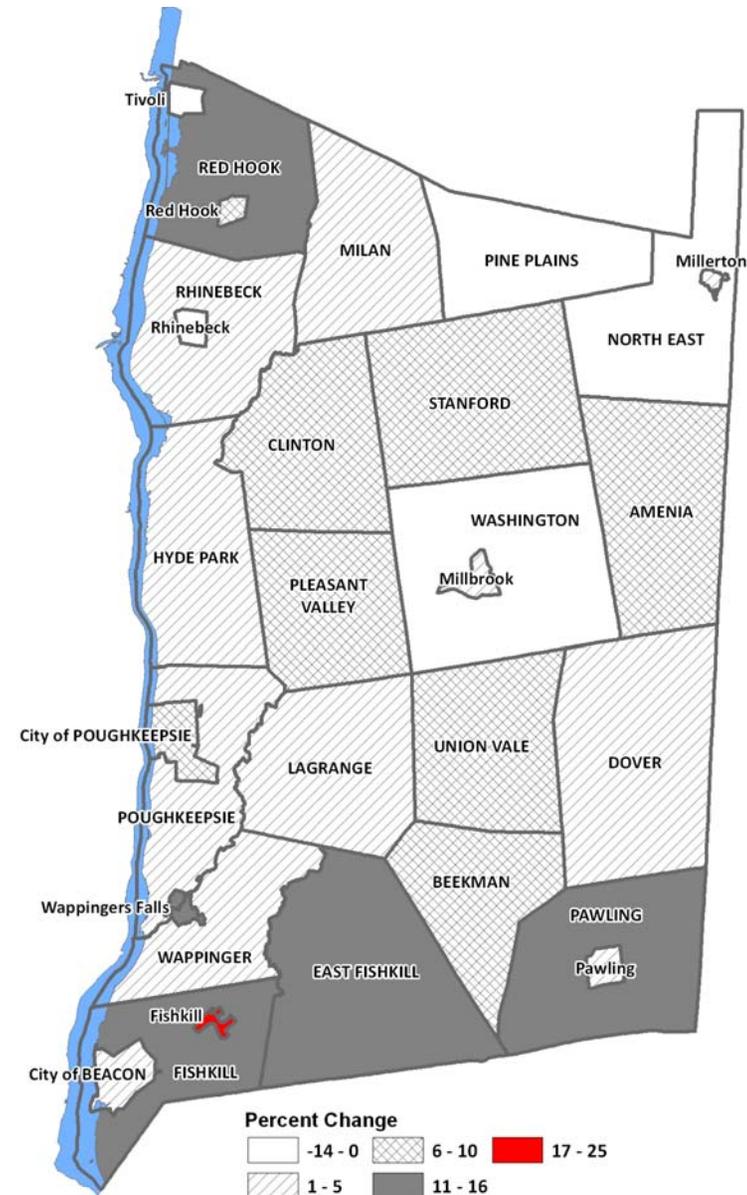
year during the decade. The 2010 Census showed that the Town of Poughkeepsie, with a population of 42,399, remained the most populated municipality in Dutchess; the City of Poughkeepsie followed with the second highest population of 32,736. These two municipalities accounted for more than a quarter of the County's total population.

The rate of population change varied across the County's 30 municipalities, with 25 gaining population and five losing population. The Village of Fishkill had the largest percent change, increasing by 25 percent from 2000-2010. The Towns of Fishkill, East Fishkill, Pawling, and Red Hook, and Village of Wappingers Falls followed with population increases of 11 to 16 percent each. The Town of East Fishkill had the largest absolute growth, increasing by 3,440 people from 2000-2010; the City of Poughkeepsie and Town of Fishkill followed with increases of 2,865 and 2,415 respectively. Together, these three municipalities accounted for half of the County's population growth over the decade.

Not all municipalities grew during 2000-2010. The Towns of North East, Pine Plains, and Washington and Villages of Rhinebeck and Tivoli lost population. The Village of Rhinebeck's population decreased by 420 people or over 13 percent, the largest decrease in the County. Figure 4-2 shows the percent change in 2000-2010 population by municipality. A detailed surface map showing 2010 population densities is provided at the end of this chapter.

The 2010 Census showed that Dutchess County had a household population of 277,523 living in 107,965 housing

Figure 4-2. Percent Change in 2000-2010 Population by Municipality



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units, making for an average household size of 2.57. This was lower than reported in 2000, when the County had a household population of 261,987 in 99,536 housing units, for an average household size of 2.63.

Title VI & Environmental Justice

As a recipient of federal funding, the Council must demonstrate its compliance with Title VI of the Civil Rights Act of 1964 and the Environmental Justice provisions set forth in Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed in 1994. Title VI prohibits the discrimination by recipients of federal financial assistance, including federal transportation funds, on the basis of race, color, and national origin, or matters related to language access for limited English proficient (LEP) persons, while Environmental Justice builds upon this by adding low income populations to the groups that should be protected from the adverse impacts of federally funded actions.

Identifying the locations of minority, low income, and LEP populations is an important step in complying with Title VI and Environmental Justice requirements. Though complementary in their objectives, the Council used separate thresholds to identify these populations. The thresholds were based on current Title VI guidelines in FTA C 4702.1A dated May 13, 2007³, proposed Title VI guidance in FTA C 4702.1B dated September 28, 2011, and proposed Environmental Justice guidance in FTA C 4703.1 dated September 28, 2011; the latter provides detailed guidance as how to identify minority and low income populations.

For the Title VI analysis, the Council used 2010 Census block group data to identify block groups that were above-average for total minority and Hispanic populations, and the Census Bureau's 2005-2009 American Community Survey (ACS) 5-year Estimate to identify municipalities with above average low-income and Limited English Proficiency (LEP) populations. The Environmental Justice analysis used the same data, but different thresholds, identifying block groups with "meaningfully greater" minority, Hispanic, and low income populations: areas where the percentage of minority, Hispanic, or low income population exceed 50 percent of the area's total population, regardless of overall averages.

Minority Population

The Council calculated total minority population by summing the Black/African-American, Asian, American Indian/Alaskan Native, and Native Hawaiian/Pacific Islander populations. In 2010 the County had a total minority population of 40,956 people, which was 13.8 percent of the County's total population. Using this average, 66 of 248 block groups were identified as being above-average for minority population. The Cities of Beacon and Poughkeepsie, Towns of Hyde Park, Fishkill, Poughkeepsie, and Wappinger, and Villages of Fishkill and Wappingers Falls contained areas that were above average for total minority population. Figure 4-3 shows 2010 Census block groups that have an above-average percentage of minorities. Using the proposed Environmental Justice thresholds, the Council identified seven block groups that had minority percentages exceeding 50 percent, all located in the City of Poughkeepsie (see Figure 4-4).

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Figure 4-3. 2010 Census Block Groups Above-Average for Total Minority Population

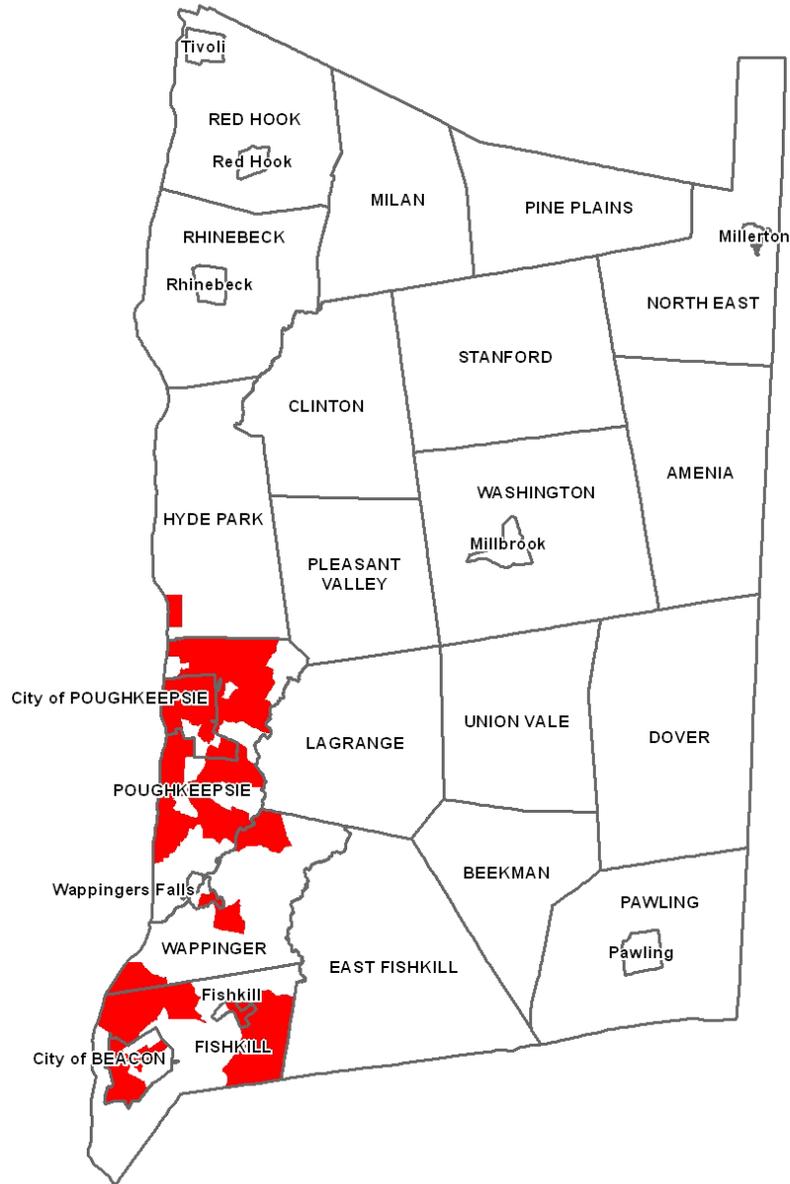
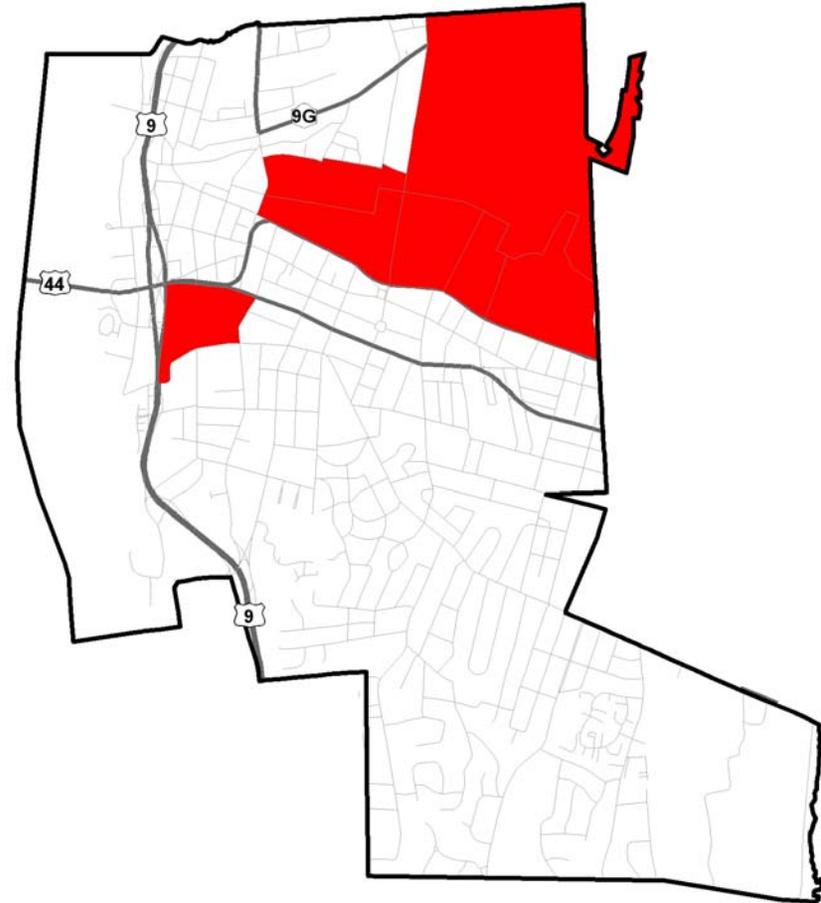


Figure 4-4. 2010 Census Block Groups Exceeding 50 Percent Total Minority Population (City of Poughkeepsie)



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Hispanic Population

The Council calculated total Hispanic population by summing the Hispanic, non-white population. In 2010 the County had a total Hispanic population of 31,267 people, which was 10.5 percent of the County's total population. Using this average, 79 of 248 block groups were identified as being above-average for Hispanic population. The Cities of Beacon and Poughkeepsie, Towns of Amenia, Beekman, Dover, Hyde Park, Fishkill, Pawling, Poughkeepsie, and Wappinger, and Villages of Fishkill, Millerton, Pawling, and Wappingers Falls contained areas that were above average for total minority population. Figure 4-5 shows 2010 Census Block Groups that have an above-average percentage of Hispanics. Using the proposed Environmental Justice thresholds, the Council identified one block group in the City of Poughkeepsie (Main Street area) that had a Hispanic percentage exceeding 50 percent (see Figure 4-6).

Low-Income Population

The Council identified low-income population areas using the estimated percent of the population living below the poverty level at the municipal level, based on the 2005-2009 American Community Survey (ACS) 5-year Estimate. For this five-year period, the Census Bureau estimated that 7.4 to 8.6 percent of the County's population was living in poverty. This range represents the lower and upper bounds based on the estimate's margin of error (+/-0.6 percent). Similar ranges were calculated at the municipal level based on the margins of error for each municipality. Those municipalities that had a lower bound above 8.6 percent were classified as being

above-average for low-income population. The Town of Milan was excluded from the analysis since its estimated margin of error was higher than the estimate itself.

The Council identified two municipalities that are estimated to have low-income populations above the County average: the Cities of Beacon and Poughkeepsie. Using Environmental Justice thresholds, no area exceeded 50 percent for low income population.

Limited English Proficiency (LEP) Population

The Council identified Limited English Proficiency (LEP) populations using the estimated number of households classified by the Census Bureau as linguistically isolated, based on the 2005-2009 American Community Survey (ACS) 5-year Estimate. For the five-year period, the Census Bureau estimated that 0.1 to 3.0 percent of the County's households were linguistically isolated; this range represents the lower and upper bounds based on the estimate's margin of error (+/-5,121 households). Similar ranges were calculated at the municipal level based on the margins of error for each municipality. Those municipalities that had a lower bound above 3.0 percent were classified as being above-average for linguistically isolated households. Thirteen municipalities were excluded from the analysis because their margins of error were higher than the estimates themselves. Using this methodology, the City of Poughkeepsie was the only municipality with an above-average percentage of linguistically isolated households.

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Figure 4-5. 2010 Census Block Groups Above-Average for Total Hispanic Population

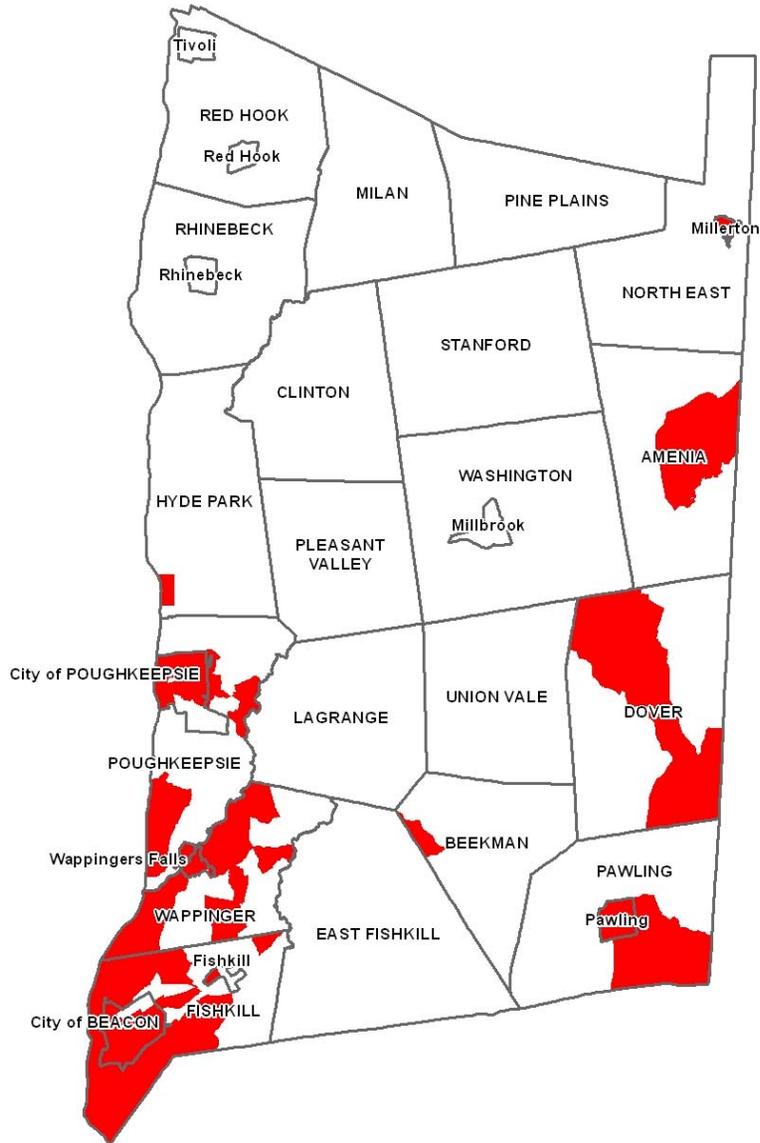
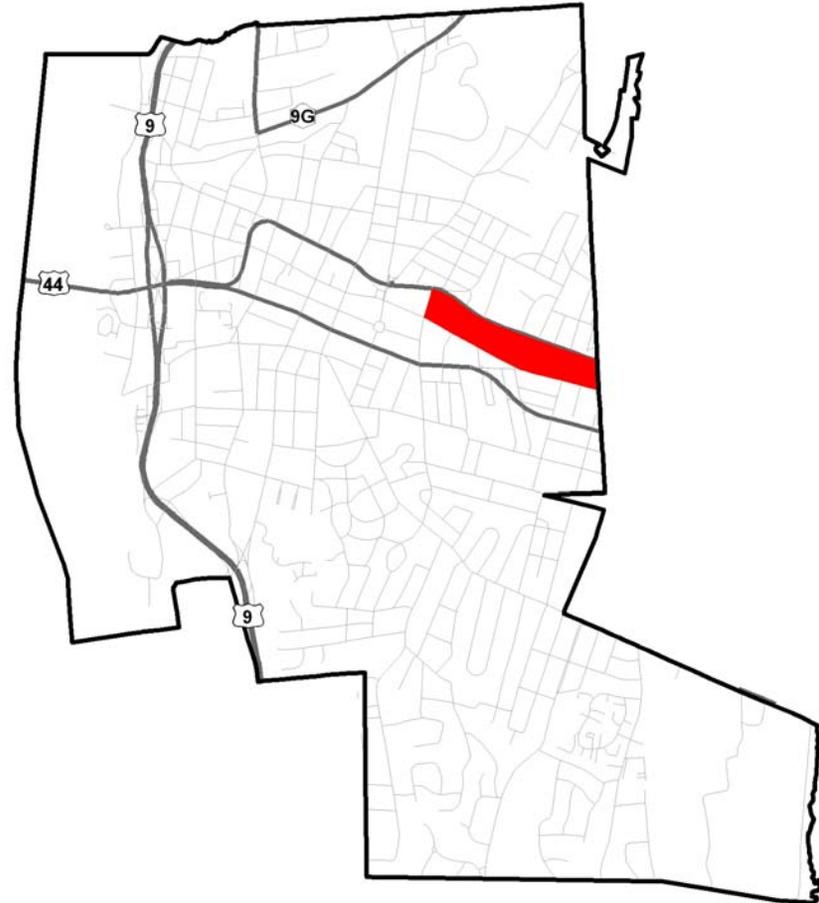


Figure 4-6. 2010 Census Block Group Exceeding 50 Percent Total Hispanic Population (City of Poughkeepsie)



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The Council assures that no person conducting business with it will be excluded from participating in, be denied the benefits of, or otherwise be subjected to discrimination on the grounds of race, color, national origin, sex, disability, age, language, or income.

Economic Activity

Economic factors such as employment and personal income directly influence people's travel behavior and how the transportation system is used. Measuring the economic health of a community allows us to better understand existing and future travel trends. Commuting to work is one reason people travel, so a significant change in employment will have a corresponding effect on the transportation system. Likewise, income affects people's transportation choices, including their access to a personal vehicle and their use of public transit, especially bus transit. The Council reviewed recent employment, income, and poverty trends that provide insight into potential impacts on transportation.

Data from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages shows that private and public employers in Dutchess County had approximately 110,000 employees in 2010⁴, with the private sector accounting for 80 percent of total employment. The data does not include self-employed persons, which the NYS DOL estimates make up approximately 6 percent of total employment in the state. The total number of employees reported in 2010 was lower than reported in 2001, though employment rose to over 117,000 persons in 2005 and 2006. The return below 2001

employment levels suggests that Dutchess County was not immune to the effects of the national recession. The fluctuation in employment over the past decade also demonstrates the speed at which employment can change, compared to population, which changes more slowly.

The Bureau of Labor Statistics also provides data on private sector employment by industry. According to the 2010 Quarterly Census of Employment and Wages, the health care and social assistance sector accounts for almost 20 percent of private employment in Dutchess County, followed by retail trade at 15 percent and manufacturing at 13 percent. Combined, these three sectors account for almost half of all private employment in Dutchess, a share that has been consistent throughout the past decade.

From a tri-County TMA perspective, the Bureau of Labor Statistics' data shows that Orange County experienced more employment growth than Ulster and Dutchess over the past decade. Private and public employers in Orange County had approximately 121,000 employees in 2001 and 128,000 in 2009, an increase of 5.7 percent. The same data show that employment decreased slightly in Ulster County, where businesses employed 61,000 in 2001 and 59,000 in 2009. Measured as a share of employees in the TMA, Orange County employers accounted for 43 percent of total employment, compared to Dutchess with 37 percent and Ulster with 20 percent. These employment patterns suggest that Orange County may be a more attractive destination for workers in the three-county area, given its larger share of total

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employees and the employment growth it has experienced over the past decade.

Beyond the TMA, employment in Putnam and Westchester counties increased from 2001 to 2009, which suggests that those counties retained their attractiveness to regional workers, including those living in Dutchess County.

Additional data on labor is available from the Census Bureau. The Census Bureau's 2005-2009 American Community Survey (ACS) 5-year Estimate shows that there were between 134,000 and 138,000 workers aged sixteen and over living in Dutchess County. Dutchess County was the most popular work destination for these employees, accounting for 68 to 69 percent of all work destinations. This is similar to the share reported in the 2000 Census. When compared to the number of jobs in the County (i.e. the number of employees reported by Dutchess employers), the ACS estimates suggest that there is a lack of local jobs for the workforce, requiring some to travel to other counties and states for work.

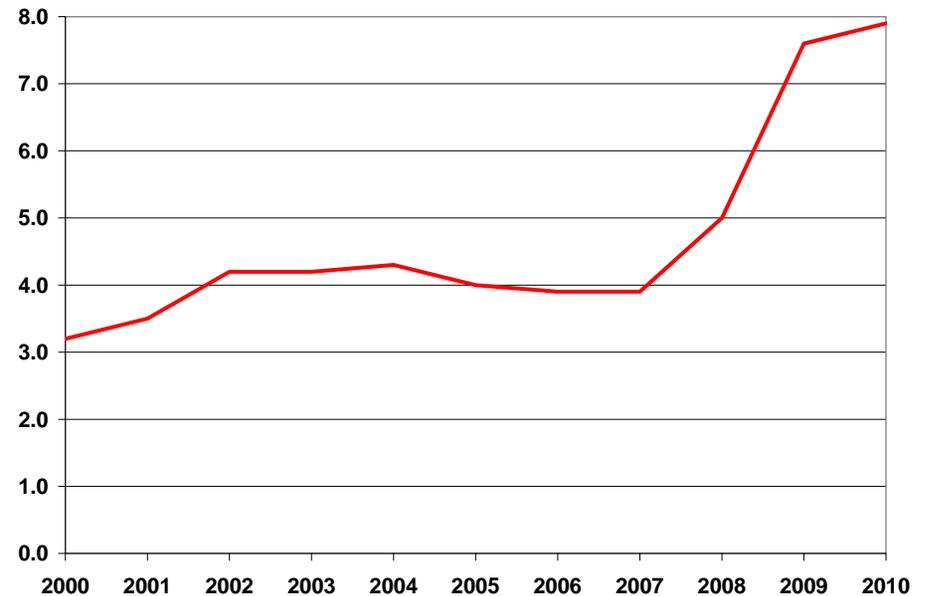
Data from the Census Bureau's 2006-2008 ACS 3-year Estimate indicates that Westchester, New York, Putnam, Orange, and Ulster counties were the most popular out-of-County work destinations for Dutchess County residents, and that Ulster and Orange counties provided the largest share of non-resident workers to Dutchess County. The 2000 Census showed similar flows.

Less recent, but more specific data from the 2000 Census showed the destinations of out-of-County workers and their

share of the workforce: Westchester County (12 percent), New York City (4.5 percent), Putnam County (3.5 percent), Orange and Ulster counties (3 percent each), and Connecticut (3 percent).

Unemployment data provides additional insight into the health of the local economy. The Bureau of Labor Statistics' Local Area Unemployment Statistics program shows that the unemployment rate in Dutchess County increased from 3.2 percent in 2000 to an estimated 7.9 percent in 2010 (see Figure 4-7). This was the second highest annual unemployment rate since 1990, the highest being 8.6 percent in 1993.

Figure 4-7. Dutchess County Unemployment Rate (2000-2010)



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Besides employment activity, household income levels influence how the transportation system is used. Higher-income households tend to have more vehicles and are thus more inclined to travel by car, whereas lower-income households may have limited access to a private vehicle and are more likely to travel by public transit, particularly bus.

The Census Bureau's 2005-2009 American Community Survey (ACS) 5-year Estimate indicates that Dutchess County had a Median Household Income range of \$67,000 to \$69,000, which 26 to 30 percent higher than the \$53,000 reported in the 2000 Census (1999 dollars). However, when adjusted by the Consumer Price Index (CPI), this increase tracks inflation.

Dutchess County experienced the same trend with personal income. The 2005-2009 American Community Survey (ACS) 5-year Estimate shows a per-capita income range of \$30,100 to \$31,180 in Dutchess, compared to \$23,940 reported in the 2000 Census (1999 dollars), an increase of 26 to 30 percent. Again, when adjusted by the CPI, this increase is insignificant: the current buying power of individuals and households in Dutchess County is the same as reported in 2000.

Assessing the number of individuals living in poverty is another measure of economic health. The Census Bureau's 2005-2009 American Community Survey (ACS) 5-year Estimate reveals that 20,100 to 23,700 individuals in Dutchess County were living below the poverty level. Though this range is slightly higher than the 19,900 reported in the 2000 Census, it is not a significant increase when measured as a percentage of the population.

Transportation-related purchases represent a significant investment for consumers. According to the Bureau of Labor Statistics' Consumer Expenditures Survey, in 2009 the average American consumer spent \$7,658 on transportation, or 16 percent of their total annual expenses. This includes an average of \$1,986 for gasoline/motor oil and \$479 for public transit. These amounts are higher than reported in 2000, though they peaked in 2008, when the price for gasoline averaged \$4.15 per gallon.

Economic activity in Dutchess County, whether measured by employment, income, or poverty levels, has generally tracked national, state, and regional trends.

Housing

The 2010 Census reported a total of 118,638 housing units in Dutchess County, which was an 11.8 percent increase from 2000. This outpaces population growth, which was 6.2 percent from 2000 to 2010. The 12,535 new housing units built during the decade translate into an average increase of 1,250 new units per year, or a 1.2 percent annual increase.

Over the decade, 29 municipalities saw increases in total housing units, with only the Village of Rhinebeck losing units. The Towns of Fishkill and Union Vale had the largest percent increases in housing, with 31.4 percent and 30.5 percent respectively (see Figure 4-8). Areas that saw the largest increases in population also saw sharp increases in the number of housing units. The Towns of Fishkill and East Fishkill experienced the largest increases in total housing units, with 2,210 and 1,544 new units respectively.

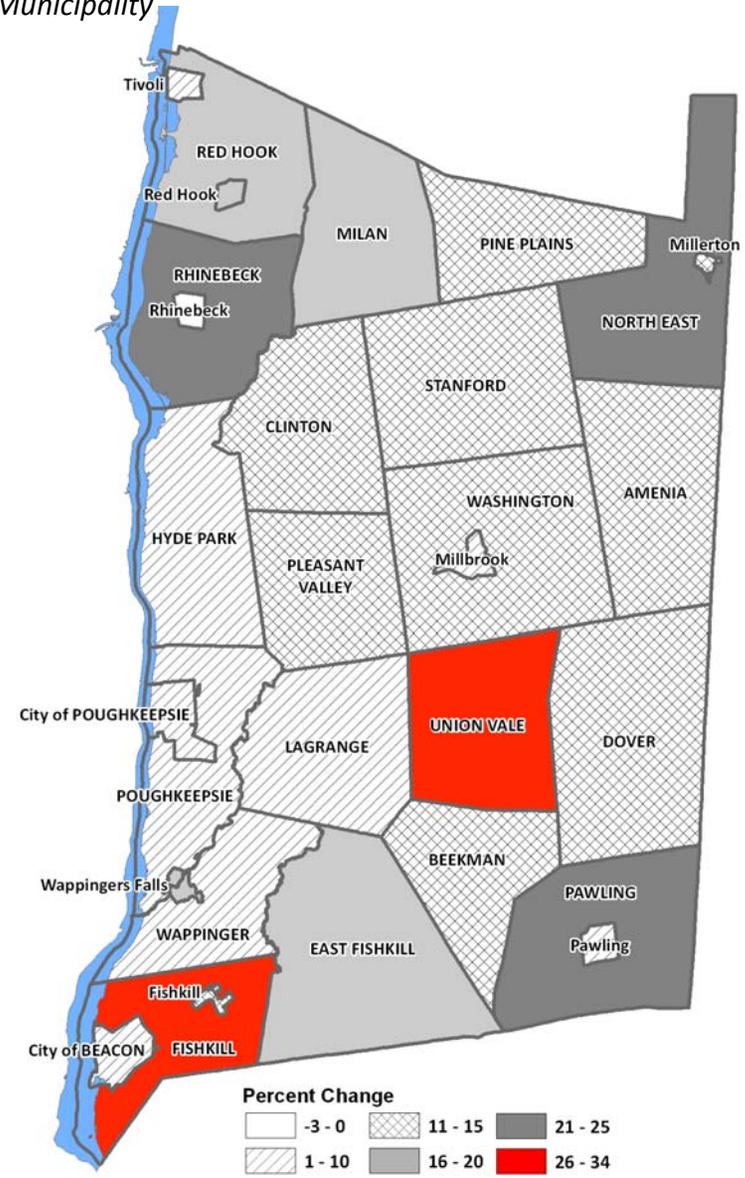
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The Council maintains a Major Projects database that tracks significant development projects across the County. The database tracks projects of 25 or more residential units or more than 25,000 square feet of non-residential gross floor area. For rural municipalities, the threshold is 10 or more residential units or more than 10,000 square feet of non-residential floor space. The 2010 Major Projects Report identified over 16,500 proposed housing units and almost 7 million square feet in non-residential development in the County. Compared to 2009, there was a 2.9% increase in proposed housing units and 1.1% decrease in proposed non-residential projects.⁵

The 2010 Major Projects Report noted that the southern and central portions of the County saw the most development proposals. The Towns of Dover, East Fishkill, Fishkill, Hyde Park, LaGrange, Pine Plains, and Poughkeepsie each had over 1,000 proposed housing units, accounting for over 77 percent of all proposed residential units in the County. Non-residential development proposals were also concentrated in the southern and central parts of the County. The Towns of East Fishkill and Hyde Park led with a combined total of over 3.2 million square feet, 44 percent of the County total. The City of Beacon and Towns of Dover, LaGrange, Pawling, and Poughkeepsie each had more than 400,000 square feet of proposed non-residential space proposed.

Related data from the Dutchess County Department of Planning and Development supports the observation that development activity has slowed in Dutchess County.

Figure 4-8. Percent Change in 2000-2010 Housing Units by Municipality



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The Planning Department reviews local development applications under the authority of New York State General Municipal Law (Sections 239-l and m), which requires city, town, and village municipal boards to forward certain land use actions to the County planning agency for review. These actions, known as referrals, include area and use variances, site plans for locations within 500 feet of a State or County road, and zoning amendments. The number of referrals processed by the Department decreased from 627 in 2000 to 513 in 2010, an 18 percent decrease.

Travel Behavior

Factors such as demographics, economic conditions, and the housing market influence people's travel behavior. Dutchess County residents rely primarily on the automobile for their transportation needs. The 2009 National Household Travel Survey (NHTS), which includes data specific to Dutchess County, estimated that 84 percent of all surveyed trips in the County were made by personal vehicle, with the remaining trips made by walking (9 percent), transit/school bus (4 percent), bicycling (1 percent), and train (1 percent) (see Figure 4-9). 92 percent of trips to work were made by vehicle. This distribution is the same as reported in the 2001 NHTS.

The Census Bureau's 2005-2009 American Community Survey (ACS) 5-year Estimate further supports the observation that the automobile is the primary means of travel in Dutchess County. Based on surveys from 2005 to 2009, the ACS estimated that 84 to 87 percent of work trips made by County residents were made by a vehicle, with 75 to 78 percent of

Figure 4-9. Residential Household Person Trips for Dutchess County Household Population (2009 NHTS)

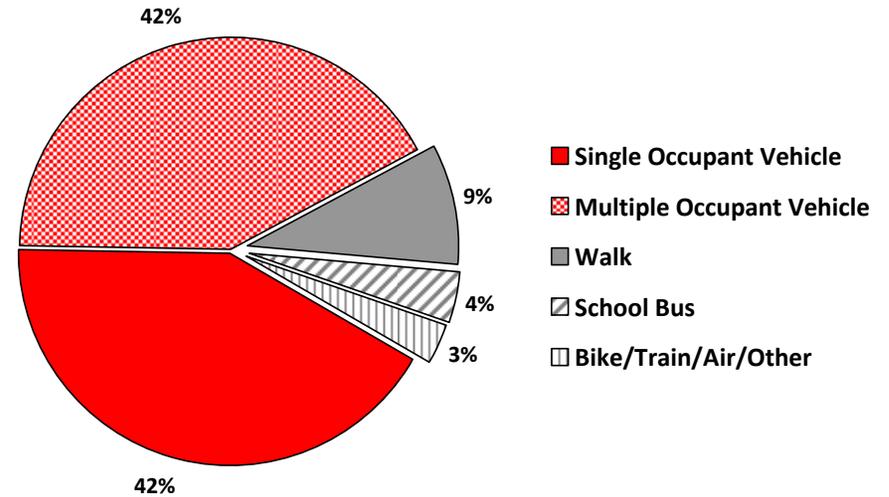
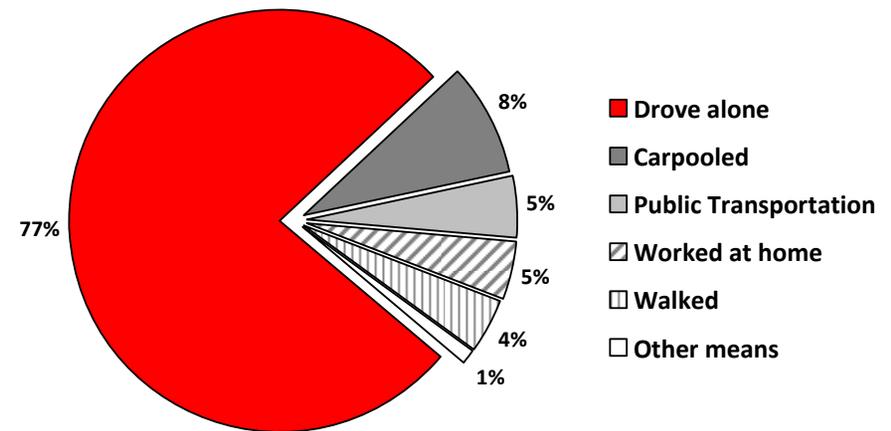


Figure 4-10. Means of Transportation to Work for Dutchess County Workers (2005-2009 ACS 5-year Estimate)



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those trips made in a single-occupant vehicle (see Figure 4-10). Only four to five percent of work trips were made by bus or rail transit.

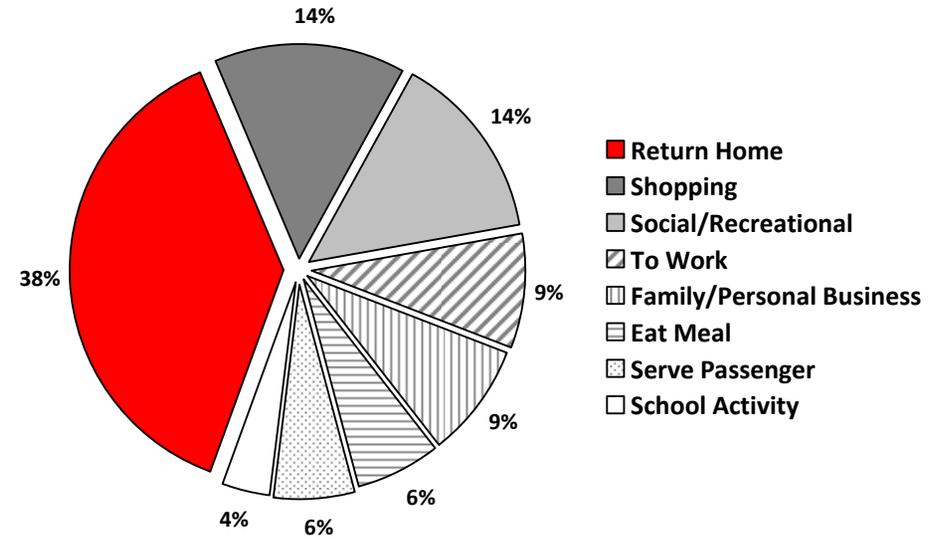
The 2009 NHTS also estimated that 97 percent of surveyed households had at least one vehicle, with only 3 percent having no vehicle. This distribution is almost identical to that reported in the 2001 NHTS. The 2005-2009 ACS 5-year Estimate supported this observation, estimating that 96 to 97 percent of Dutchess County workers aged 16 and over had access to at least one household vehicle. The majority of no-vehicle households had an annual household income below \$25,000.

Vehicle registration data from the NYS Department of Motor Vehicles affirms that the private vehicle is ubiquitous in Dutchess County. From 2000 to 2010, the number of standard vehicle registrations in the County increased by 9 percent, from 192,000 to 209,000 vehicles. Most of this increase occurred during the first half of the decade, with the number stabilizing in recent years. Drivers' license data shows the same trend, stabilizing at almost 211,000 licensed drivers in 2010.⁶

The 2009 NHTS provides data on why Dutchess County residents travel. The return trip home, whether from shopping, work, or other activities, represents 38 percent of all trips, the highest share of any trip purpose. Other trip purposes include shopping (14 percent), social/recreational (14 percent), family business (9 percent), and eating out (6 percent) (see Figure 4-10). The trip to work represents 9

percent of all trips, which is the same share reported in the 2001 NHTS (see Figure 4-11).

Figure 4-11. Residential Household Person Trips for Dutchess County Household Population (2009 NHTS)



The 2009 NHTS also indicates that trip purposes have different travel characteristics. The distance traveled by Dutchess County residents varies based on trip purpose. The 2009 NHTS estimates that people traveled an average of 17.7 miles for social/recreational purposes and 17.2 miles to commute, whereas trips to school, shopping, or for family business were less than 10 miles. Measured as a whole, the average trip length in Dutchess County was 11.2 miles; this is slightly higher than the 10.3 miles reported in the 2001 NHTS. Some transportation modes had longer trip lengths – for example, train trips to work averaged 62.5 miles, compared to 17.6 miles for vehicle-based work trips. Non-motorized trips had

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the shortest trip lengths, with walking trips averaging 0.7 miles and bicycling trips averaging 1.1 miles. These trip distances were consistent with the 2001 NHTS.

The Census Bureau's 2005-2009 ACS 5-year Estimate for Dutchess County indicates that the average travel time to work is between 29.1 and 30.3 minutes, with over half of work commutes taking 24 minutes or less. The ACS also estimates that 7:00-8:30 a.m. is the most common time period for Dutchess County workers to leave home for work. These estimates are consistent with data from the 2000 Census.

Travel Activity

Travel activity remains closely tied to the economy. The 2007-2009 economic recession not only affected employment and housing, but also the amount of travel. Traffic volume data from the FHWA shows that nationally, the number of vehicle miles traveled in 2009 was lower than reported from 2004 through 2007, and in 2008, total travel fell for the first time since 1980.⁷ Though travel fell during the recession, vehicle miles traveled nationally increased by 6.8 percent from 2000 to 2009, an annual rate of growth of 0.8 percent. In comparison, the U.S. population grew by 9.7 percent from 2000 to 2010, an annual growth rate of almost one percent.

Travel activity in New York State followed national trends. The number of vehicle miles traveled in the state decreased for three consecutive years from 2007 to 2009.⁸ Yet the state experienced moderate travel growth from 2000 to 2009, with total vehicle miles traveled increasing by 3.7 percent, or 0.4 percent annually. This was slightly higher than the state's population growth, which grew by 2.1 percent from 2000 to

2010, an annual growth rate of 0.2 percent. Regional travel trends tracked national and state trends.

Future Population, Employment, & Housing

Moving Dutchess recommends projects and policies to preserve and improve the County's transportation system over the next 29 years. To accomplish this, the Council must understand how the area will change, particularly with regard to population, employment, and housing. Demographic forecasts inform our understanding of potential trends and allow us to better assess the potential impacts of change on the transportation system. The Council recognizes that forecasts are imprecise, and unforeseen events, whether international or national in scope, can quickly alter future conditions and affect how people use the transportation system. Nonetheless, the Council must identify future trends, based on the best available data, to satisfy its planning mission.

Prior to developing its own forecast, the Council reviewed demographic forecasts and projections from three sources: the New York State Department of Transportation (NYSDOT), the New York State Department of Labor (NYSDOL), and the New York Metropolitan Transportation Council (NYMTC). All three provided population forecasts at the County level, with the NYSDOT data providing additional forecasts at the municipal level.

The NYSDOT forecast spanned the 30-year period from 2000 to 2030 and was prepared in 2005 by Global Insight under

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contract by NYSDOT. The forecast estimated that the County's population would grow to approximately 333,000 by 2030, a growth rate of 19 percent or 0.6 percent annually. The forecast estimated that the population aged 65 and over would increase by 110 percent, while the 19 and under age group would increase by only one percent – though they would still represent 24 percent of the population, compared to 21 percent for those aged 65 and over. The labor force, defined as those between the ages of 20 and 64, was projected to increase by 9 percent.⁹

The NYSDOL projections were prepared in 2011 through a collaborative effort with the Cornell Program on Applied Demographics. The projections relied on historic data to estimate future conditions and spanned the 30-year period from 2010 to 2040. The projection estimated that Dutchess County's population could grow to approximately 326,000 by 2040-- a total increase of 9.7 percent or 0.3 percent annually. The projection estimated that the population aged 65 and over would increase by 51 percent or 1.7 percent annually. When measured as a share of the total population, the projection estimated that the 19 and under age group would represent 24 percent of the population, compared to 19 percent for those aged 65 and over. The labor force, defined as those between the ages 20 and 64, was projected to increase by 9 percent.¹⁰

Prepared in 2011, the NYMTC forecasts span the period from 2010 to 2040 and provide county-level estimates for population and employment. The forecast estimated that the County's population would grow to approximately 395,000 by

2040, a 41 percent increase. This represents an annual growth rate of one percent, which is considerably higher than the NYSDOT and NYSDOL growth rates. The forecast estimated that employment would increase by 65 percent by 2040, or 1.6 percent annually.¹¹

Although the three forecasts differ in their rates of growth, they agree that Dutchess County's population will increase over the next 20 to 30 years. The forecasts also agree that the 65 and over population will grow at a faster rate than other age groups, especially those 19 and under. The estimates further agree that the 19 and under age group will continue to represent almost 25 percent of the County's total population.

Build-out Analysis

In addition to the population estimates described above, the Council performed its own estimate of future population, which was based on a build-out analysis completed by the Dutchess County Department of Planning and Development. The premise behind this approach was that the County has finite capacity to support new housing units, and this capacity will affect the rate of population growth. By determining how many housing units could be built, we can better estimate future population based on historic occupancy rates and average household sizes.

The build-out analysis assumed that all undeveloped parcels that are currently zoned residential would be developed to their full potential. For *Moving Dutchess*, it was assumed that this build-out would occur over 50 years (i.e. 2060). The analysis identified the number of possible new housing units

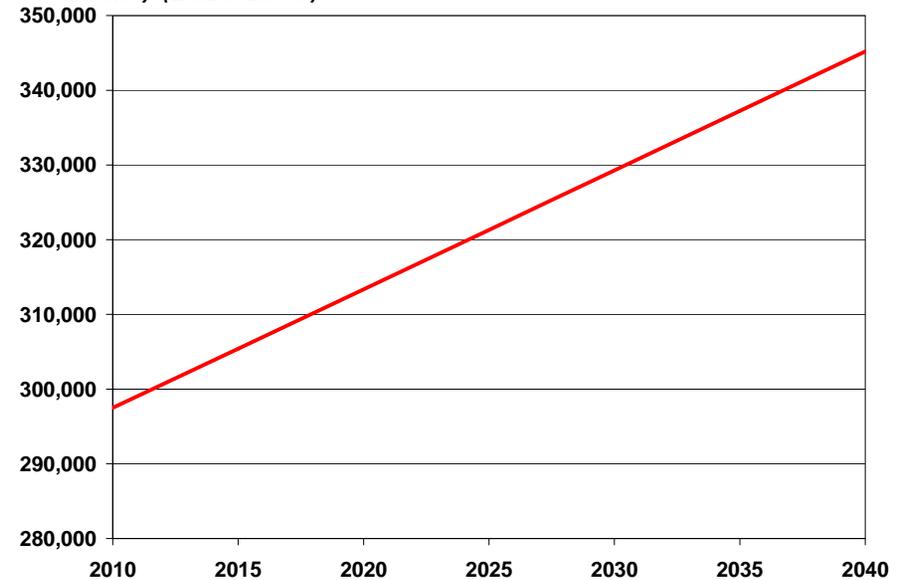
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that could be legally supported for over 7,200 individual parcels, based on local zoning and subdivision bulk regulations for the County's 30 municipalities. This gross build-out was then constrained based on environmental features such as floodplains, watersheds, steep slopes, protected lands, and agricultural lands that would limit the number of housing units on each parcel. An additional 15 percent of land area was set aside for roads and other infrastructure. This produced a net total of potential housing units by parcel, which was adjusted by the presence of any existing housing units. The analysis estimated that over 30,000 new housing units could be developed on residential parcels, with an additional 13,000 housing units if residentially zoned agricultural lands were developed. Assuming that land being used for agricultural purposes would be protected, it was estimated that by 2040, almost 20,000 of the 30,000 new units could be developed. This scenario is illustrated in the Build-out Development Potential map.

To estimate future population, the total number of potential future households (occupied housing units) was calculated by applying occupancy rates to the number of new housing units. The occupancy rates were based on average vacancy rates from 1980-2010 Census data by municipality. Future population was determined by multiplying the number of occupied housing units (i.e. households) by the average number of persons per household by municipality. This generated a total new population, which was added to 2010 Census data.

The pro-rated build-out analysis estimates that the County's population could total 345,000 by 2040, a 16 percent increase from 2010. This is a 0.5 percent annual growth rate, which is comparable to the NYSDOL and NYSDOT forecasts but lower than the NYMTC forecast (see Figure 4-12).

Figure 4-12. Estimate of Future Total Population in Dutchess County (2010-2040)



Center-Focused Build-out Alternative

In addition to the traditional build-out analysis, the Dutchess County Planning Department performed an alternative build-out analysis to measure how much development could be absorbed by the centers identified in the County's Centers and Greenspaces concept. This build-out assumed the same environmental constraints and 15 percent set-aside for

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infrastructure as the build-out based on existing zoning. Assuming a 10 unit per acre density within the 66 centers, undeveloped land within the centers could potentially absorb 55 percent of total build-out development. This build-out scenario would preserve all of the current agricultural parcels and 36 percent of the other residentially-zoned land projected to be developed under the existing zoning build-out. This scenario is illustrated in the Center-focused Build-out Development Potential map.

Regional Population Growth

The Council expects population growth to occur across the Mid-Hudson Valley. The NYSDOL projections estimate that Orange County will grow to 444,000 by 2040, an increase of 19 percent or 0.6 percent annually, with Ulster County projected to have a population of 178,000 by 2040, a decrease of 2.3 percent. Combined, the three counties are estimated to have a population of approximately 950,000 by 2040.

Given the likelihood of population growth in Dutchess County and the greater region, the Council expects that additional pressure will be placed on infrastructure, public services, and natural resources.

Future Economic Activity

The Council relies on national, State, and regional data sources to understand economic activity in Dutchess County. Understanding how the economy may change allows us to better gauge future demands on the transportation system,

since economic, employment, and income trends directly influence travel behavior.

The Bureau of Labor Statistics' Employment Projection Program estimated that national employment will grow by 10 percent from 2008-2018, or one percent annually. The projections indicate that two major employment sectors will experience the highest rates of growth: professional and business services, and health care and social assistance. These two sectors are expected to create half of all new jobs over the 10-year period. Other sectors such as educational services and leisure and hospitality will also experience high rates of growth. The manufacturing sector is projected to experience the highest rate of job loss, losing 0.9 percent annually from 2008-2018.¹²

Though the national, State, and regional economies will require time to regain their footing, it is reasonable to expect that there will be economic growth over the next 30 years. Employment forecasts completed in 2005 by Global Insight for NYSDOT estimated that the number of jobs in Dutchess County would increase by 43 percent between 2000 and 2030, from 114,500 to over 163,000, while NYMTC's forecasts show employment reaching 225,000 by 2040.

The Dutchess County Planning Department, in conjunction with Orange and Ulster counties, completed a Regional Housing Needs Assessment (RHNA) in 2009 that included housing and economic forecasts for the three counties. For Dutchess County, the forecast indicated that non-farm employment would grow by 0.4 percent annually from 2010

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to 2020, with most new jobs occurring in the education and health sectors.¹³

The 2009 RHNA identified three major issues related to the region's future economy: 1) credit is expected to be more difficult to obtain in the near term, 2) energy prices are expected to remain elevated relative to historic prices, and 3) the struggling economy will likely further slow the relatively weak population growth forecasted in the region.

Future economic conditions, especially tighter credit lending practices, will make home ownership less likely for households and make it more difficult for businesses to expand. Higher energy prices will increase the cost of doing business and reduce discretionary household spending. A slowdown in the housing market will likely lead to slower population growth in the region. The 2009 RHNA noted that the demographic changes forecasted to occur in the area, particularly over the next 15 years, will be different than years prior due to slow economic growth.

The Council expects employment to grow at a very gradual rate, due to the lingering affects of the 2007-2009 recession and sluggish economic growth across the nation. The NYSDOL estimates that it will take five years for the state's economy to rebound from the recession. This suggests that employment will not reach pre-recession levels until at least 2015. The Council therefore estimates that employment growth in Dutchess County will trail behind population growth, averaging an increase of 0.4 percent annually. Using this

growth rate, total employment in Dutchess County could reach 124,000 by 2040. This is 13 percent higher than 2010.

Future Housing

The Council used data from the 50-year build-out analysis to identify the number of future housing units and households. However, the 2009 RHNA also estimated the number of future housing units in Dutchess County. The RHNA estimated that the County would have a total of 119,600 units by 2020, which is slightly lower than the 125,000 housing units estimated by the build-out analysis for 2020. The RHNA estimated a total of 116,500 households by 2020, which is similar to the 114,000 estimated by the build-out analysis.

The RHNA projected housing growth across the TMA, estimating that Orange and Ulster counties would reach 146,300 and 82,000 housing units respectively by 2020. These increases are similar to the growth rates projected for Dutchess County. Combined, the TMA is projected to have almost 348,000 housing units by 2020. By extrapolating each County's projected growth, the Council estimates that the TMA could see a total of over 400,000 housing units by 2040.

Future Travel

The Council maintains a travel demand model that simulates vehicle travel within Dutchess County. The model uses a three step process (trip generation, trip distribution, and trip assignment) to estimate trips and relies on GIS (Geographic Information Systems) mapping to simulate the road system and land use patterns. The model measures the impact of

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demographics and land use on the transportation system, incorporating data about future population, employment, housing, and households in the County. The resulting Vehicle Miles Traveled (VMT) provides an estimate of future travel. Based on model runs completed for the Plan's air quality conformity determination, daily VMT could increase by 38 percent over the planning period, reaching 7.5 million miles traveled daily by 2040.

Forecasting transit demand is less detailed. The two public bus systems (Dutchess County LOOP and City of Poughkeepsie) maintain data on day-to-day passenger boardings. Although these agencies do not make passenger forecasts for their systems, the Council expects passenger levels to continue at current levels, potentially increasing if fuel prices rise, the systems expand, or transit-oriented development become more prevalent. The Council also expects commuter demand for inter-county transit connections to remain at current levels and perhaps increase as the economy grows, fuel prices rise, or improvements are made to the systems.

The Metropolitan Transportation Authority (MTA) is updating its Regional Strategic Review of operations, including Metro-North Railroad. The initial analysis assumes growth on the Hudson and Harlem lines, including new demand for off-peak and weekend service. The strategy supports MTA's 20-year Needs Assessment (2015-2034) and current 5-year Capital Program (2010-2014).

Like demographic forecasts, travel forecasts are based on recent trends and do not account for global or national forces

that may impact our transportation system, such as disruptions to the supply or price of fuel, a downturn in economic activity, public and private responses to global climate change, or other behavior-altering events.

Implications for the Transportation System

Irrespective of future changes in population, employment, or travel behavior, the challenge continues to lie in finding an acceptable balance between competing needs and limited resources. The Council seeks to promote projects that will satisfy Dutchess County's most pressing short, mid, and long-range transportation needs. Changes in regional and local population, employment, and land use all have an impact on travel behavior, as do external influences such as the economy and energy prices. The past decade saw the County's population and housing stock grow, while employment fell. These fluctuations in growth will likely continue, with economic conditions not fully rebounding until the latter part of this decade. Yet, even if no more growth occurs, our infrastructure will still age and require adequate investment to maintain acceptable levels of safety and mobility.

¹ U.S. Census Bureau; 1950-2010 Census

² U.S. Census Bureau; 2000 and 2010 Census

³ FTA Circular 4702.1A, *Title VI and Title VI-Dependent Guidelines for Federal Transit Administration Recipients*, May 13, 2007.

⁴ Bureau of Labor Statistics, *Quarterly Census of Employment and Wages*, 2010. BLS data for 2010 showed total employment in Dutchess County at 110,200, continuing the downward trend since 2006.

⁵ Poughkeepsie-Dutchess County Transportation Council, *2009 and 2010 Major Projects Reports*, 2009 and 2010,

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<http://www.co.dutchess.ny.us/CountyGov/Departments/Planning/majorprojects2010.pdf>

⁶ NYS Department of Motor Vehicles, *Drivers Licenses on File and Vehicle Registrations in Force*, 2011, <http://www.nydmv.state.ny.us/stats.htm>

⁷ Federal Highway Administration (FHWA), *Traffic Volume Trends*, January 2011,

http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm

⁸ NYSDOT, *Historical Travel Trends in New York State*, July 2010,

<https://www.nysdot.gov/divisions/policy-and-strategy/darb/dai-unit/tss/repository/Trends.pdf>

⁹ NYSDOT, *Global Insight Forecasts*, 2005

¹⁰ Cornell Program on Applied Demographics, *Dutchess County Population Projection Data*, 2011,

<http://pad.human.cornell.edu/counties/projections.cfm>

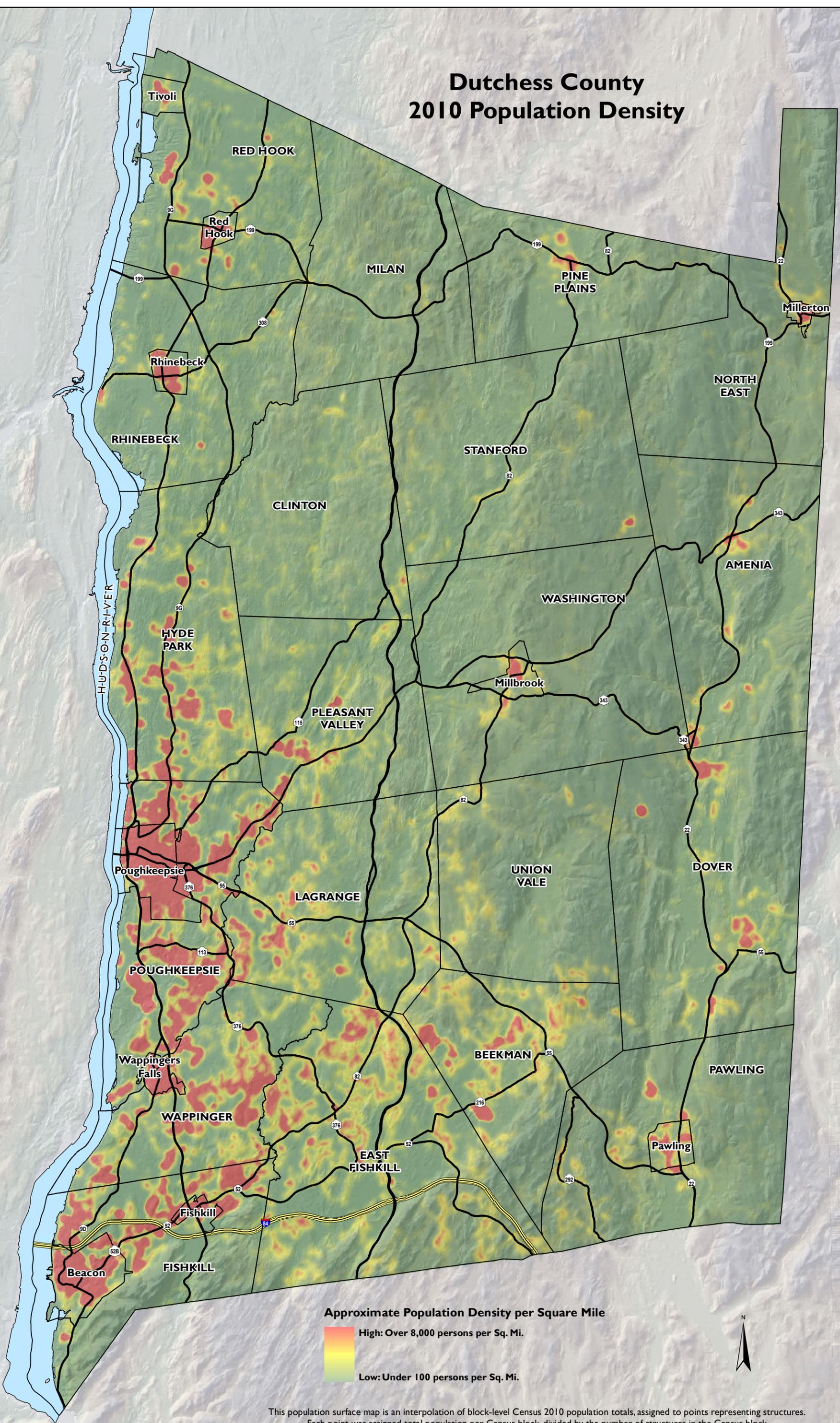
¹¹ NYMTC, *2040 Socioeconomic and Demographic Forecasting*, August 2011, http://www.nymtc.org/project/forecasting/sed_products.html

¹² Bureau of Labor Statistics, *Employment Projections Program (EPP)*, 2008-18 (November 2009), <http://www.bls.gov/emp/#publications>

¹³ Dutchess, Orange, and Ulster County Planning Departments, *A Three-County Regional Housing Needs Assessment*, February 2009,

<http://www.co.dutchess.ny.us/CountyGov/Departments/Planning/tcrhassessent.pdf>

Dutchess County 2010 Population Density



Approximate Population Density per Square Mile

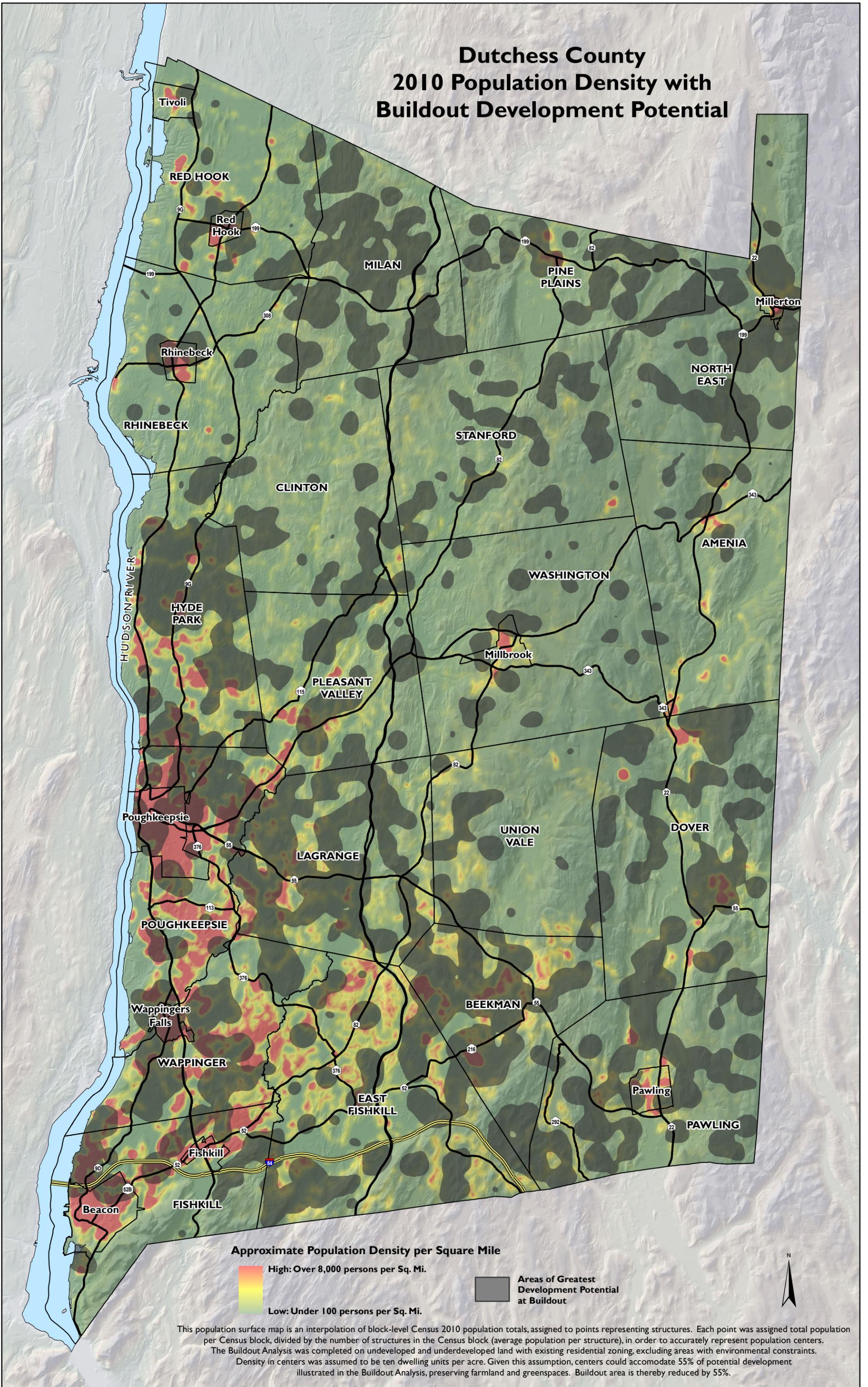
High: Over 8,000 persons per Sq. Mi.

Low: Under 100 persons per Sq. Mi.



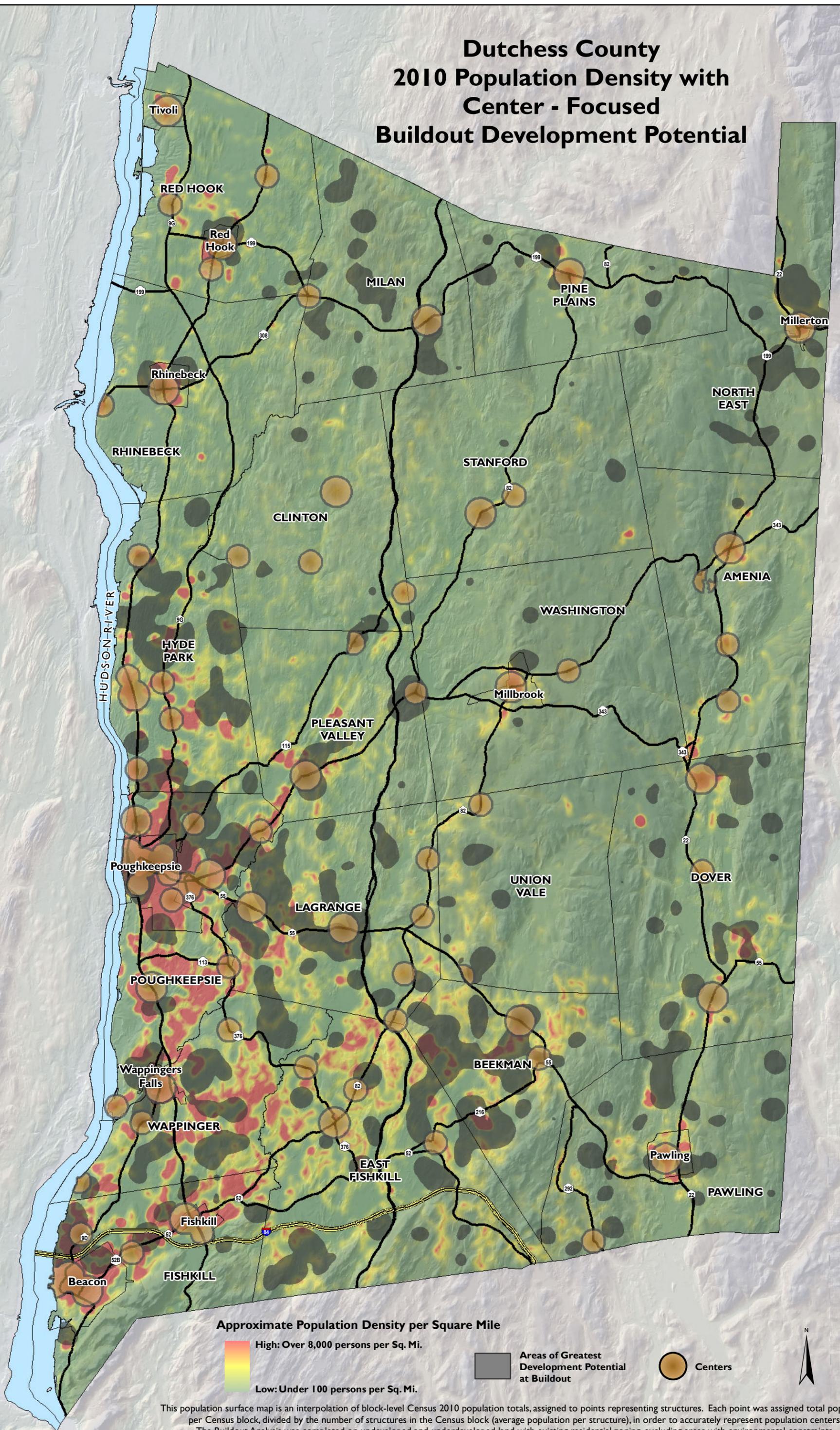
This population surface map is an interpolation of block-level Census 2010 population totals, assigned to points representing structures. Each point was assigned total population per Census block, divided by the number of structures in the Census block (average population per structure), in order to accurately represent population centers.

Dutchess County 2010 Population Density with Buildout Development Potential



This population surface map is an interpolation of block-level Census 2010 population totals, assigned to points representing structures. Each point was assigned total population per Census block, divided by the number of structures in the Census block (average population per structure), in order to accurately represent population centers. The Buildout Analysis was completed on undeveloped and underdeveloped land with existing residential zoning, excluding areas with environmental constraints. Density in centers was assumed to be ten dwelling units per acre. Given this assumption, centers could accommodate 55% of potential development illustrated in the Buildout Analysis, preserving farmland and greenspaces. Buildout area is thereby reduced by 55%.

Dutchess County 2010 Population Density with Center - Focused Buildout Development Potential



This population surface map is an interpolation of block-level Census 2010 population totals, assigned to points representing structures. Each point was assigned total population per Census block, divided by the number of structures in the Census block (average population per structure), in order to accurately represent population centers. The Buildout Analysis was completed on undeveloped and underdeveloped land with existing residential zoning, excluding areas with environmental constraints. Density in centers was assumed to be ten dwelling units per acre. Given this assumption, centers could accommodate 55% of potential development illustrated in the Buildout Analysis, preserving farmland and greenspaces. Buildout area is thereby reduced by 55%.