Chapter 2

Base Study

Chapter 2: Base Study

Long-range planning must be based on accurate, comprehensive, and reliable data about the community and its residents. Analysis of long-term trends can be helpful in forecasting the community's future needs and requirements. This Base Study provides an analysis of the community's existing land uses, natural and environmental conditions, population and economy to anticipate future growth and development over the next 25 years. The results of these analyses is the determination of the amount of residential, commercial, and industrial land required to accommodate growth and the basis for future land use plans and policies.

Existing Land Use Analysis

An important element of land use planning is an analysis of a community's existing land use. An existing land use analysis involves a detailed evaluation of the community's character, specifically existing land uses, vacant and underdeveloped land, physical conditions and constraints, and availability of public infrastructure and services. This analysis results in the determination of the land capacity and services available and needed to meet the future growth and development.

Nelson County has approximately 279,780 acres, or 437.2 square miles. Given this substantial land area, a property-by-property evaluation of existing land uses was not feasible during the existing land use analysis for the 1996 Comprehensive Plan. The existing land use analysis focused on identifying and evaluating Community Character Areas, or areas representing distinct geographic areas with similar characteristics, development issues, and planning concerns. The existing land use analysis of the 1996 plan identified 8 Community Character Areas based on field surveys of existing development, community input and experience, and analysis of natural features. Due to their more intensive and concentrated existing land uses, more detailed analyses of the Urban and Suburban areas and Bloomfield, Fairfield, and New Haven towns were completed. These Community Character Areas were used as a basic framework for applying future land use development and public service policies, and the community characteristics provided the basis for the Future Land Use Plan recommendations.

This 2011 Comprehensive Plan includes an update of the existing land use analysis from the 1996 plan and identifies changes in land use patterns that have occurred over the last 15 years within each Community Character Area. The identification of major changes to land use patterns resulted in adjustments to future land use plans for the Community Character Areas and assisted in the development of detailed future land use maps for the Village, Hamlet, and Crossroads Community Character Areas. For instance, the Little Brick Hamlet at the intersection of Boston Road (US 62) and Wilson Creek Road (KY 733) was identified as a new Crossroads Community Character Area to accommodate compact residential and neighborhood business development in and around the new Boston School.

Maps #2-1 through 2-4 in the Map Appendix are the Existing Land Use Maps for the Urban and Bloomfield, Fairfield, and New Haven Town Community Character Areas. Table 2-1 is a matrix providing a description and identifying the common characteristics of the existing Community Character Areas. The existing land use maps and matrix provide the basis for the Future Land Use Plan recommendations presented in Chapter 4.

Table 2-1: Existing Community Character Area Matrix

Community Character Area	Community Characteristics
Urban Areas Developed area within and surrounding Bardstown and with a mixture of land uses at a development density more intensive than the rest of the County.	• Mixture of residential, commercial, institutional, and industrial uses. • Compact development patterns. • Availability of or access to public infrastructure and services. • Primary employment center for the county. • Principal retail and general commercial, office, public, and institutional uses serving local and regional users and market. • Significant recreational and tourist activities and attractions. • Presence of naturally sensitive areas, particularly along creeks, streams, and river corridors. • Existing developed areas within the sewer drainage basins surrounding Bardstown. • Substantial undeveloped or underdeveloped land areas within sewer drainage basins.
Suburban Areas Developing area on the fringe of and immediately surrounding the Urban Community Character Area and with primarily low-density residential uses.	• Primarily low-density residential and agriculture uses. • Varying degree of availability of and access to public infrastructure and services, particularly water and sewer. • Predominant development pattern comprised of internal residential street system within subdivisions. • Commercial uses located within Villages, Hamlets, and Crossroads at the edge and within the Suburban Area. • Increased development pressure within Suburban area.
Towns Developed areas within the incorporated cities and characterized by a mixture of land uses.	• Bloomfield, Fairfield, and New Haven • Compact urbanized developments surrounded by rural areas. • Mixture of residential, commercial, institutional, and industrial uses. • Availability of or access to public infrastructure and services within Bloomfield and New Haven. • Secondary employment center for the surrounding area. • Retail and general commercial, office, public, and institutional uses serving surrounding area.
Villages Traditional compact centers that are predominantly residential in character and have core of limited commercial, public, and community services.	• Boston, Chaplin, Cox's Creek, Deatsville, and Hunters • Small compact developments surrounded by rural area. • Existing low-density single-family residential neighborhoods. • Basic street network beyond crossroads. • Compact commercial areas for professional office, retail commercial, and personal service establishments serving residents of the Village and surrounding area.
Hamlets Small developed areas concentrated at a crossroads or roadway intersection and that have a distinct identity in a rural setting.	• Botland, Culvertown, Melody Lake, New Hope, Samuels, and Woodlawn • Existing single-family residential neighborhood organized around a community focal point or at a crossroads. • Small commercial areas for retail commercial and personal service establishments serving residents of the Hamlets and immediately surrounding area.

Table 2-1: Existing Community Character Area Matrix (continued)

Crossroads Smallest developed areas concentrated at a crossroads or roadway intersection and that have a distinct identity in a rural setting.	• Balltown, Cedar Creek, Greenbriar, Highgrove, Howardstown, Little Brick, and Nelsonville • Existing single-family residential neighborhood organized around a community focal point or at a crossroads. • Small commercial areas for retail commercial and personal service establishments serving residents of the Crossroads and the immediate surrounding area.
Rural Areas Areas predominantly rural in character and with very low-density residential uses and agricultural, open space, and undeveloped lands.	• Remaining County area outside defined community areas. • Predominately agricultural, open space, and undeveloped lands and very low-density residential uses. • Scattered non-residential uses. • Growing amount of residential frontage development characterized by a development pattern of residential lots with direct access to and from heavily traveled major and minor arterial roads.
Naturally Sensitive Areas Areas with the most significant concentration of lands with developmental constraints, such as floodplains or steep slopes.	• Predominately agricultural, open space and undeveloped lands with constraints to developments, such as knobs and steep slopes and floodplain and riparian areas.

Urban and Suburban Community Character Areas – Bardstown & Surrounding Areas

The City of Bardstown is Nelson County's largest city and its county seat. Bardstown also is the County's primary employment center and has the principal retail and general commercial, office, public, institutional, and tourist and recreational uses serving local and regional users and market. The Suburban areas are those developing areas on the fringe of and immediately surrounding the Urban area. This area has primarily low-density residential uses and has adequate undeveloped land for future residential growth. Map #2-1 in the Map Appendix illustrates the existing land use composition and pattern of the Urban and Suburban areas and specifically shows the general land use composition. For all of these reasons, it is important that compact development be established for Bardstown and surrounding area. A key to maintaining quality growth and community character will be defining and directing compatible growth to these areas and ensuring adequate levels of public infrastructure and services. The Urban area and its surrounding area should continue to be the primary growth center of Nelson County.

Towns – Bloomfield, Fairfield, and New Haven

The Cities of Bloomfield, Fairfield, and New Haven are designated as *Towns* and require further analysis given the mixture and composition of uses in these character areas. These historic settlement areas have recognizable identities and established public services and facilities and area capable of accommodating future development. Maps #2-2 through #-2-4 in the Map Appendix illustrate the existing land use composition and patterns and presence of low-density residential and agricultural areas surrounding each Town. These maps also provide the foundation for determining the location and amount of future development for each Town. These Towns are recognized growth areas and have adequate available and undeveloped land to accommodate future development. To prevent scattered growth in the rural areas, future growth and development must be directed to locate within these established communities.

Villages, Hamlets, and Crossroads

Small settlement areas are scattered throughout Nelson County. Eighteen areas have been designated as Villages, Hamlets, and Crossroads, as shown on Maps #4-6 through 4-23 in the Map Appendix. These settlement areas have recognizable identities and development patterns; however, each area has unique resources and levels of public services and facilities. Further land use analysis of each settlement area is needed to determine the level of public services and facilities and potential development capacity.

Environment

The physical geography of an area affects the amount, type, and direction of development. Knowledge of a community's natural environment helps create a community that is fiscally and environmentally sustainable. Natural factors, such as climate, topography, geology, soils, and hydrology are important because they influence the cost of development and determine suitability of an area for a given use.

Rapid growth and development may have dramatic and long-term adverse effects on the physical environment. As Nelson County continues to grow, many environmental issues, such as reduced water and air quality, increased noise and light pollution, increased storm water runoff, and decreased open space, will arise and may individually or collectively adversely effect the community character and overall quality of life of residents. Depletion of Nelson County's unique natural features, such as knobs, wood hillsides, scenic views, vistas, and corridors, and floodplains and riparian areas, will result in unrecoverable resources significant to the community's character, quality of life, and recreational opportunities.

This section identifies the environmental characteristics and assessment of development constraints and impact on natural resources. The feasibility of development may be significantly affected by these conditions. Future land use planning must minimize development in these naturally sensitive areas to guard against negative environmental issues and impacts. Because the generalized geology, soil, slope, and floodplain maps in this Plan do not provide significant detail, soil, slope, flood hazard, wetlands, geological, and infrastructure mapping and data are all incorporated *by reference* as part of this Plan. This mapping and data should be referenced during the review of future land use proposals to ensure that development proposals minimize adverse impacts on naturally sensitive areas.

Climate

Nelson County has a moderate and humid climate and is suitable for agriculture and other uses. The National Climatic Data Center of the U.S. Department of Commerce has 2007 climatological data for Nelson County. The average annual temperature is 57.3 degrees, with the highest recorded temperature of 103 degrees in July 1999 and the lowest recorded temperature of -21 degrees set in January 1963. Precipitation averages 45.91 inches annually. The mean annual snowfall is 15.7 inches. The mean number of days with precipitation is 130.8. Southerly winds predominate and bring moist warm air. The 30-year record of relative humidity is 83 percent at 7 a.m., 61 percent at 1 p.m., and 66 percent at 7 p.m.

The most common severe weather conditions are mild droughts, ice storms, and thunderstorms. The mean number of days with thunderstorms is 41.4 days. Tornadoes are the most devastating severe weather that occurs.

Topography

General Topography

Nelson County includes parts of the Outer Bluegrass Region of central Kentucky and fringes of the Knobs Region east of Muldraugh Hill (Highland Rim). The valley of Rolling Fork separates upland masses from the main escarpment in the southwestern part of the county.

The topography of Nelson County is varied, ranging from a nearly flat tableland in the Bardstown area to the rolling hills of the eastern part of the county and the knobs terrain of the western and southwestern areas. Eastern and north-central parts of the county have a hilly topography, gently to moderately rolling and well dissected. Local relief of 100 feet is common, and steep slopes are rare.

Broad, flat areas are present between valleys in the central part of the county. The tableland dips gently from an elevation of about 750 feet east of Bardstown to about 600 feet west of Bardstown.

The most striking topography in the county is found in the western and southwestern areas. In the Knobs area, conical hills and irregular land masses rise 300 to 400 feet or more above the surrounding lowland.

Slopes are steep. The highest elevation in the county, 1,090 feet, is on Rohan Knob, located on the Nelson-Marion County line. Cecil Ridge, northeast of Howardstown, has a maximum elevation of 1,022 feet, and Indian Grave Ridge in Knobs State Forest has a maximum elevation of 902 feet. Several knobs northeast of New Haven also attain elevations in excess of 900 feet.

The lowest elevations in the county are along the valley of Rolling Fork. The lowest point, approximately 390 feet, is where Rolling Fork leaves the county. The elevation of Bardstown, at the Old Courthouse in Court Square, is 647 feet. Other elevations are Bloomfield, 657 feet; Boston, 454 feet; Chaplin, 830 feet; Coxs Creek, 700 feet; Cravens, 617 feet; Deatsville, 687 feet; Fairfield, 721 feet; Howardstown, 507 feet; Nelsonville, 473 feet; New Haven, 470 feet; New Hope, 518 feet; Samuels, 677 feet; and Woodlawn, 790 feet.

Reprinted from Groundwater Resources of Nelson County, Kentucky, www.uky.edu/KGS/water/library/gwatlas/Nelson

Karst Topography

The term "karst" refers to a landscape characterized by sinkholes, springs, sinking streams (streams that disappear underground), and underground drainage through solution-enlarged conduits or caves. Karst landscapes form when slightly acidic water from rain and snowmelt seeps through soil cover into fractured and soluble bedrock, usually limestone, dolomite, or gypsum. Sinkholes are depressions on the land surface where water drains underground. Usually circular and often funnel-shaped, they range in size from a few feet to hundreds of feet in diameter. Springs occur when water emerges from underground to become surface water. Caves are solution-enlarged fractures or conduits large enough for a person to enter. Reprinted from Generalized Geologic Map for Land-Use Planning: Nelson County, Kentucky, Map and Chart 97, Series XII, 2005, Kentucky Geological Survey.

Map #2-6 in the Map Appendix shows the karst-prone areas of Nelson County. Eastern and southcentral Nelson County have considerable karst-prone areas. Major concerns with karst topography in these areas are sinkhole flooding, overburden collapses, and groundwater contamination. Sinkhole flooding occurs when stormwater runoff exceeds the drainage capacity of the sinkhole. Flooding problems may increase when sinkholes are filled in with debris or soil when an area is graded. Development that occurs in a sinkhole drainage area and increases the amount of impervious surface can result in increased rates of runoff and then, in turn, results in flooding. Development in karst-prone areas must be carefully evaluated to minimize adverse impacts.

Steep Slopes

Land uses vary in their sensitivity to slope. Virtually flat land can be used for intensive activity, while slopes in excess of 20 percent present constraints that development is not feasible, both practically and financially. Residential development can take place on small scattered sites utilizing land that industrial development, with its more expensive land requirements, must bypass. In addition, the location and concentration of slopes in the forms of hills, ridges, valleys, and plains can force development into large clusters or break it up into dispersed patterns.

Map #2-9 in the Map Appendix is a generalized slope map of Nelson County. Areas with slopes greater than 12 percent are located in the Knobs Region of western and southern Nelson County and in the eastern part of Nelson County. These areas are susceptible to sliding and slumping due to their composition of thick shales. Any land disturbance or development on steep slopes can accelerate erosion, increase runoff, and decrease volume of water absorbed and filtered as groundwater. Damage to buildings and other manmade structures can occur on unstable slopes. Commercial and industrial development should be restricted to slopes no steeper than 12 percent. Residential developments may be allowed on slopes steeper than 12 percent, but such developments should be carefully analyzed to minimize adverse impacts and ensure safety of residents of the development. Table #2-2 shows slope suitability for development and should be used to evaluate slope suitability for any development proposal.

Table #2-2
Slope Suitability for Urban Development

Limitations	Suitability	Residential	Commercial	Industrial
Slight	Optimum	0 – 6%	0 – 6%	0 – 2%
Moderate	Satisfactory	6 – 12%	6 – 12%	2 – 6%
Severe	Marginal	12 – 18%	12 – 18%	6 – 12%
Very Severe	Unsatisfactory	18%+	18%+	12%+

Source: Keifer, Ralph W. "Terrain Analysis for Metropolitan Area Planning." Journal of the Urban Planning Division, Proceedings of the American Society of Civil Engineers, December 1967.

A portion of this section was reprinted from Generalized Geologic Map for Land-Use Planning: Nelson County, Kentucky, Map and Chart 97, Series XII, 2005, Kentucky Geological Survey.

Geology

In Nelson County, water is obtained from consolidated sedimentary rocks of Ordovician, Silurian, Devonian, and Mississippian ages, and from unconsolidated sediments of Quaternary age. The oldest rocks found on the surface in Nelson County, the Clays Ferry Formation, were deposited in shallow seas 490 million years ago during the Ordovician Period. In the Late Ordovician the seas became relatively shallow, as indicated by the amounts of mud (shale) in the sediments. When the waters were clear and warm, a profusion of animal life developed, particularly brachiopods and bryozoa. Lying on top of the Ordovician rocks are the Silurian rocks, which were also deposited in warm seas, 430 million years ago. In Kentucky, the Silurian seas were commonly warm and clear, although the presence of some shale beds suggest that muddy conditions prevailed at times. Locally, numerous corals and brachiopods can be found in the Silurian limestones and dolomites. Above the Silurian lies the New Albany Shale, also called the black shale. This shale, 400 million years old, was formed during the Devonian Period when the deep sea floor became covered with an organic black muck. The muck is now hard black shale (an oil shale) and is one of the most distinctive of all geologic formations in Kentucky. The Mississippian sandstones and siltstones are the result of a great influx of mud, silts, and sands brought in by rivers and streams from uplands many miles away and deposited as a great delta. The Mississippian limestones found in Nelson County were deposited 350 million years ago in the bottom of a warm, shallow sea. Over the last million years, unconsolidated Quaternary sediments have been deposited along the larger streams and rivers. Reprinted from Groundwater Resources of Nelson County, Kentucky, www.uky.edu/KGS/water/library/gwatlas/Nelson

Map #2-5 in the Map Appendix shows the generalized geology of Nelson County. Geological characteristics, such as presence, type, and depth of underground rock, may make some types of development either physically difficult or financially prohibitive.

Soils

Nelson County's Soil Survey identifies 6 soil associations, which are landscapes that have a distinctive proportional pattern of soils and normally consist of one or more major soils.

- McGary-Markland-Lawrence association. This soil association makes up approximately 2 percent of the county and extends from Boston north and west to the county line. These soils are located on stream terraces, are deep, somewhat poorly drained to well-drained, nearly level to gently sloping, and have predominantly fine-textured subsoil.
- Huntington-Lawrence-Newark association. This association comprises about 6 percent of the County. This association is found along a narrow strip of floodplains and stream terraces along the Rolling Fork River. These soils are deep, well-drained to somewhat poorly drained and have nearly level soils and medium-textured to moderately fine textured subsoil.
- Rockcastle-Colyer-Trappist association. This association makes up about 28 percent of the county. These soils are located on shale uplands and consist of long narrow ridges, steep valley walls, knobs, and somewhat narrow, sloping valley floors. The soils range from shallow,

excessively drained, strongly sloping to steep, to moderately deep, well drained, gently sloping to strongly sloping with have fine textured to moderately fine textured subsoil.

- Pembroke-Beasley-Cordyon association. This soil association extends from Bardstown northwest and southeast to the county line. It makes up 26 percent of the county. The soils are deep to shallow, well-drained to somewhat excessively drained, nearly level to moderately steep, and have moderately fine textured to fine textured subsoil.
- Lowell-Fairmount-Shelbyville association. This association is located on limestone and shale uplands and makes up 30 percent of the county. The soils are deep, well-drained, shallow, somewhat excessively drained, and sloping to steep and have fine textured to moderately fine textured subsoil.
- Eden-Lowell association. This soil association makes up about 8 percent of the county and is located on highly dissected limestone and shale uplands. The soils are deep and well-drained, sloping to steep soils and have fine textured subsoil.

Soil types, such as permeability, slope, and clay content, may also make some types of development either physically difficult or financially prohibitive. The Soil Survey also includes a soil evaluation identifying the suitability and limitations for various types of development and sanitary facilities. A slight limitation indicates that the soil properties are generally favorable; a moderate limitation means that property planning or design can usually minimize potential problems; and severe limitations means that required mitigation may result in excessive cost, special design, or intensive maintenance. Development proposals should be carefully evaluated to determine suitability of soil types and to minimize adverse impacts.

Reprinted from http://soils.usda.gov/survey

Hydrology

Groundwater Overview

According to the Groundwater Branch of the Kentucky Division of Water, "Groundwater is a vital, renewable natural resource that is widely used throughout Kentucky. Wells and springs provide approximately one-third of public domestic water supplies in the state. Surface streams, the major source of Kentucky's water supply, are primarily sustained during base flow by groundwater discharge from adjacent aquifers. This resource is susceptible to contamination from a variety of activities at the land surface. Once contaminated, groundwater can be difficult or impossible to remediate."

Quality of Groundwater in the County

The quality of groundwater in the Bluegrass Region varies considerably from place to place and is determined by its geologic source. In Nelson County, groundwater is hard to very hard and may contain salt or hydrogen sulfide. The two most common natural constituents that make water in the Bluegrass Region objectionable for domestic use are common salt and hydrogen sulfide. The hydrogen sulfide-bearing water is usually satisfactory for domestic use since the hydrogen sulfide escapes as a gas upon exposure of the water to the air.

At a time when surprisingly little information is available on groundwater quality, groundwater contamination has become a major environmental issue. Reliable information about water quality is necessary in order to develop plans for protecting groundwater. The absence of accurate and broad perspectives on groundwater quality may lead to inappropriate and ineffective regulatory policies. Because groundwater supplies a large percentage of rural drinking water and water for agricultural use, rural landowners have become increasingly concerned about the quality of groundwater. The Kentucky Farm Bureau, Kentucky Division of Conservation, University of Kentucky Cooperative Extension Service, and the Kentucky Geological Survey conducted a water-quality survey of nearly 5,000 rural domestic wells. The results are discussed in "Quality of Private Ground-Water Supplies in Kentucky."

Sensitivity of Groundwater to Pollution

According to the Kentucky Division of Water, Groundwater Branch, Nelson County has areas of low-moderate to moderate-high sensitivity to groundwater pollution. The hydrogeologic sensitivity of an area is defined as the ease and speed with which a contaminant can move into and within a groundwater system. The sensitivity assessment addressed only the naturally occurring hydrogeologic characteristics of an area. Possible impacts of human activity upon groundwater, such as mining, logging, industry, and the use of pesticides, injection wells, and landfills, were not considered.

Reprinted from Groundwater Resources of Nelson County, Kentucky, www.uky.edu/KGS/water/library/gwatlas/Nelson

Floodplain

Floods are one of the most common hazards in the United States. A flood is an excess of water on land that is normally dry. The official definition used by the National Flood Insurance Program is:

> A flood is "a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from:
>
> - Overflow of inland or tidal waters;
> - Unusual and rapid accumulation or runoff of surface waters from any source;
> - Mudflow; or
> - Collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood as defined above."

In Nelson County, flooding may occur during any season of the year. However, most of the major floods have occurred as a result of spring rains between February and May and Gulf of Mexico tropical storms during early summer months.

A floodplain or flood-prone area is any land area susceptible to being inundated by flood waters from any source, and these Special Flood Hazard Areas (SFHAs) are areas that have a one percent chance of flooding in any given year. Map #2-9 in the Map Appendix provides a generalized map of the floodplain areas in Nelson County; however, the Flood Insurance Rate Maps (FIRMs), prepared and published by the Federal Emergency Management Agency (FEMA) and dated May 24, 2011, are the official "floodplain" maps illustrating the extent of these flood hazard areas by depicting the flood risk zones and Special Flood Hazard Areas. These maps identify the flood hazards for areas that drain more than 1 square mile (640 acres) and identify the areas that are likely to be flooded during a 1% annual chance flood, meaning that areas shown on the map have a 1% chance of flooding in any given year.

In Bardstown, floodplains are located along the Beech Fork and Rowan, Withrow, and Town Creeks. Beech Fork is a tributary of Rolling Fork and flows generally northwest through Nelson County. The floodplain is wide and generally clear of woods and brush. Rowan Creek and Withrow Creek are tributaries of Beech Fork and enter Beech Fork just south of Bardstown. Town Creek is a tributary of Rowan Creek. Town and Withrow Creeks are just over 2 miles in length, are deeply entrenched streams, and have no significant floodplain at the upper end of the basins. Rowan Creek is the largest of the Beech Fork tributaries and is approximately 5 miles, extending from the Beech Fork to the Loretto Road (KY 49) bridge. It has a wide floodplain, and flooding from bank overflow is common. The upstream basin has very little floodplain.

In Bloomfield, floodplains are located along Simpson and Hinkle Creek. East Fork Simpson Creek rises in southeast Nelson County, approximately 9 miles southeast of Bloomfield. Its floodplain is narrow, but the stream banks are generally low and commonly flood. The maximum flood on East Fork Simpson Creek occurred in 1963. Hinkle Creek is a tributary of East Fork Simpson Creek. The lower portion of the reach of Hinkle Creek is highly developed and has significant encroachment onto the floodplain.

Significant floodplains are located in eastern and southern Nelson County. Areas along the Rolling Fork and between the knobs in the western part of Nelson County have broad floodplains. These values are underlain by alluvium, which is unconsolidated sand and gravel, and development should be limited in these areas to prevent possible future flooding. Rolling Fork is a tributary of Salt River and has a wide floodplain. Its banks are low and flooding is common. Several floods on Rolling Fork have been sufficiently high to flood the City of New Haven.

Western Nelson County has a significant number of wetlands in the Beech Fork and Rolling Fork floodplains, such as the J.C. William Wildlife Management Area in the Beech Fork and Rolling Fork wetlands. These wetlands help reduce flooding, improve water quality, and provide habitat for wildlife. Development in these wetlands is prohibited.

Flood effects can be local, impacting a neighborhood or community, or very large, affecting entire river basins and multiple states. Development should be minimized in floodplains, and development proposals should be given careful consideration to minimize adverse impacts and protect life and property.

Portions of this information were reprinted from Flood Insurance Study for Nelson County and Generalized Geologic Map for Land-Use Planning: Nelson County, Kentucky.

Demographic Analysis & Land Use Demand

A demographic analysis is the statistical study of population trends based on size, age, race, ethnicity, place of work, and educational attainment. Demographic characteristics of a community are important because they directly impact the future housing, education, employment, recreation, public safety, utilities and other needs of a community. This analysis has been used to assess existing land use patterns and future land use needs recommended by this Plan.

Population Characteristics

Population analysis can identify the community facilities to accommodate the changing needs of the population. Population size, spatial distribution, and composition are important indicators of future social, economic, and physical land use needs of a community. Population size provides an estimation of current land use and spatial needs. Population distribution determines where particular land uses and transportation and community facilities should be located. Population composition provides a breakdown of the population by age, household size, and income levels and is useful in determining spatial needs of community facilities for each of the community's population categories. By identifying the number, age, sex, and race of the County's population, planners and decision makers can identify the particular needs of specific groups. For instance, as Nelson County's population continues to "gray" and becomes more diverse, its future workforce will be affected, and all aspects of land use management – housing, education, parks and recreation, healthcare, etc. -- will be impacted.

Population Size & Distribution

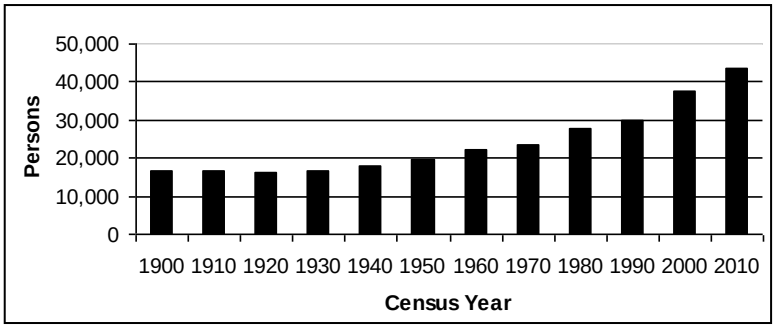
Over the last 150 years, Nelson County's growth rate has fluctuated. Table #2-3 and Figure #2-1 show the historical population and percentage of change for Nelson County for each decade from 1850 to 2010. Between 1910 and 1920, the County experienced a loss in population. The County experienced double-digit percentage growth between 1950 and 1960, 1970 and 1980, and more recently between 1990 and 2000 and 2000 and 2010. The most significant increase in population was between 1990 and 2000.

Table #2-3
Historical Population
Nelson County
1900 – 2010

Year	Persons	% Change
1900	16,578	1.0%
1910	16,830	1.5%
1920	16,137	-4.1%
1930	16,551	2.6%
1940	18,004	8.8%
1950	19,521	8.4%
1960	22,168	13.6%
1970	23,447	5.8%
1980	27,584	15.0%
1990	29,710	7.2%
2000	37,477	26.14%
2010	43,437	15.9%

Sources: Kentucky State Data Center; U.S. Bureau of the Census

Figure #2-1
Population Growth
Nelson County
1900 – 2010



Sources: Kentucky State Data Center; U.S. Bureau of the Census

Table #2-4 and Figure #2-2 show the population growth of the Cities of Bardstown, Bloomfield, Fairfield, and New Haven and Nelson County between 1950 and 2010.

Table #2-4
Population Growth
Cities of Bardstown, Bloomfield, Fairfield & New Haven, Unincorporated Nelson County
1950 – 2010

Census Year	Bardstown		Bloomfield		Fairfield		New Haven		Unincorporated Nelson County	
	Persons	% Change	Persons	% Change	Persons	% Change	Persons	% Change	Persons	% Change
1950	4,154	--	666	--	202	--	563	--	13,936	--
1960	4,798	15.5%	916	37.5%	290	43.6%	1,009	79.2%	15,155	8.8%
1970	5,816	21.2%	1,072	17.0%	163	-43.8%	977	-3.2%	15,449	1.9%
1980	6,155	5.8%	954	-11.0%	169	3.7%	926	-5.2%	19,380	25.5%
1990	6,801	10.5%	845	-11.4%	142	-15.9%	796	-14.0%	21,126	9.0%
2000	10,374	52.5%	855	1.2%	72	-49.3%	849	6.7%	25,327	19.9%
2010	11,700	12.8%	838	-2.0%	113	56.9%	855	0.7%	29,931	18.2%

Sources: Kentucky State Data Center; U.S. Bureau of the Census

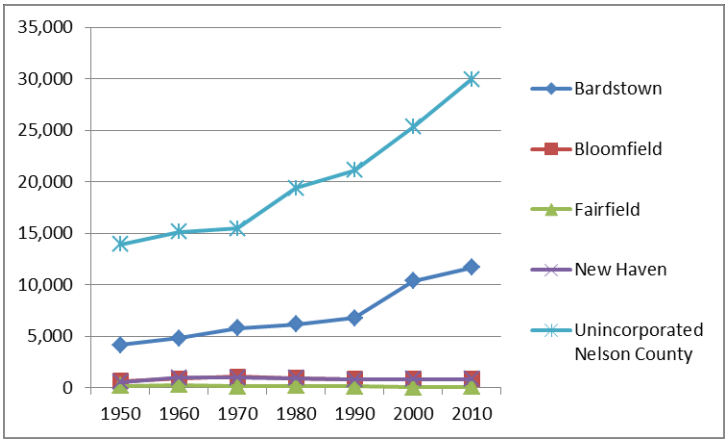
The City of Bardstown showed significant population growth between 1950 and 2010. During this 60-year period, Nelson County's principal urban area increased from 4,184 to 11,700 persons, a 182 percent increase. The City's most significant period of population growth occurred between 1990 and 2000 – from 6,801 to 10,374 persons, a 52.5 percent increase. Between 2000 and 2010, Bardstown's population growth rate slowed to 12.8 percent.

The City of Bloomfield showed a 54.5 percent increase in population between 1950 and 1970, followed by 11 percent decreases in the subsequent two decades. Bloomfield had a slight population upstart with a 1.2 percent increase between 1990 and 2000 but again experienced slight population loss between 2000 and 2010.

The City Fairfield almost doubled its population between 1950 and 1960 but decreased by a similar percentage during the next decade. Fairfield showed a slight population increase of 3.7 percent between 1970 and 1980 but experienced a 33 percent decrease in persons since 1980.

The City of New Haven has experienced population fluctuations since 1950. Between 1950 and 1960, New Haven showed substantial population growth – a 79 percent increase, but the City's population decreased over the next three decades. New Haven's population showed a slight rebound between 1990 and 2000 but only a 0.7 percent increase between 2000 and 2010.

Figure #2-2
Population Growth
Cities of Bardstown, Bloomfield, Fairfield & New Haven, Unincorporated Nelson County
1950 – 2010

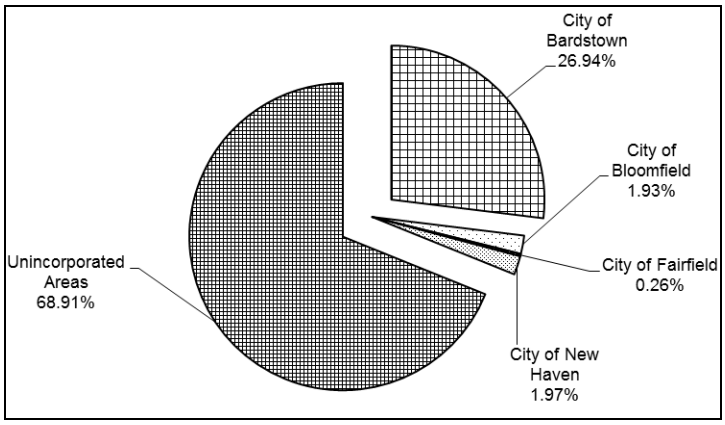


Sources: Kentucky State Data Center; U.S. Bureau of the Census

Population Distribution

Population distribution identifies the areas of population growth and is important to identify demands for certain land uses, transportation, and community facilities. Both Census data and Zoning Compliance Permit data can be used to analyze population and development distribution. Figure #2-3, Table #2-5, and Figure #2-4 show the geographic distribution of Nelson County's population based on Census data.

Figure #2-3
Population Distribution
Nelson County
1900 – 2010



Source: U.S. Bureau of the Census.

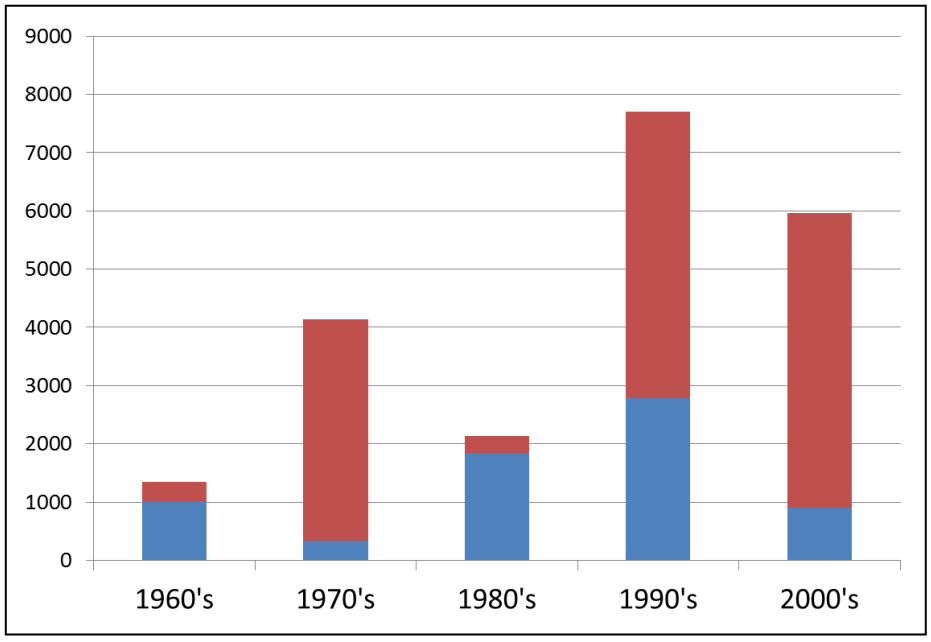
Table #2-5 shows the breakdown of Nelson County's urban and rural population. Since 1950, approximately one-third of Nelson County's population has resided in the incorporated cities of Bardstown, Bloomfield, Fairfield, and New Haven. This data suggests that most of the population growth has occurred in the unincorporated areas of Nelson County.

Table #2-5
Urban & Rural Population & Persons per Square Mile
Nelson County
1950 – 2010

Year	Urban Areas		Rural Areas		Persons per Square Mile
	Population	% Change	Population	% Change	
1950	5,585	---	13,936	---	45
1960	7,013	25.6%	15,155	8.7%	51
1970	8,028	14.5%	15,449	1.9%	54
1980	8,204	2.2%	19,380	25.5%	65
1990	8,584	4.6%	21,126	9.0%	70
2000	12,150	41.5%	25,327	19.9%	89
2010	13,506	11.1%	29,931	18.2%	103

Sources: U.S. Bureau of the Census. Population by Urban and Rural Residence (www.census.gov).

Figure #2-4
Decennial Population Growth
Bardstown (bottom/blue) & Nelson County (top/red)
1960s – 2000s



Source: Kentucky State Data Center.

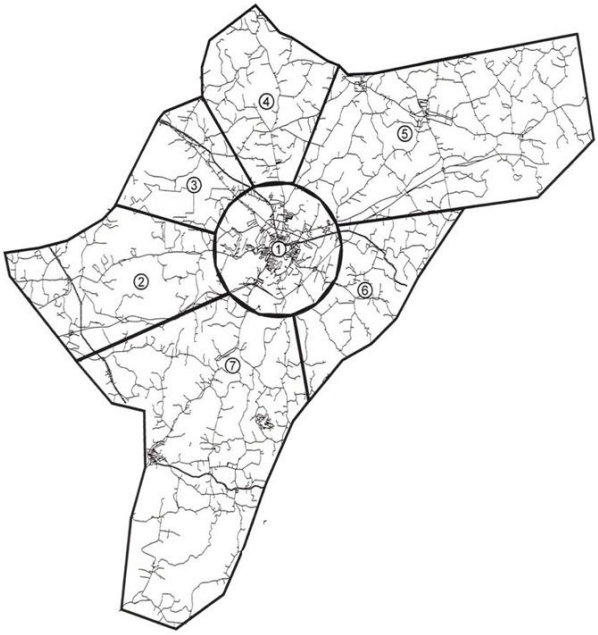
An analysis of zoning compliance permit data also shows that since 1997, two-thirds of residential development occurred outside of the Urban and Town areas. Table #2-6 and Figure #2-5 show the geographical areas for residential development between 1997 and 2010.

Table #2-6
Residential Development Analysis
Zoning Compliance Permits
Nelson County
1997 – 2010

Geographic Area	# Dwelling Units	% Total	Estimated Population
Nelson County Total	5,701	---	14,808
Bardstown Urban	1,973	35%	5,301
Boston Road (US 62) Corridor	298	5%	760
New Shepherdsville Road (KY 245) Corridor	833	15%	2,124
Louisville Road (US 31E) Corridor	503	9%	1,283
Bloomfield Road (US 62) Corridor	886	15%	2,259
Springfield Road (US 150) Corridor	692	12%	1,765
New Haven Road (US 31E) Corridor	516	9%	1,316

Source: Joint City-County Planning Commission.

Figure #2-5
Geographic Area
Residential Development Patterns
Nelson County



This analysis of population distribution shows that residential development has occurred in a scattered pattern throughout the unincorporated areas of Nelson County. Although one-third of the residential development has occurred within the Urban and Town areas, other residential growth areas have occurred along the corridors of New Shepherdsville Road (KY 245), Bloomfield Road (US 62), and Woodlawn/Poplar Flat Roads (KY 605) / Springfield Road (US 150). This scattered development pattern is not consistent with the Comprehensive Plan's reorientation policy of guiding 50 percent of residential development within the Urban and Town areas. It also poses significant impacts on future land use and infrastructure planning. Scattered development presents difficulties in planning and providing for services and infrastructure and often results in less efficient and costly services and facilities.

Age Characteristics

An analysis of a community's age characteristics will identify land use and community facility needs. For instance, a growing youth population will identify needs for child care, schools, and recreational facilities, while an aging population will signal the need for assisted living and long-term care facilities. Table #2-7 provides age characteristics from the 2010 Census for Nelson County and Kentucky. Nelson County's

median age of 37.7 years was just below Kentucky's median age of 38.1 years. In 2010, 26 percent of Nelson County's population was under 18 years of age, and 12 percent was over 65 years of age.

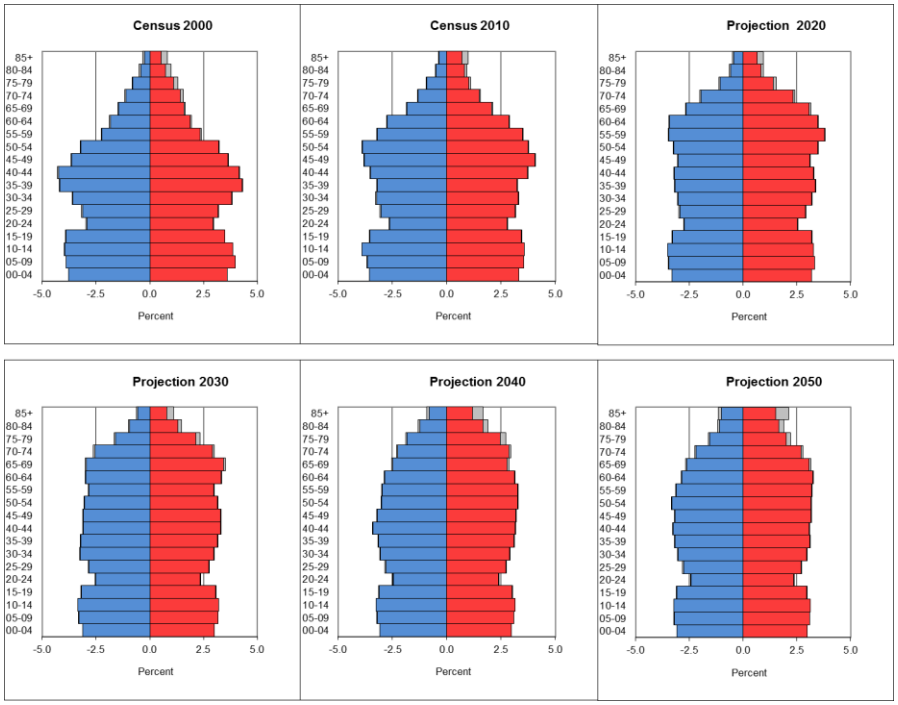
Table #2-7
Age Characteristics
Nelson County & Kentucky
2010

Characteristic	Nelson County	Kentucky
Median Age	37.7	38.1
Under 18 years of age	26%	23.6%
65 years of age and over	11.7%	13.3%

Source: Kentucky State Data Center

Figure #2-6 shows past and projected population age compositions for Nelson County. Nelson County's age composition continues to change, and these changes follow the state and national trends. Nelson County residents are having fewer children. This change is reflected in the decrease in household size from 2.8 persons per household in 1990 to 2.55 persons per household in 2010. While the population of children under 4 years old has remained constant, the population of school-age children has increased. The percentage of persons between 20 and 59 years old also increased and reflects the aging of the post-war baby boom. The projections shown in Figure #2-6 show slight decreases in population in the 0 to 4, 5 to 19, and 20 to 39 year old age groups, but show significant increases in the 40 to 59 year old and particularly the over 60 year old age groups.

Figure #2-6
Population Pyramids
Nelson County
2000 – 2050

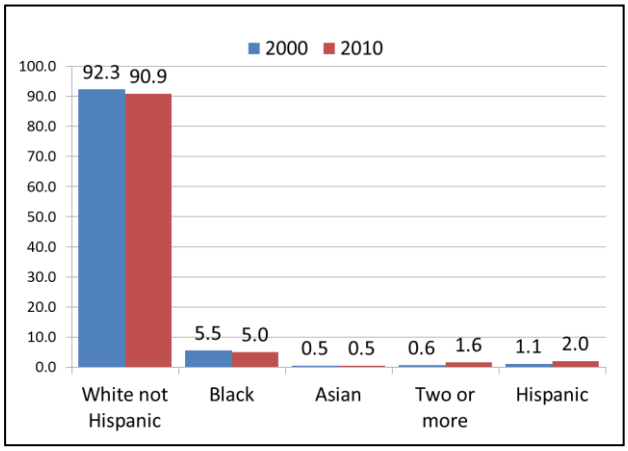


Source: Kentucky State Data Center

Racial & Ethnic Composition

In 2010, the majority of Nelson County's population was Caucasian. Between 2000 and 2010, the most significant change in racial composition was persons who identify as some race other than Caucasian, African-American, Alaska Native, Native Hawaiian, or other Pacific Islander. In 2000, 0.6 percent of the population identified with 2 or more races. However, by 2010, 1.6 percent of the population identified with 2 or more races. Nelson County's ethnic composition continues to change. In 2010, 2 percent of the population identified as being Hispanic or Latino origin, up from 1.1 percent in 2000.

Figure #2-7
Racial & Ethnic Composition
Nelson County
2000 - 2010



Source: Kentucky State Data Center

Components of Population Change

Two components affect population change -- natural increase and net migration. Natural population increase is the number of births minus the number of deaths, and net migration is the total number of persons migrating into the county less those migrating out of the county.

Nelson County experienced a decrease in natural increase between the 1960s and 1970s but has shown a steady increase since the 1980s. It is anticipated that natural increase will remain constant.

Net migration has fluctuated. Migration data shows that more people have moved into Nelson County than moved out. Available data shows that between 1996 and 2000, Nelson County realized a net gain of 2,311 persons, and between 2000 and 2003, the County only realized a net gain of 1,104 persons. The most significant number of residents moving to Nelson County relocated from Jefferson, Bullitt, Hardin, and other Kentucky counties. The largest outflows were to Jefferson, Bullitt Counties, and other unidentified Kentucky counties. While Nelson County has seen positive net migration, recent economic conditions may result in increased out-migration as residents relocate to find employment or to live closer to job centers. Migration will continue to be one of the most important factors affecting population growth in Nelson County over the next 25 years.

Population Projections

The analysis of population projections is important in order to determine the amount and type of development and redevelopment to serve the needs of the existing and future populations. Table #2-8 illustrates the population projections for Nelson County. By 2035, Nelson County's population is anticipated to be 63,171 residents, an increase of 19,734 persons.

To determine the future housing demand, the 2010 Census average of 2.55 persons per household will be used. By 2035, the demand will be 7,739 new homes to accommodate the projected population of 63,171 persons. Depending on future residential densities, this residential demand will require approximately 3,000 acres and significant infrastructure and community facilities.

Table #2-8
Nelson County Population Projections
2009 - 2035

Year	# Persons	% Change
2009 Estimate	43,550	---
2010 Census	43,437	-0.26%
2015 Projection	47,931	10.35%
2020 Projection	51,803	8.08%
2025 Projection	55,806	7.73%
2030 Projection	59,631	6.85%
2035 Projection	63,171	5.94%

Source: U.S. Census Bureau; Kentucky State Data Center.

Housing Characteristics

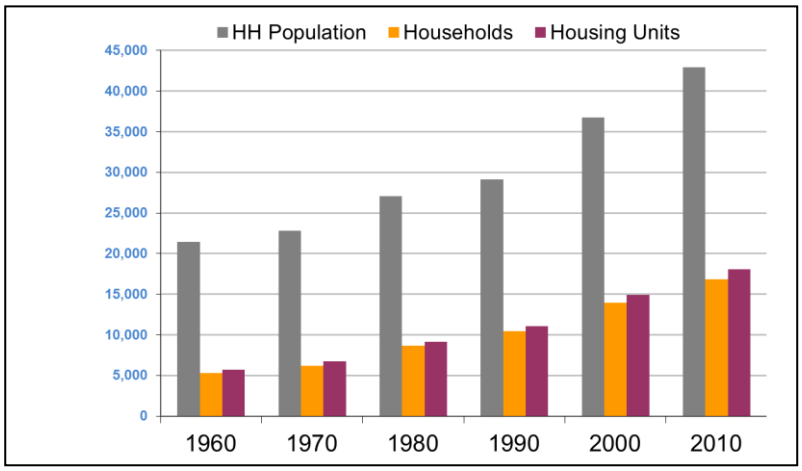
An analysis of housing characteristics is important in determining the type of residential land use needs for a community. For instance, as the number of persons per household continues to decrease, Nelson County will experience a demand for increased housing units and more diverse housing types.

Figure #2-8 shows household population, number of households, and number of housing units in Nelson County between 1960 and 2010. During this 50-year period, the total population in households doubled from 21,428 to 42,941, the total number of households more than tripled from 5,303 to 16,826, and the total housing units more than tripled from 5,672 to 18,075.

Figure #2-9 represents the changes in household size. In 1960, an average household was 4.04 persons; however, in 2010, the average household size was 2.55 persons.

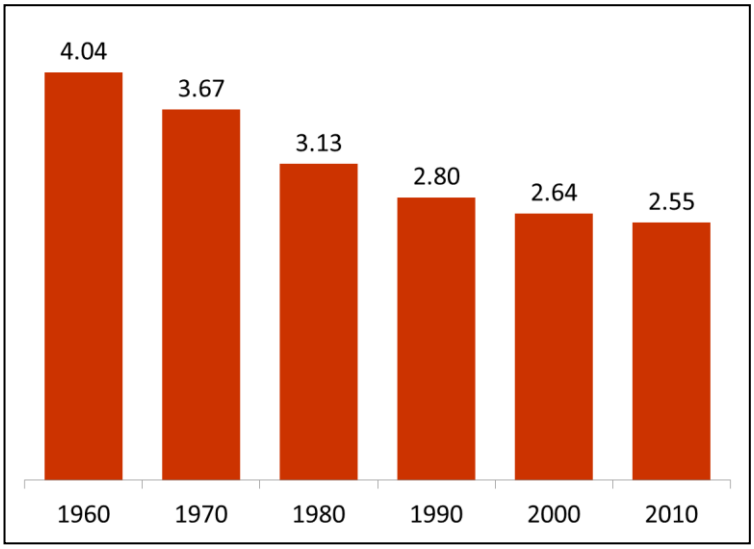
Figure #2-10 shows the availability of housing within Nelson County. The percentage of total units not occupied has remained fairly consistent since 1960 and indicates the availability of housing in Nelson County.

Figure #2-8
Household Population, Households & Housing Units
Nelson County
1960 – 2010



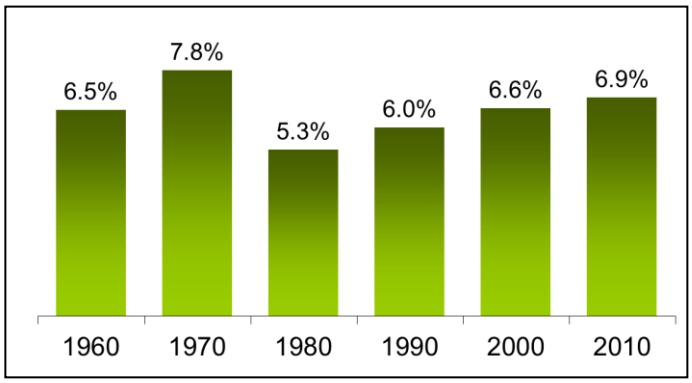
Source: Kentucky State Data Center.

Figure #2-9
Household Size
Number of persons per household
Nelson County
1960 – 2010



Source: Kentucky State Data Center.

Figure #2-10
Vacant Housing
Percent of Total Housing Units Not Occupied
Nelson County
1960 – 2010



Source: Kentucky State Data Center.

Economic Analysis

Another important component of land use planning is economic analysis. An economic analysis investigates local economic trends to evaluate the economy's ability to withstand fluctuations in the regional and national economies and to examine the economy's diversification. Along with the population analysis, the structure and vitality of Nelson County's economy influences the adequacy and availability of land, infrastructure, and services. These analyses form the basis for establishing and implementing land use plans to manage existing resources and plan to meet the future needs.

Labor Force Characteristics

Table #2-9 shows employment characteristics of Nelson County residents. Nelson County's unemployment rate has remained slightly higher than the state and national unemployment rates. However, this low- to moderate-unemployment rate reflects the local industrial base and its proximity to employment centers, including Louisville, Elizabethtown and other surrounding communities.

Table #2-9
Labor Force Characteristics
1995 -2011

Characteristic	1995 Annual	2000 Annual	2005 Annual	2010 Annual	2011 July*
Civilian Labor Force	17,428	19,564	20,547	22,179	23,543
Employment	16,168	18,735	19,214	19,575	20,182
Unemployment	1,242	289	1,333	2,604	3,361
County Unemployment Rate (%)	7.1	4.2	6.5	11.4	14.3
Kentucky Unemployment Rate (%)	5.6	4.2	6.0	10.5	9.7
US Unemployment Rate (%)	5.6	4.0	5.1	9.6	9.3

* Estimated
Sources: Kentucky Department for Employment Services, Local Area Unemployment Statistics.

Table #2-10 shows Nelson County's employment by major industry. Nelson County's employment remains diversified among six industries. While a majority of Nelson County's employment is concentrated in manufacturing and service sectors, the county has experienced moderate increases in contract construction, finance, insurance, and real estate, and state and local government. These employment changes reflect the residential, retail, and general commercial growth and development that have occurred since 1996. Nelson County's agricultural economy and employment continue to be a considerable part of Nelson County's overall local economy, and in particular, contract-type workers, such as hired farm laborers, are often not reported but account for considerable employment and wages.

Table #2-10
Employment by Major Industry
Nelson County
2010

Industry	Nelson County	
	Employment	Percent
All Industries	13,821	100.0
Agriculture, Forestry, Fishing and Hunting	N/A	N/A
Mining	N/A	N/A
Construction	919	6.6
Manufacturing	3,628	26.2
Trade, Transportation, Utilities & Information	2,813	20.4
Financial Activities	395	2.9
Services	3,967	28.7
Public Administration	433	3.1
Other	1	0.0

Source: U.S. Department of Labor, Bureau of Labor Statistics.

Employment Projections

Employment projections are an important factor in determining land use demand for non-residential development. Examining employment projections will identify volatile conditions and will allow the County to be prepared for the future as trends change over time.

Table #2-11 illustrates the rate of employment projected for Nelson County through 2035. It is anticipated that Nelson County will experience an increase of 6,279 jobs over the next 25 years. To accommodate this employment growth, adequate amounts of land, in the right location and with adequate services, must be available to continue to be economically strong in the future. Further, diversification is important to the health of the local economy. Diversification will allow the local economy to withstand fluctuations that otherwise significantly impact economies that rely on single industries. Since 1996, Nelson County has seen considerable commercial and industrial employment, particularly with the NPR, Sykes, Flower Foods, Cracker Barrel, and other new businesses and industries. Nelson County has adequate and available land and workforce, and the prospects for employment diversification and growth are good over the next 25 years.

Table #2-11
Employment Projections
Nelson County
2010 - 2035

Year	Employment	% Change
2010 estimate	13,821	1.06%
2015 Projection	15,251	10.35%
2020 Projection	16,483	8.08%
2025 Projection	17,757	7.73%
2030 Projection	18,973	6.85%
2035 Projection	20,100	5.94%

Source: Kentucky State Data Center.

Table #2-12 shows the projected employment growth for Nelson County's major employment sectors. The number of jobs projected for each land use type has been used to determine the amount of acreage needed to accommodate the additional employment.

Agriculture and related services are not included in this analysis of determining land needs for nonresidential uses. Agriculture is a land intensive use and the number of acres needed for the future is difficult to estimate. Preservation of agriculture is addressed through the Plan's overall concern for protecting the rural character and maintaining agriculture as a strong industry in Nelson County in the future.

Table #2-12
Projected Employment Growth
by Land Use Type
2005 -2035

		Employment Growth by Land Use Type		
Industry	Projected Employment Growth	Office	Commercial / Retail	Industrial
Contract Construction	414	83	--	331
Manufacturing	1,650	--	--	1,650
Transportation, Trade, Utilities & Information	1,281	128	897	256
Financial Activities	182	182	--	--
Services	1,802	1,352	450	--
Public Administration	195	195	--	--
Other (Mining, Agriculture, etc.)	773	--	--	--
Total Projected Employment	6,297	1,940	1,347	2,237

Using the average of 7 employees per acre, the non-residential land use demand will be approximately 789 acres by 2035. Table #2-13 provides the breakdown of non-residential land use demand.

Table #2-13
Non-Residential Land Use Demand
2005 – 2035

Land Use Type	Acreage Demand
Office	277
Commercial / Retail	192
Industrial	320
Total Non-Residential Uses	789

Land Use Demand Analysis

Nelson County has always been an attractive growing community. Although growth trends have slowed during the recession, it is anticipated that Nelson County will continue to experience positive growth in population and housing. Nelson County's current population is 43,437 and is projected to increase by nearly 19,734 residents in the next 25 years, resulting in a 2035 population of 63,171.

The projected population increase will result in the demand for housing and employment over the next 25 years. Adequate land must be available for residential and non-residential developments to support the projected employment and housing demands. As a general standard, future land use planning should ensure that 1 ½ to 2 ½ times the amount of land projected for both residential and non-residential use is available for development or redevelopment. This general standard has been established because more land should be planned for availability than is prescribed by the demand projection in order to provide adequate land choice and market opportunity in the future. A multiplier of two would require 1,578 acres for non-residential uses and 6,000 acres for residential uses depending on future densities. Table #2-14 illustrates the number of acres needed by land use type using a multiplier for future land area demand.

Table #2-14
Future Land Use Demand
2005-2035

Land Use Type	Demand Acreage	Adjusted Demand Acreage (1 ½ to 2 ½ X demand acreage)
Residential	3,000	4,500 – 7,500
Office	277	416 – 693
Commercial / Retail	192	288 – 480
Industrial	320	480 – 800
Total	3,789	5,684 – 9,473

Development Capacity Analysis

Future land use policies should take into consideration existing land use patterns and the availability and adequacy of public infrastructure and services. The lack of coordination of future land use planning with public infrastructure and services may result in negative impacts, such as unavailable or inadequate public infrastructure and services and premature expansion of public service areas. Unless mitigated, these negative impacts may result in an overburdening of existing public service and facilities and the reduction of capacities to serve the needs of the community.

A primary goal of the ***Nelson County 2035*** is to ensure that existing and new developments are served by adequate level of public services and facilities and that public services and facilities are provided in an orderly and efficient manner. To achieve this goal, this Plan recommends the coordination of future land use planning with capital improvements planning and the improvement of public facilities in a logical and cost-effective manner.

While the adequacy and availability of all public services and infrastructure should be reviewed and factored into future land use decisions, coordination of future land use planning with availability and adequacy of public water and sewer is critical to minimizing over-burdening and ensuring orderly and efficient services. The availability and adequacy of public water and sanitary sewer service are important factors in determining quality of life and for identifying potential development areas.

Development Capacity Analysis

A development capacity analysis provides an evaluation of the community's potential for future development based on existing land use patterns, availability and adequacy of public infrastructure and services, and availability of land for future development. A development capacity analysis of the Urban Community Character was conducted and used to determine if adequate and suitable land within the Urban area is available to satisfy the "growth demand capacity," simply the anticipated growth over the next 25 years, as identified in Part III of this Base Study.

The development capacity analysis included several parts, as outlined below.

- Existing Land Use Survey. An existing land use survey provides a physical foundation for analyzing the community. This survey identifies existing conditions within the Urban Area and provided a basis for identifying potential development areas. Map #2-1 is the Existing Land Use Map for the Urban Area and identifies the current use of land based on field surveys and analysis of aerial photographs.

- Potential Development Area (PDA) Identification. Using the existing land use survey, vacant, undeveloped, and underdeveloped properties were identified and evaluated based on potential for future development. The existing land use survey identified Potential Development Areas (PDAs). PDAs are "developable" tracts with minimal development constraints and are either served by or have access to adequate public services and infrastructure. Those properties not designated as PDAs are recognized as having development constraints. While these PDAs have been identified, it does not guarantee approval of a development proposal. Each PDA development proposal must be carefully reviewed for consistency with all elements of the Comprehensive Plan, specifically the acceptable densities, illustrative land uses, and development and public services policies of the specific land use group. Map #2-10 shows the PDAs within and immediately surrounding the Urban area.

- PDA Current Buildout Analysis. A detailed analysis of each PDA was conducted to determine the potential buildout based on existing zoning and to determine residential and non-residential development potential. The analysis first identified "developable" acreage for each PDA and then evaluated current development potential based on its current use, existing zoning and allowed gross density, water and sewer availability and suitability, and natural conditions suitability. This analysis examined proximity of the PDA to current water and sewer and determined the

development potential for each PDA based on the availability and suitability of the services. Further, the analysis determined whether the PDAs had natural conditions that posed development constraints, such as steep slopes and floodplain. Table #2-14 shows the buildout estimate of all PDAs at current zoning and densities. This estimate clearly shows that the PDAs within the Urban Community Character Area and immediately surrounding areas within the Suburban Community Character Area can accommodate the projected residential and non-residential growth over the next 25 years. The PDA Appendix provides the current and full buildout potential determination for each PDA.

Table #2-14
Current PDA Buildout Estimate

	Current PDA Buildout			
Land Use Type	**Acreage**	**Dwelling Units**	**Persons**	**Space (sf)**
Residential	8,073	1,602	4,086	--
Office, Commercial & Retail	616	--	--	6,364,748
Industrial	242	--	--	4,330,256

- Full Potential PDA Buildout. The final step of the development capacity analysis was to identify the future land use group classification for each PDA, as shown on Maps #4-1 and 4-2, and to estimate the full development potential for each PDA. For residential PDAs, the analysis provided an estimate of the potential housing and population, and for non-residential PDAs, an estimate of potential commercial/retail and industrial space was determined. This analysis provides estimates only and is not an accurate determination of full PDA buildout potential. The determination of actual full PDA buildout requires additional planning, surveying, and engineering that is beyond the scope of this Plan. Further, all development proposals for PDAs still must be reviewed The PDA Appendix provides the full buildout potential determination for each PDA. Table #2-15 shows the full PDA buildout estimate.

This Base Study included a demographic analysis and identified the projected amounts of land for residential and non-residential uses to support the projected population and employment. As a general standard, between 1 ½ to 2 ½ times the amount of land projected for both residential and non-residential uses must be available for development or redevelopment. The analysis used a multiplier of two to provide adequate land choice and market opportunity in the future. Based on this calculation, approximately 888 acres of office, retail, and general commercial uses, 872 acres of industrial uses, and 6,000 acres for residential uses should be available to meet future population and employment projections. Table #2-15 illustrates the full buildout potential for the PDAs. This analysis clearly shows that the PDAs within the Urban Community Character Area can accommodate the projected residential growth as well as a majority of the projected office, commercial retail, and industrial growth over the next 25 years.

Table #2-15
Full Potential PDA Buildout Estimate

	Future PDA Buildout			
Land Use Type	**Acreage**	**Dwelling Units**	**Persons**	**Space (sf)**
Residential	7,283	14,710	37,810	--
Office, Commercial & Retail	635	--	--	6,910,859
Industrial	617	--	--	8,062,531