PLAN GOALS

The 2030 Land Resource Management Plan is based on the strong foundation provided by previous plans and the countywide goals contained within those plans. The 1967 five-point General Development Policy included countywide planning goals for employment, people, housing, environmental considerations, and natural resources. Adopted 37 years ago, these goals were reaffirmed in the 1982 Comprehensive Land Use Plan. In 1993 the Regional Planning Commission reviewed the growth and development of Kane County and expanded the countywide planning goals to include agricultural preservation, historic preservation, transportation, and cooperative planning. The 2030 Plan adds a tenth goal to this legacy, addressing population distribution and land use allocation based on the unprecedented population growth and community development projected for the next two-and-a-half decades.

Countywide Planning Goals

Employment
Kane County's present position as an economically balanced community (employment equal to labor force) should be maintained.

People
All types of people should be able to live in Kane County so that a labor force with diversified skills and training is available.

Housing
Housing of all sizes, types, and prices should be available.

Environmental Considerations
Every person has the right to live and work in an attractive and healthful environment.

Natural Resources
All development decisions should consider the conservation and wise use of the soil, air, water resources, and the natural environment of Kane County.

Agricultural Preservation
Support the conservation, protection, development, and improvement of agricultural land for the production of food and other agricultural products.

Historic Preservation
Protect and maintain local historic and cultural resources including rustic roads that contribute to the character of Kane County.

Transportation
Provide safe, efficient transportation systems that provide mobility choices and that are compatible with mixed land use patterns.

Cooperative Planning
Work with the various jurisdictions located within Kane County to achieve a shared community vision.

Land Use
Work with the municipalities to ensure that 50% of the area of Kane County is in agriculture and open space land uses by 2030.

The development of goals begins with values, which are then translated into objectives that generate policies aimed at achieving the established goals. The range of policies that can be and should be adopted is limited by the values themselves. This factor suggests which policies can work and which cannot. In many cases, while a certain policy would work, the more powerful desires of society will not permit it to

work. In essence then, these values, goals, objectives, and policies constitute a body of development factors; they define the future development of a planning area. A distinction needs to be drawn among these development factors:

Values
Values are widely shared concepts of what is good. Value-oriented planning is concerned with achieving conformity with a standard of excellence.

Goals
Goals are an expression of values; they provide policy direction towards a final objective. Goals may not be specific but can yet provide a means to measure the success of the desires of a community to maintain and improve the quality of life.

Objectives
Objectives are the means to achieve stated goals. They are specific statements of purpose serving as a guide for public policy and action.

Policies
Policies translate objectives into useful and understandable decision guidelines. Policies are to be fully considered and evaluated when allocating resources, making public improvements, directing growth, and receiving development proposals.

The attainment of the 2030 Plan goals is a long-term process. As Kane County grows and develops, the values, goals, objectives, and policies of its citizens and elected officials may evolve. The 2030 plan will be reviewed every five years, with citizen input, in light of changing demographics, changes in state or federal policies, major infrastructure improvements, major shifts in the regional employment base, public policy decisions, and economic and employment activities. At that time, the Regional Planning Commission and elected officials of Kane County will revise the 2030 Land Resource Management Plan as appropriate.

Although they are general in nature, these ten goals can be achieved through more specific objectives and policies identified for the county in the planning issues section of the 2030 Plan. These issues are: agriculture, housing, commercial development and design, economic and workforce development, energy conservation, transportation, open space, mineral resources, water resources, historic preservation, public safety, and educational services.

AGRICULTURE Objectives

1. To protect farmland as a valuable natural resource and an economically productive land use by preventing premature conversion of farmland in the county.
2. To encourage and promote agriculturally related businesses as a valued element of the Kane County economy.
3. To encourage the effective use of agricultural land in achieving national and local energy and soil conservation goals.
4. To discourage projects that will have a detrimental impact on the preservation of agricultural lands and the use of public funds for such projects.
5. To support incentives and assist property owners in maintaining agricultural lands and structures to ensure an ongoing food supply and to support those land owners who choose farming as a way of life.
6. To expand the purchase of agricultural conservation easements wherever possible.

Chapter Focus

Like much of Illinois, Kane County has some of the most productive farmland in the world. Agriculture has been the dominant land use in the county for decades and still occupies 74% of its unincorporated land. Agriculture plays a vital role in the county's economy, even as its historical structure and composition changes with the times. A continued threat to agriculture is the encroachment of development and the conflicts that arise between farm and non-farm land uses. Kane County strongly supports protective land use strategies that discourage premature conversion of farmland in the Critical Growth Area, protect farmland in the Agricultural/Rural Village Area, and guide new development toward planned growth areas.

This chapter examines:

- Economic Role of Agriculture
- Agriculture and Land Use
- Agricultural Protection
- Kane County Agricultural Program

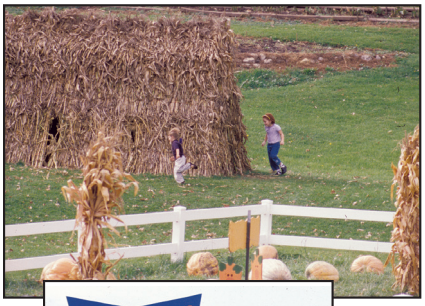
Economic Role Of Agriculture

Agriculture is an integral part of Kane County's economy, landscape, and natural resource base. Agriculture continues to contribute to a stable and diversified economy, especially as the variety of agricultural crops and products such as nursery and greenhouse crops increases in response to changing markets. Agribusiness services and facilities support the farm economy and need a strong agricultural base for their success. The farm economy creates jobs in equipment sales and service, seed research and sales, fertilizer and herbicide sales, finance and insurance, and food processing and distribution industries such as Con Agra in St. Charles, Power Packaging in Geneva, Kraft Foods in Aurora, and Lipton in Elgin.

Since 1945, the number of Kane County farms has decreased. However, this decline has been offset by a large increase in average farm size. In 2002, the average size of a Kane County farm was 320 acres, representing an increase of 30 acres since 1992 (Refer to Figure 10). In 2002, the average for the State of Illinois was 374 acres, representing an increase of 23 acres since 1992.

Since 1992, the market value of Kane County agricultural products sold has consistently totaled over $85 million per year. In 2002, 30% of the county's farms produced annual sales of $100,000 or more.

The average market value of products sold per farm was $187,487, considerably higher than the statewide average of $105,115. The net cash farm income of the county's farms averaged $24,489 per farm compared to $28,685 per farm for Illinois farms.



In 2002, Kane County farmers harvested 11.3 million bushels of corn for grain. This represents an average of 126 bushels per acre. The state average was 132 bushels per acre. That same year, the county harvested 3.3 million bushels of soybeans averaging 43 bushels per acre. The state average was 41 bushels per acre. Corn, soybeans, small grains, and nursery and greenhouse crops accounted for 87 percent of the market value of agricultural products sold in 2002. Livestock, poultry, and related products accounted for the remaining 13 percent of market value. In 2002, over 50% of Kane County's 619 farms were classified as cash grain farms. Of the cash grain crops, 53% of total sales came from the sale of corn and 34% from the sale of soybeans.

Figure 12 underscores the economic importance of horticultural production. In 2002, Kane County was the largest dollar producer of nursery, greenhouse, floriculture, and sod crops of all Illinois counties, producing 15% of the state's total. These horticulture producers made up only 11% of the county's farms, yet produced 48% of total agricultural sales. Nursery, greenhouse, sod farms, edible crops, and seasonal crops (for example, Christmas trees and pumpkins) will play an increasing role in Kane County's agricultural economy. These operations are generally located near developing areas such as Kane County. Kane County encourages expansion of nursery and greenhouses and other agriculturally related businesses through the use of the F-2 (agriculturally related sales) zoning district.

Agriculture and Land Use

Agriculture is the predominant land use in the county. The Development Department's 2001 land use survey indicates that 74% or 180,576.52 acres of unincorporated Kane County is in agriculture. The agricultural presence becomes stronger as one goes west across the county. Most of these agricultural uses are concentrated in the western and central townships. Within the townships, the percentage of unincorporated land in agriculture in 2001 was: western townships, 88%; central townships, 73%; and river townships, 41%.

Major threats to agriculture in Kane County are encroaching urbanization and the conflicts and incompatibilities that arise between farm and non-farmland uses. Many intruding non-farm uses in agricultural areas not only permanently remove land from production, but also create new problems. These include bringing conflicting land uses into contact, stimulating land speculation, and increasing property assessment and public services cost. Further, encroaching development discourages new investments in farm improvements and causes crop losses due to disruption of drainage and vandalism. The new non-farm neighbors must also contend with odors, dust, noise, and other conditions naturally present in agricultural areas.

An emerging trend in agricultural practice is Concentrated Animal Feeding Operations (CAFO). In general, CAFOs consist of an enclosed facility or open lot where animals, such as cattle, dairy cows, swine, sheep, hens, turkeys or chickens are confined and maintained for a specified time. With such operations, animal wastes are concentrated creating potential environmental and public health issues.

Agricultural Protection

Kane County's commitment to agricultural protection has evolved over a twenty-year period. On July 22, 1980, Governor James R. Thompson signed Executive Order 80-4, Preservation of Illinois Farmlands. This Executive Order eventually led to the Illinois Farmland Preservation Act establishing a new state policy to promote the protection of Illinois farmland from unnecessary conversion and degradation. The Act required state agencies to develop an agricultural land preservation policy. In 1980, enabled by the new legislation and responding to an increasing threat to agricultural land in Kane County, the County Board amended the 1976 Land Use Plan. Objectives and policies were added to specifically protect agriculture as a valuable natural resource and an economically productive land use. These objectives and policies were reinforced in the 1982 Comprehensive Land Use Plan and were strengthened in the 2020 Land Resource Management Plan.

In 1991 the County Board became the first in Illinois to adopt a Farmland Preservation Policy to minimize conflicts between farming and other land uses. The policy states Kane County will encourage development within the county to occur in such a fashion as to minimize conflict between farming and other land uses. It goes on to assert that Kane County does not intend to enforce any rule, regulation or ordinance in such a manner as to violate the "Farm Nuisance Suit Act" (740 ILCS70).

In 1991 Kane County worked with the Northeastern Illinois Planning Commission (NIPC) to develop an Agricultural Protection Area (APA). The purpose of the APA is to maintain the designated area in farming use and uses ancillary to and supportive of the farming economy and community (Refer to Figure 14). An APA map was prepared based on prime farmland, soils, land use, municipal plans, drainage divides, environmentally sensitive lands, flood plains, and man-made features such as existing subdivisions and roads. Approximately, 165,000 acres or almost 50% of Kane County is included in the Agricultural Protection Areas.

The APA map is used by Kane County and NIPC when reviewing amendments to Facility Planning Areas (FPAs). NIPC and the county advise the Illinois Environmental Protection Agency on proposed FPA amendments for wastewater expansions. The map is an important tool for implementation of state, regional, and county farmland preservation policy and can be useful in preventing land use conflicts and "leapfrog" development in the APAs.

In 2001, the Kane County Board adopted the Agricultural Conservation Easement and Farmland Protection Program. The purpose of the program is to protect farmland through purchase or donation of development rights, or fee simple purchase of land. The program is driven by farmland owners voluntarily applying to sell future development rights to the county. Applications are reviewed and recommended to the County Board by the Kane County Agricultural Conservation Easement and Farmland Protection Commission. Once the county purchases the development rights, a conservation easement is placed on the property in perpetuity, restricting the land to farming uses. As of winter 2005, landowners have submitted applications representing over 5,500 acres of land to the county for preservation.

As Kane County's population grows over the next 30 years, development pressure on the county's productive agricultural land will increase. The county is recommitting to protecting farmland in order to ensure the economic vitality of the agricultural sector and to preserve our agricultural communities and rural lifestyle (Refer to Figures 15, 16 and 17).

PLANNING ISSUES—AGRICULTURE

Policies

1. Protect land best suited for farming from premature conversion to other land uses, and maintain agriculture as an integral part of the county's economy, landscape and natural resource base.
2. Encourage right-to-farm legislation, support incentives to retain farmland, and further limit the circumstances under which farming operations may be deemed a nuisance.

3. Encourage the use of county-produced farm products through activities such as farmers' markets and urban produce markets and support the development of new national and international markets.
4. Support agribusiness services and facilities, such as equipment sales and service, research facilities, nurseries and greenhouses, genetic research, biotechnology, grain elevators, and fertilizer services.
5. Discourage sewer and water systems and other projects that would cause the encroachment of development into agricultural areas.
6. Encourage, where appropriate, agricultural land use categories in municipal land use plans, the use of the LESA system for municipal planning projects, and establish transitional areas between residential development and agricultural land.
7. Support Executive Order 80-4, Preservation of Illinois Farmlands and the Illinois Farmland Preservation Act.
8. Participate with the Natural Resources Conservation Service, the Consolidated Farm Service Agency, and the Kane-DuPage Soil and Water Conservation District in programs aimed at implementing good soil conservation practices and improving rural water quality.
9. Encourage development and maintenance of the infrastructure required to support agricultural operations such as roads, bridges, local drainage systems, and drainage districts.
10. Continue to annually fund the Agricultural Conservation Easement and Farmland Protection Program and to maximize the level of federal matching funds from the Farm and Ranch Lands Protection Program for farmland preservation in Kane County.

Figure 10

Kane County Farms

	Number of Farms	Average Farm Size (Acres)	Land in Farms (Acres)
1945	2,029	147	298,489
1950	2,052	145	297,119
1954	1,879	156	293,063
1959	1,550	178	275,207
1964	1,372	195	267,745
1969	1,210	227	275,228
1974	955	251	239,535
1978	995	252	250,469
1982	912	263	240,011
1987	824	277	227,961
1992	703	290	203,590
1997	650	323	209,941
2002	619	320	198,227

Source: Census of Agriculture, National Agricultural Statistics Service, USDA.

Figure 11

Illinois Agriculture Facts

- Illinois is the leading producer of soybeans, corn, and swine in the United States.
- Food processing is the number-one manufacturing activity, adding almost $13.4 billion annually to the value of Illinois' raw agricultural commodities.
- Each year 274 million bushels of Illinois corn are used to produce more ethanol than any other state—about 678 million gallons.
- About 89 percent of the state's cropland is considered prime farmland, ranking third nationally in total prime farmland acreage.
- Illinois ranks second nationally in the export of agricultural commodities with nearly $4 billion worth of goods shipped to other countries each year.
- More than 44 percent of grain produced in Illinois is sold for export.
- Illinois' food and fiber industry employs nearly 1 million people.

Source: "Facts About Illinois Agriculture," Illinois Department of Agriculture, August 2004.

Figure 12

Estimated Value Per Acre of Selected Specialty Crops

In Kane County 2003

Crop	Dollar Value Per Acre in Kane County
Sweet Corn (retail)	$4,800
Pumpkins (retail)	$10,000
Apples (retail)	$21,000
Apples (wholesale)	$10,500
Strawberries (retail)	$60,000
Strawberries (u-pick)	$30,000
Grapes (retail)	$4,000
Grapes (sold retail as wine)	$37,500
Balled & Burlapped Woody Plants	$4,000
Containerized Plants	$40,000

Source: Specialty Growers Task Force; St. Charles Horticultural Research Center; University of Illinois; and Midwest Groundcovers, Midwest Trading, 2003.

Figure 13

Location Advantage—Terminal Market

In August of 2003, the Union Pacific Railroad began operations on the new Global III Intermodal Terminal in Rochelle, approximately 25 miles from Kane County. The terminal serves as an interchange hub and as a loading and unloading terminal for rail intermodal shipments moving through the Chicago metropolitan region. The Rochelle rail port provides an opportunity to form a terminal market, an assembly and trading place for agricultural commodities. Terminal markets are usually at or near major transportation hubs. Kane County can partner with DeKalb, Lee, and Ogle counties and the Union Pacific Railroad to develop agriculture enterprise initiatives capitalizing on the new rail port. Proximity to the rail port may give area farmers an opportunity to stimulate development of a system for the delivery of specialized products.

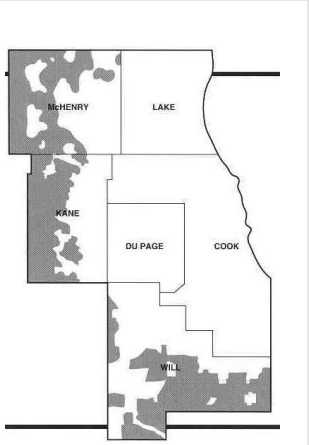
Source: "Global III Update," Union Pacific Railroad, June/July 2003, website: www.up.com.

Figure 14

Agricultural Protection

Agricultural protection is valuable because it:

1. Contributes to a stable economy, both locally and nationally, and provides jobs and a market for products.
2. Preserves a valued livelihood and way of life.
3. Retains open land for possible future extraction for valuable mineral resources.
4. Provides visible, private open space with its rural aesthetics and environmental benefits, including enhanced air and water quality.
5. Controls stormwater runoff and sediment damage, protects groundwater recharge areas, and conserves soil when appropriate farming practices are used.



"The top of the ridge is a cornfield.
It rests all winter under snow.
It feeds the broken snowdrifts in spring
To a clear stream cutting down hill to the river."

—Carl Sandburg

Figure 15

Leveraging Purchase of Development Rights

On September 2003, the County Board commissioned a report to address strategies for strengthening Kane County's farm economy into the year 2030. The report, *Leveraging Purchase of Development Rights to build a strong farm economy*, was prepared by Robert Heuer, a Public Policy and Marketing Consultant in Evanston, Illinois. The paper suggests a number of policies and programs to help farmers leverage the county's location on the edge of a metropolitan market. The net return on conventional farms producing corn and soybeans is extremely low. The report suggests that farm values increase in suburbanizing areas as farmers convert from production of low-value wholesale goods to higher-value direct marketing and ornamental crops. Specialty farms can retain 40 to 50 percent of the net returns versus the conventional farm's 15 to 20 percent. A focus on mass customization, a common industrial practice that involves tailoring goods and services to meet the particular needs of the customers, in Kane County can boost the economic value of crops. Producing specialized, higher value crops can help ensure that agriculture remains a vital part of the Kane County economy.

One proposal from the report would be to develop an AgriFIRST program to stimulate development of innovative agribusinesses. This program would help farmers and farm cooperatives identify customers' needs and tailor their production to deliver consumer ready food and agricultural products to meet marketplace demands. A second proposal would be to develop a direct marketing association or forum that works with farmers to market their products to individuals, families, restaurants, companies, and farmers' markets; and develop agricultural tourism activities and pick-your-own operations. The State of Illinois currently does not have a direct marketing association yet there are demands for high-value products in the Chicago metropolitan region.

Source: "Leveraging Purchase of Development Rights to build a strong farm economy," prepared by Robert Heuer, September 2003.

Figure 16

Kane County Farmland Protection Program

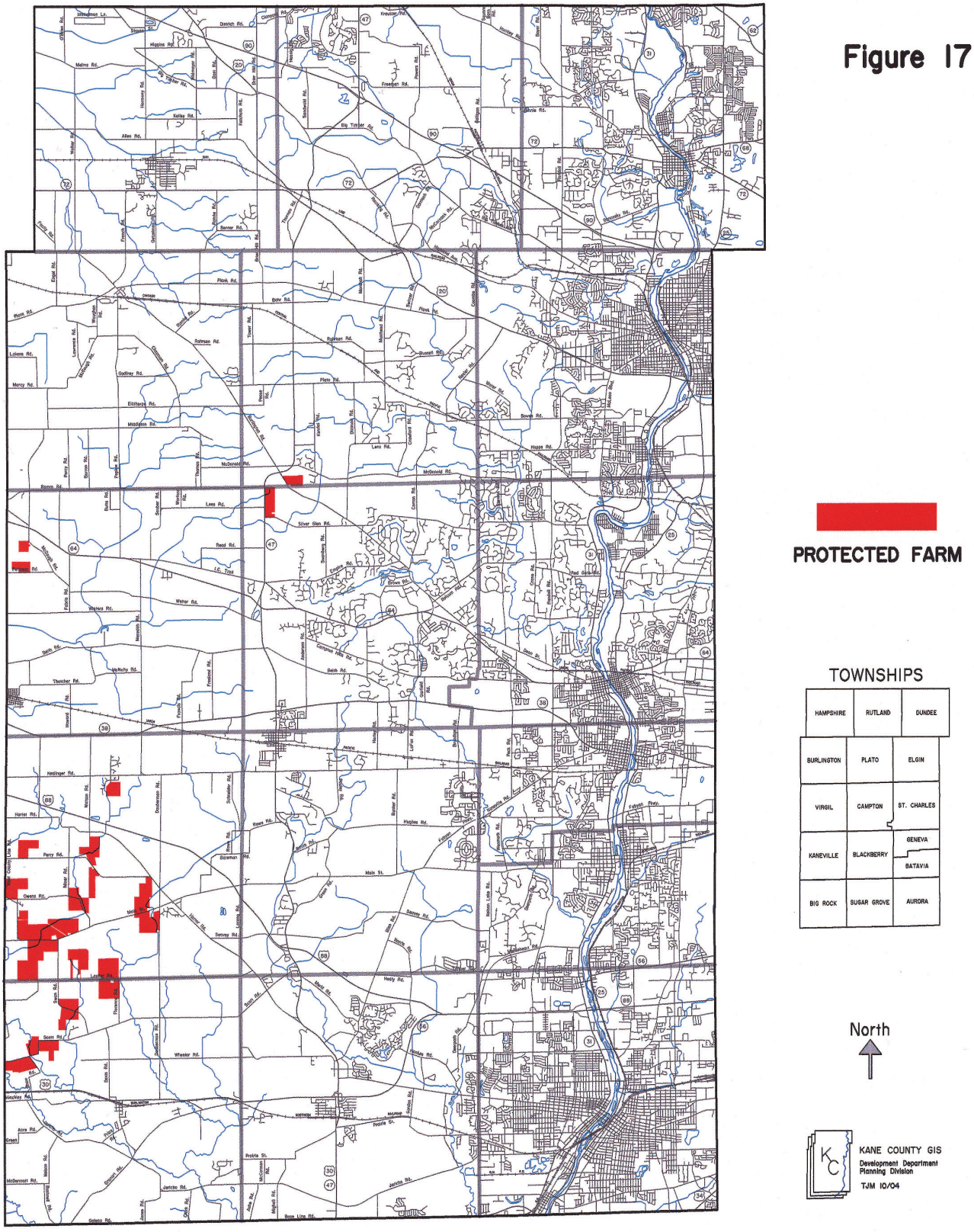
As of winter 2004, the County Board has approved the purchase of development rights on 2,900 acres, of which 2,153 acres of easements were purchased with a Federal Farmland Protection Program grant awarded to Kane County.

Year	# of farms preserved	# of acres preserved
2002	11	1,425.71
2003	5	708.79
2004	5	774.43

Note: Numbers based on board approved applications.

Source: Kane County Development Department, Planning Division, 2004.

Figure 17—Protected Farms Map



PLANNING ISSUES—HOUSING

Objectives

1. To encourage a variety of housing types to meet the profound changes and shifts in the social-demographic profile of Kane County residents.
2. To maintain, enhance, and create neighborhoods that are safe, free from environmental and public health hazards, provide a sense of community, and offer a choice of housing.
3. To ensure orderly county and municipal development with residential land uses and densities consistent with local and county plans.
4. To encourage housing developments that enhance community livability, increase walkability and decrease auto dependence.
5. To support residential infill, redevelopment, and mixed-use in the Urban Corridor.
6. To encourage the appropriate use of Smart Growth design principles and techniques in county and municipal planning in the Critical Growth Area, as an alternative to conventional suburban sprawl.

Chapter Focus

One of the major challenges facing the county and municipalities over the next two and a half decades is housing. From 2000 to 2030, the county will increase by 100,716 households. The profile of these households will be different from today. The number of Americans over the age of 65, the baby boomers, will increase by 103% during this same period. Echo boomers (born between 1975 and 1995) are a population segment as large as the original baby boomers. Today, fewer than 25% of households are comprised of parents with one or more children. Further, approximately 20% of all Kane County households are comprised of individuals living alone. It is Kane County's goal to provide a variety of housing opportunities to meet the changing social-demographics of Kane County. Housing that creates a sense of community, rather than contributing to conventional suburban sprawl, should be provided. The county encourages housing development following the smart growth principles and emphasizing neighborhood cohesiveness and environmental integrity.

This chapter examines:

- Residential Growth
- Affordability and Housing Balance
- Neighborhood Design, Character and Livability
- Lifespan Housing
- Redevelopment

Residential Growth

After agriculture, residential is the second largest land use in Kane County. Between 1980 and 2000, Kane County gained 40,007 households for a total of 133,901. It is important to note, however, that 84% (112,588) of the county's total households resided in the 27 municipalities. These trends are expected to continue as the population increases and in fact the municipal incorporated areas will include 90% or more of all households by 2030.

The Fox River communities in the Urban Corridor contain the majority of the county's population and the richest diversity of housing due to history, available infrastructure and years of neighborhood investment. This is attributed to communities having established sewer and water services, transportation networks, and a variety of businesses with employment opportunities. The urban communities of Algonquin,

PLANNING ISSUES—HOUSING

Aurora, Batavia, Carpentersville, East Dundee, Elgin, Geneva, Montgomery, North Aurora, Sleepy Hollow, South Elgin, St. Charles, Wayne, and West Dundee are addressing growth, infill, and redevelopment issues. The Fox River cities are becoming more interested in redevelopment and infill opportunities. A renaissance of their downtown areas is creating a new residential townhome and apartment market, stimulating reinvestment in historic buildings and preserving and enhancing the character and quality of life. The challenges facing these communities include planning in the western fringes extending into the Critical Growth Area and examining infill and redevelopment opportunities closer to their central cores and along Randall Road.

Residential is the second largest land use in Kane County.

The Critical Growth communities include Elburn, Gilberts, Lily Lake, Pingree Grove, Hampshire, Huntley, and Sugar Grove. Population projections indicate these communities will experience substantial growth in the next 20 to 30 years. Much of the growth is expected to be new construction. Many of these communities are looking to enhance or create their town center. These town centers are a community focal point and create gathering places for people. Challenges facing the Critical Growth communities as they develop are tremendous and include not only housing, but related issues of traffic congestion and sustainable water supply. The dominant housing type in the unincorporated areas of the Critical Growth Corridor is single-family detached homes on large lots of one and one-quarter acre. In larger developments, such as Mill Creek and Fox Mill, Kane County has emphasized the use of design principles often missing from conventional suburban developments: preserving historic, cultural and visual landmarks; planting native landscaping; protecting viewsheds; and preserving natural features and landscapes including creeks, wooded areas, hedgerows, and land forms. Challenges facing Kane County as it develops in the unincorporated areas include restricting the subdivision of land with severe physical limitations for septic systems, buildings, and roads, as well as requiring development to preserve and enhance natural features such as vegetation, wildlife, waterways, wetlands, topography, and scenic vistas.

The Agricultural Villages in Kane County include Big Rock, Burlington, Maple Park, and Virgil. These towns have populations of less than 1,000, yet are expected to face new housing growth pressures in the next 30 years. These towns have a unique challenge facing them as they grow and develop. Much of their attraction is due to the area's rural character. It is to everyone's advantage to capitalize on and to protect as many elements of the rural character as possible, incorporating them into development as it occurs. These towns have a unique opportunity to create an alternative to typical suburban sprawl.

Affordability and Housing Balance

There is an increasing need for affordable housing in Kane County. On January 1, 2004, the Illinois legislature enacted the Affordable Housing Planning and Appeal Act. In the findings, the legislature declared that there exists a shortage of affordable, accessible, safe and sanitary housing in the state, that there is a need for workforce and retirement housing and that local governments need to provide affordable housing. The Act further states that beginning October 1, 2004, the Illinois Housing Development Authority shall determine which local governments are currently

Joint meeting of the CDBG and HOME Commissions.

providing affordable housing. Those communities not providing affordable housing will need to develop a plan for providing affordable housing by January 1, 2005.

Federal programs, such as the Community Development Block Grant (CDBG) and Home Investment Partnerships (HOME) Programs, assist Kane County in addressing housing and community development needs. While CDBG funds are used to improve housing quality, build neighborhood infrastructure, and expand economic opportunities for residents, HOME funds assist in the development of quality affordable workforce and senior housing. These programs provide gap financing for projects that strengthen the livability of communities and offer a valuable incentive for projects that demonstrate the principles of Smart Growth.

Kane County and the Cities of Aurora and Elgin participate separately in the CDBG Program. In order to access HOME funds, however, Kane County and the City of Elgin formed a Consortium—or partnership—in 2004. The City of Aurora also participates in the HOME Program, but under a separate partnership with DuPage County. Regardless of the conduit, HOME funds may be used to finance the construction of new affordable housing units, rehabilitate existing housing, and provide both homebuyer and rental assistance. Each consortium determines the specific uses for HOME funds after evaluating the housing needs of their citizens and prioritizing the types of activities and projects that will best meet those needs. The Housing Endorsement Criteria, prepared by the Metropolitan Planning Council and Metropolitan Mayors Caucus, provide a set of sound principles on which to base these critical funding decisions (Refer to Figure 19).

As a precursor to receiving HOME funds, Kane County and the City of Elgin launched a planning initiative in the summer of 2004 that will culminate with the completion of what is known as a "Consolidated Plan" in the spring of 2005. Once adopted by the County Board, the Consolidated Plan will be submitted to the U.S. Department of Housing and Urban Development and will guide the use of federal housing funds over the next five years. The plan will identify the most-urgent housing and community development issues facing our area and establish a strategy for using available federal resources to tackle those issues. Included in the plan will be a housing market analysis, which will take into account the varying market conditions in a number of areas within the county. Based in part on the results of the analysis, the plan will identify the housing needs specific to each of those areas. HOME funds will then be used to make strategic investments in projects and activities that address the housing needs in each area of Kane County. For instance, financing for the construction of new affordable housing units can be targeted for areas where the need for such units is greatest in order to meet affordable housing goals set by the State of Illinois under the Affordable Housing Planning and Appeal Act.

There is a strong tie between affordable housing, job location, and transportation. According to the American Planning Association in their report Jobs-Housing Balance (November 2003), "land-use patterns, which have increased travel distances because of the separation of homes, jobs, and other destinations—can be blamed for

approximately one-third of the increase in driving. Better-planned communities with balanced jobs and housing can help reduce travel distances and thus limit the growth in trip lengths." Achieving a balance between housing and jobs without straining the transportation system is a growing concern within the Chicago metropolitan region. The majority of workers drive to their place of employment, often with long commute times, resulting in traffic congestion. This decreases the overall livability and desirability of an area.

Residential development should be designed to encourage walking, bicycling, bus, commuter rail and other forms of transportation. Public transportation improves mobility choices for all ages and for citizens with disabilities. It eases traffic congestion, enhances economic opportunities, and improves quality of life. However, higher residential densities are required to support increased opportunities for public transit. Design elements supporting transit use that can be incorporated into residential design are grid street networks, sidewalks leading to transit routes, cross-walks, diagonal walkways and shortcuts to make access to transit more direct.

In Kane County, the greatest percentage of residential development is not within a mass transit node. Most residential development is only accessible by its surrounding road network. Transportation planning for housing has often focused solely on the internal subdivision road system, losing sight of the larger transportation network. When the internal and regional networks are planned along with land use, the resulting transit effects are maximized. Subdivision design and land use planning can reduce the number of residential vehicle trips. This can be accomplished by internalizing and concentrating neighborhood businesses and services, implementing mixed-use development, and concentrating housing near mass transit.

"Location Efficiency" is a term used to describe the conditions under which urban households devote substantially less of their income to meet their day-to-day transportation needs. A household with high location efficiency is located in an area with characteristics as, compact residential design, availability of shops and other amenities, and pedestrian friendliness. Annually, households with high location efficiency can spend from $1,200 to $6,000 less on transportation than their counterparts in poorly planned developments where shops, schools, and workplaces are generally accessible only by automobile. These savings can be attributed to the option to own fewer cars and take more trips by walking, bicycling, and using public transit. A new Location Efficient Mortgage (LEM) program has been initiated in the Chicago area as an incentive to reduce automobile trips and to increase affordability of homeownership in location-efficient communities (Refer to Figure 20).

Reduced employee commute times and a nearby supply of reasonably priced housing are advantages to

employers. In one recently created Employer Assisted Housing (EAH) program, the employer offers assistance to employees, often with financial support of state housing programs, purchasing homes within a reasonable distance of the employer. The EAH initiative offered by the Metropolitan Planning Council, in partnership with nonprofit housing organizations and area employers, is growing as it gains recognition and financial support from the State of Illinois. Participating Illinois corporations can receive a credit toward their state income tax for cash, land or property donated for the creation of workforce housing. The state's goal is to generate private sector investment in workforce housing.

Neighborhood Design, Character and Livability

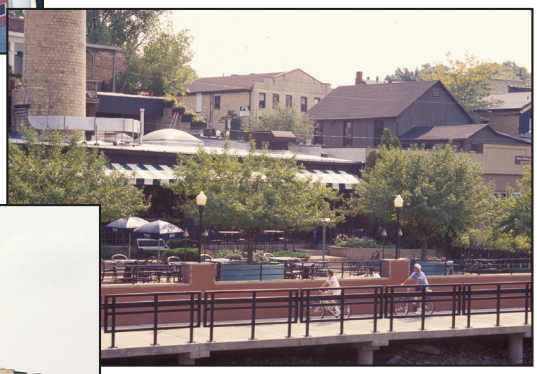
Homebuyers are becoming more sophisticated and demanding in their choices for a desired neighborhood. Their selection criteria are not based only on home design and size; it includes the neighborhood, schools, parks, and other community facilities, as well as easy access to work and shopping.

A component of a successful community is the strength of its existing housing and neighborhoods. Neighborhood character—the appearance and feeling of an area—is supported as people take pride in their home and neighborhood. Planning for the neighborhood level has resurged and is most effective when incorporated into a community's comprehensive plan, ordinances, and regulations. A neighborhood plan addresses topics such as housing and community development, schools, libraries, transportation, community policing, economic development and tourism from the local perspective. Characteristics such as churches, landmarks, historic sites, or natural features that help define a neighborhood are identified and recommended for protection. Future public and private investment in neighborhoods should compliment the character and design pattern established in its architecture and infrastructure.

In new residential developments, it is common for developers to provide additional amenities including entrance landscaping, unified signs, decorative lighting and fencing, and common area landscaping. Recreational amenities such as golf courses, swimming pools, tennis courts, and fishing ponds and small lakes are often the focal point of newer developments.

Residential developments are more desirable when natural amenities are protected and incorporated into the development. Developments planned and clustered around open space networks, viewsheds, and waterways are becoming more popular. It is now recognized that even in-town development can protect and incorporate the site's natural features including topography, wetlands, waterways, and wooded areas. A design concept coinciding with protection of natural areas is compact building. Compact building creates smaller living spaces and preserves larger natural areas. A smaller home and lot with adjacent open space is becoming more popular in the market place.

PLANNING ISSUES—HOUSING



New development layouts can be greatly improved when other design and land use patterns are utilized. One example is incorporating a network of trails, paths and sidewalks into the development. The network would include certain paths for recreation and others for functionality, such as connections to schools, churches, parks, and nearby retail. Trails, paths and sidewalks should be located where they derive the greatest benefit, such as along a greenway system. Other non-traditional design patterns include a variety of lot types, housing styles, and layout techniques allowing for more efficient use of land and opportunities to protect and incorporate natural features.

Existing land features to be considered in new development design include: viewsheds; topography; rustic roads; tree lines; fences and stone rows; agricultural buildings including barns and silos; ponds; tree stands; and native vegetation. These features should be evaluated on a site-by-site basis. It is important that local development codes allow for the design flexibility that is needed to incorporate such features when appropriate.

Lifespan Housing

The housing needs of Kane County residents in the upcoming 30 years will be as varied as the population. For years the single-family detached home suited the primary needs and desires of homebuyers. Because single-family detached housing is the primary type, it is expected to continue to fulfill much of the demand. However, demand for other housing styles and options is increasing. Single-family attached units, such as townhomes, coach homes, and garden apartments, provide a variety of housing choices and opportunities, especially with the maintenance-free lifestyle offered. Flex houses or live/work units are becoming more mainstream options as home-based businesses and home offices increase. Residential accessory units, providing separate living quarters in addition to the principal dwelling unit, meet special housing needs for a variety of residents, including the elderly, singles and disabled persons.

From 1990 to 2000, Kane County lost 500 rental housing units. Rental units provide a housing option for residents that do not want to make a commitment to homeownership. Job and life changes make rental units a desirable and realistic option for people, such as young professionals or empty nesters. Recent national and county level studies indicate there is an insufficient number of rental units being built or redeveloped. There is also an unmet need for workforce housing in the Chicago metropolitan area. While portions of the county, including Aurora and Elgin, offer workforce housing opportunities, Kane County and the other municipalities should investigate options to address and meet this housing requirement. To maximize the benefit of rental units, they should be appropriately located in a downtown or town center, adjacent to higher density housing units, mass transit centers, retail and entertainment districts, and places of work.

There is also an increasing need for senior housing. This need can be addressed by a variety of housing choices, including planned developments, townhomes, and

apartments. Accessibility is an important feature for senior housing units. Local code authorities should review plans for compliance with all state and federal codes and guidelines for accessible and adaptable housing units. Location and site plans should also be reviewed for accessibility and connectivity to community amenities, such as stores, medical facilities, parks, libraries, and public buildings.

Housing diversity can be achieved by developing zoning and building codes that are flexible enough to accommodate new design and construction methods. This is especially important with technological advances in building construction such as precast concrete panels, components, and other non-traditional building techniques.

Redevelopment

As greenfield sites dwindle, municipalities and developers will reexamine underused sites. This is part of the renaissance of the Urban Corridor and refinement in the Critical Growth Area. Redevelopment projects are often the catalyst for the rejuvenation of an entire area or neighborhood. These sites are attractive because a neighborhood framework is established. While infrastructure is often in place and utilities immediately available, there are often constraints to redevelopment of infill projects. Subdivision standards and zoning ordinances are two of the local regulations that should be examined and revised to make these tracts of land more desirable to developers. Other barriers to overcome include assembly of land, repair and improvement of infrastructure (including streetscape and parks), and environmental issues such as contamination, soil conditions, and remaining building debris. Because redevelopment occurs within an existing neighborhood context, community support is essential for project success. Municipalities can lay the groundwork for project support by underscoring the importance of revitalization of older areas in advance of specific projects.

As architects and designers work to develop plans for new neighborhoods and redevelopment projects, many use techniques to create what is called “place making” or a “third place.” Sociologist Ray Oldenburg refers to the first two places as the home and workplace. A “third place” is an area that draws people to an informal social setting where friends and neighbors can meet old friends, meet new acquaintances, discuss the important issues of the day, and relieve the stresses of the day. Creating a “third place” requires a desirable and attractive physical location that has a unique identity, facilitates social interaction, and creates a sense of pride and community.

Policies

1. Encourage an open housing market throughout the county that provides housing regardless of age, race, religion, ethnic background or income levels.
2. Discourage residential development in areas detrimental to county farmland preservation goals.
3. Encourage new residential development and redevelopment to be pedestrian, bicycle and transit friendly with links between housing, jobs, and retail.
4. Restrict subdivision of land with severe physical limitations for septic systems, buildings, and roads.
5. Require that residential developments preserve and enhance natural features such as vegetation, wildlife, waterways, wetlands, topography, and scenic vistas.
6. Consider code revisions reflecting new techniques and innovations to facilitate housing development, rehabilitation, and construction.
7. Encourage infill, preservation and rehabilitation of housing in the Urban Corridor and in the Critical Growth Area villages.
8. Incorporate the Housing Endorsement Criteria as policy for the consolidated CDBG plan for Kane County.
9. Focus funding of the five-year consolidated CDBG plan towards projects furthering the renaissance of the Urban Corridor.

Figure 18

Successful Infill Development Offers Rewards To Communities:

- Provides housing (both affordable and market rate) near job centers and transit;
- Increases property-tax base;
- Preserves open space at the edge of regions;
- Provides new residents to support shopping districts and services;
- Capitalizes on community assets such as parks, infrastructure, and transit; and
- Creates new community assets such as child-care centers, art districts, and shopping areas.

Source: Strategies for Successful Infill Development, Northeast-Midwest Institute; and Congress for the New Urbanism, 2001.

Figure 19

Housing Endorsement Criteria—General Principles

- **Promote Economic Development and Sustainability**

  Housing, when appropriately located, encourages the expansion of existing and the location of new businesses and industries within the region. The mismatch between where the jobs are and where workers can afford to live has significant costs. Local housing for all levels of the workforce promotes stability and productivity for workers as well as for individual companies.

- **Encourage an Array of Quality Housing Options Throughout the Region**

  Developments with units at price points accessible to a wide range of income levels are needed to provide the local workforce and residents with a housing supply that is critically needed and currently lacking.

- **Support Innovative Community Development and Design**

  Quality residential and mixed-use developments maintain, enhance, or create livable streets, neighborhoods, and public spaces oriented to the pedestrian. A variety of housing types provides a healthy mix of different age groups, racial and cultural backgrounds, income levels, and household types.

- **Provide for Mixed Uses within a Neighborhood**

  In order to enhance community livability and decrease auto dependency, a mix of land uses within a neighborhood combine residential with retail, restaurants, schools, and other amenities in close proximity. The location of schools, entertainment districts, parks, businesses, institutions, and recreational facilities will be consciously integrated with new existing residential developments to encourage ease of pedestrian access.

- **Minimize Cost of Municipal Services**

  Clustering housing near existing infrastructure minimizes the per capita costs of municipal services by allowing for more efficiency and economies of scale.

- **Promote the Use of Public Transit**

  Housing, together with commercial space and public amenities, should be planned for, and built first, within walking distance of existing or planned transit service in order to strengthen transit ridership and decrease traffic congestion.

- **Support Sensible Growth**

  Infill development and redevelopment within existing municipal areas and conservation developments are of tremendous value. Adhering to development policies that encourage compact, mixed-use development will promote an array of housing types and expand individual choice. This will advance other community needs such as the protection of open space and growth of the local tax base.

Source: The Housing Endorsement Criteria is a joint initiative of the Metropolitan Planning Council and the Metropolitan Mayors Caucus Housing Task Force.

Figure 20

Location Efficient Mortgage

The Location Efficient Mortgage (LEM) is an innovative, new mortgage product offered in Chicago as part of a Fannie Mae sponsored $100 million product test. LEM allows people looking for homes in location efficient communities to borrow more money since these locations allow people to spend less on transportation. Location-efficient communities take into account the transportation-related savings achieved by households that use public transportation, bike, or walk and rely on local shops, services, entertainment, and recreation. Depending on the location, the household size, and the number of vehicles owned, a LEM borrower could expect to manage a mortgage that is approximately $15,000 to $50,000 more than other mortgage products. The LEM can be used to purchase an owner-occupied, detached, single-unit home, or a condominium or town home located within the city of Chicago. The LEM borrower would be expected to lead an LEM lifestyle, which involves walking, bicycling, and use of public transportation to travel to work, shop, or attend entertainment, cultural, or other events. If widely used, the LEM could result in a 5% increase in the home ownership rate in the Chicagoland area, reduce sprawling neighborhoods by increasing population in location-efficient areas, as well as reduce automobile use.

Source: Driven to $pend, A Transportation and Quality of Life Publication 2000, Surface Transportation Policy Project, Center for Neighborhood Technology; and Introducing the Location Efficient Mortgage, The Institute for Location Efficiency and member organizations, 2002.

Figure 21

Residential Accessory Units

Residential accessory units, when approved as part of a planned unit development, meet special housing needs for a variety of residents such as elderly, single-parent families, and disabled persons in Kane County. Accessory units augment other housing types when appropriately located and regulated. Accessory units are separate living quarters in addition to the principal dwelling unit, and are above or part of the attached or detached garage. Residential accessory units have been created as part of the Mill Creek Planned Unit Development and have been very well received by local residents. Typically, accessory units have the following features:

- Maximum size of approximately 800 square feet
- Maximum of one accessory unit per lot
- Separate outside entrance
- One off-street parking space required
- Cannot be converted to a condominium or sold separately from the principal dwelling.

Source: Kane County Development Department, 1996.

Figure 22

Live/Work Units

Downtown revitalization depends on a successful combination of cultural, retail, entertainment, and residential uses. The City of Aurora's zoning district encourages nontraditional uses for revitalized structures. Live/work units, offering the opportunity for individuals to live and work in the same structure, have been introduced into the City of Aurora. The Dye House, historically the Stolp Woolen Mill Dye House dating from 1858 to 1960, is currently being redeveloped into live/work units for artisans. Situated adjacent to the Fox River, the 3,900-square-foot redeveloped Dye House has a lot to be desired with combined live/work units, inspirational river views, and the amenities of living downtown. The lower level will be used as a workspace for artists and the upper level to be used as their living space. Such projects are bringing more talent to Aurora and enhancing the culture of their downtown district.

Source: City of Aurora, Downtown Development Division and the Aurora Area Convention and Visitors Bureau, 2003.

Figure 23

Active Adult Communities

Active adult communities are age restrictive communities targeting people 55 years or older. At least one resident must be 55 years of age, and no one under 19 can be a permanent resident. The Del Webb Corporation is a leader in active adult community design. Opened in 1998 in Huntley, Del Webb's Sun City is situated on 2,155 acres and will contain 6,016 homes. Sun City was designed to build not only homes, but also to create a lifestyle and community for future residents. Amenities include a golf course, fitness room with outdoor and indoor pools, hiking or biking paths, sports complex, tennis courts, art and design classes and workspace, computer lab, and lodge.

Source: Del Webb Corporation, 2003.

PLANNING ISSUES—COMMERCIAL DEVELOPMENT AND DESIGN

Objectives

1. To provide an adequate supply of commercial goods and services throughout Kane County.
2. To encourage agriculturally related businesses in farmland areas.
3. To encourage commercial development that is compatible with surrounding land uses as well as functional, safe, and well designed.
4. To encourage redevelopment of older commercial centers and structures.
5. To encourage the principles that create gathering places, community landmarks, and a sense of place.
6. To eliminate county spot commercial zoning where it is not being utilized.
7. To encourage the appropriate use of smart growth design principles and techniques in county and municipal planning in the Critical Growth Area, as an alternative to conventional commercial development.

Chapter Focus

Commercial development provides jobs, tax revenue, and sources of goods and services for the county's growing population. Historically, much of the county's commercial development has been located in the downtowns along the Fox River. The location of intense commercial uses in the municipalities was appropriate because this is where the population, transportation facilities, and infrastructure to support commercial uses were found. More recently, growth trends and location shifts, particularly in the retail goods and services sector, have moved commercial investment westward to the Randall Road corridor. This westward shift in commercial development creates an increasing challenge for municipalities to strengthen older commercial areas. Examining the changing preferences and lifestyles of the residents, workers, and visitors that the retail area serves can revive older commercial areas. Design techniques can be used to build on the area's unique identity and character as well as to ensure compatibility with the surrounding area.

Support of the Agricultural and Rural Village area is essential. Appropriate commercial categories and locations have been established for agribusiness and crossroads commercial.

This chapter examines:

- Commercial development
- Commercial design

Commercial Development

More than 80% of commercial development in Kane County is found in the Fox Valley area, primarily within the municipalities. These occur in many forms: traditional downtowns, regional malls, sub-regional shopping centers, strip centers and small neighborhood conveniences. The county has two regional malls with more than one million square feet of space: Spring Hill Mall in West Dundee and Carpentersville, and Charlestowne Mall in St. Charles. The municipalities are an appropriate location for intensive commercial uses because of existing infrastructure and population. The municipalities also desire this land use because it generates tax revenues without increasing school population. The county will continue to steer intensive commercial uses toward the municipalities. Traversing the county from north to south, the Randall Road corridor is one of the largest and fastest growing commercial areas in the region.

PLANNING ISSUES—COMMERCIAL DEVELOPMENT AND DESIGN

In unincorporated Kane County, commercial uses totaled just 5% or 1,195 acres of land uses in 2001, occurring predominately within the unincorporated villages of the central townships. This small amount of commercial land use in unincorporated Kane County is partly due to the County Board's practice of steering commercial development towards cities and villages where it is more appropriate. Further, in unincorporated areas where commercial zonings have outlived their usefulness or are inappropriate, the county has taken steps to revoke and eliminate "spot" commercial zoning. This is not to be confused with the agribusiness in the central and western townships and villages, which supports the agricultural community.

Kane County identifies seven types of commercial uses which fulfills various functions:

1) Downtown Cores
2) Urban Arterial Commercial
3) Rural Commercial
4) Neighborhood Centers
5) Crossroad Commercial
6) Agricultural Businesses
7) Office, Research and Industry

1) Downtown Cores

The historic downtown cores of Kane County municipalities and villages are indispensable to the economy and viability of the communities and the county. The downtown centers contain many beautiful, older buildings with historical significance and architectural integrity. Many downtown centers are linked to the Fox River through riverwalks and greenways. Kane County will continue to support downtown revitalization programs such as main street programs and other preservation programs building on the existing infrastructure and a strong sense of place.

2) Urban Arterial Commercial

Urban Arterial Commercial is an important land use in the Fox Valley. Commercial land uses along major arterials in the Fox Valley provide a variety of goods and services and comprise the majority of new commercial development in incorporated areas of Kane County. This location is a result of proximity to sewer and water, residential population, and well-traveled transportation routes.

Examples of urban arterial commercial uses are: Meadowdale Shopping Center in Carpentersville, Charlestowne Centre in St. Charles, Windmill Place in Batavia and Geneva Commons. Urban commercial uses are especially concentrated along stretches of Randall and Orchard Roads. Pressure for commercial development along these major highways will continue.

Kane County should continue to discourage commercial development along the unincorporated stretches of these major roads. The only commercial uses that will be considered along these arterials will be properties with access to municipal services and consistent with municipal plans. Such development must be coordinated with county road access policies. Compatible and aesthetically pleasing building and landscape design as well as traffic management are key factors to consider in approving commercial uses. Poorly designed strip commercial development should be strongly discouraged.

Kane County and the municipalities should limit the expansion of commercial development westward into the Critical Growth Area. Commercial development in the Critical Growth Area should be used to service neighborhood development. New commercial developments should be directed toward the Urban Corridor or town centers. Opportunities for new commercial development in the Urban Corridor will help foster the retrofit of existing commercial strip centers and a renaissance of downtown retail (Refer to Figure 24).

3) **Rural Commercial**

Pressure for scattered commercial development in central and western Kane County will increase as population grows. Kane County will continue to encourage and guide commercial uses within planned areas of villages where such services have historically been provided and where infrastructure is available or being planned. Villages within this area include Big Rock, Burlington, Elburn, Hampshire, Kaneville, La Fox, Lily Lake, Maple Park, Pingree Grove, Plato Center, Udina, Virgil, and Wasco.

Kane County's Historic Preservation Plan states that new businesses should use available older structures wherever possible and that new buildings should complement the historic character of each rural town. The county endeavors to avoid the blighting effects of incompatible commercial development by assisting the rural villages in maintaining and enhancing existing rural commercial development.

4) **Neighborhood Centers**

Neighborhood Centers are new commercial uses located on a limited basis primarily within residential development in the Critical Growth Area. Residential growth in the area will increase the need for goods and services. This need can be met without generating strip centers or commercial sites along major intersections. Neighborhood Centers, such as the village center for Mill Creek, are a means of providing goods and services that are compatible with the scale and style of surrounding neighborhoods. These centers are an alternative to the conventional suburban sprawl and perform multiple functions—shopping, services, and community meeting places—and contribute to a strong sense of place. Such centers must be designed as an integral part of the residential development. Design requirements will include cluster development, access control, efficient traffic patterns, well-planned parking, and pedestrian friendly features. Neighborhood Centers will be an environmental asset to communities by reducing dependency on the automobile.

5) **Crossroad Commercial**

Crossroad commercial uses are designated at strategic intersections in order to provide basic conveniences for automobile travelers, and in response to location, traffic volume and patterns, accessibility, and existing land use. Examples include the intersections of Illinois Route 47 and Jericho Road, and the intersection of Illinois Routes 47 and Plank Road. The overall function of crossroad commercial land use is to provide automobile-oriented conveniences, such as gas stations and mini-marts, in an efficient, safe, and aesthetically pleasing manner. Development at such intersections should be limited in size and the scope of services. Shopping strip centers are discouraged to avoid competition with commercial services in nearby villages and cities, as well as to avoid sprawl. Efficient turn lanes, setbacks, signage, and landscaping, are measures to achieve auto-related,

functional, and attractive intersections. Design control creating a countryside character and complementing the existing rural surroundings is highly recommended.

6) **Agricultural Businesses**

The purpose of this type of commercial use is to provide for the location and expansion of agriculturally related businesses. Agribusinesses are a vital support to the agricultural economy in Kane County, and provide stability and growth in the western villages. These businesses include sales, services, processing, research, warehousing, marketing activities, and other related uses that are dependent upon or closely allied to the agricultural industry. Agricultural businesses are generally located in the central and western portions of the county townships and are encouraged to utilize existing buildings to locate in or as natural extensions of the villages. Agricultural will continue to provide strong economic benefits to Kane County. Encouraging the development and expansion of agribusinesses in appropriate locations will contribute to the economic viability of farming in the central and western townships.

7) **Office, Research and Industry**

Kane County has started to see large office and research facilities in Aurora and Elgin tollway corridors—the East-West Tollway (I-88) and Northwest Tollway (I-90). Some examples are Matsushita Electronics and First Card in Elgin, as well as Toyota and Farmers Insurance in Aurora. Office and research development in the Aurora area is an extension of what has been taking place in DuPage County between Oak Brook and Naperville since the 1960's. Likewise, the office and research development along the Northwest Tollway in the Elgin area is an extension of similar growth in northwest Cook County between O'Hare Airport, Schaumburg, and Hoffman Estates.

Industrial land uses exist in most Kane County municipalities and account for most of the traditional manufacturing jobs. Major industrial development areas are in Aurora, Elgin, Montgomery, and St. Charles. Kane County's 2001 land use survey of unincorporated Kane County showed 642 acres of industrial use. This relatively low acreage demonstrates that most industry is located within municipalities where sewer, water, and electrical power are readily available. Sugar Grove and Hampshire plan additional new office and industrial areas of significant size.

Commercial Design

Commercial design helps communicate an image and is one element making a place desirable. Design review is the most effective way for municipalities and the county to directly project an impression of livability and economic vitality. Design review goes beyond traditional zoning issues and addresses building and site design details that create gathering places, community landmarks, and a sense of place (Refer to Figure 27).

In David Sucher's book, *City Comforts* he gives examples of, "...small things that make urban life pleasant: places where people can meet, methods to tame cars and make buildings good neighbors. Many of these small details are so obvious as to be invisible." These details can enhance commercial districts and at the same time draw the public to shop and linger in a pleasant atmosphere. Some of these details include:

PLANNING ISSUES—COMMERCIAL DEVELOPMENT AND DESIGN

- Create public spaces with seats
- Place playgrounds in shopping districts
- Create gateways for neighborhoods
- Soften with green
- Personalize the city with art
- Engage walkers with interesting storefronts
- Provide a place for music
- Encourage public interaction with chess tables
- Identify neighborhood plants
- Allow the corner grocery
- Provide bike racks
- Build close to the sidewalk
- Allow workplaces to be visible
- Use sound (water features) to permit conversation

Increasingly, fast-food restaurants, gas stations, supermarkets, mini-malls, motels, car washes, and other corporate chains are found along major arterials and in neighborhood centers. It is the marketing strategy of these companies to be easily identified and to provide their customers with a sense of familiarity through replicating standardized brand images. Use of standardized buildings and signs has an obvious impact on communities with a well-defined heritage and can be detrimental to communities working toward to establishing a unique sense of place. Establishing and enforcing design review guidelines and ordinances through local design review can help communities achieve design details fitting the respective community's unique style. In *Community by Design*, Kenneth Hall and Gerald Porterfield, demonstrate the importance of paths, edges, districts, nodes, and landmarks in design guidelines. Attention to landscaping, lighting, architectural style and details, and materials also make a positive difference in the way franchises fit in with the community's character. Corporate chain buildings that reflect a community's character help create a sense of neighborhood identity and pride, help create distinctive commercial districts, increase the company's profits by attracting shoppers, and provide for future adaptive uses of the buildings (Refer to Figure 28).

Policies

1. Cooperate with local and regional groups and Chambers of Commerce to foster planned growth and expansion of existing and new commercial activity meeting community needs.
2. Encourage and promote agriculturally related businesses in rural Kane County, including the production, sale, and research of agriculturally related goods and services.
3. Encourage quality design standards, particularly with respect to road access landscaping, signage, and aesthetics for municipal and unincorporated commercial uses.
4. Require that commercial developments preserve and enhance natural features such as vegetation, wildlife, waterways, wetlands, topography and scenic vistas.
5. Prevent scattered, non-agriculturally related commercial uses in the unincorporated rural areas.
6. Support municipalities and villages in preserving and revitalizing downtown centers using historic resources whenever possible.

7. Coordinate commercial development with local events, visitor information, and county tourism opportunities.
8. Encourage design guidelines for neighborhood centers within master planned developments.
9. Encourage design guidelines for crossroads commercial land uses at designated intersections, including parking, access, lighting, and signage.

Figure 24

Urban Corridor Renaissance
Retrofitting Commercial Strip Centers

Retrofitting commercial strip centers through a redesign plan, implemented in stages, could gradually transform strip centers into mixed-use sub-centers. Success with one retrofit could generate momentum for other commercial corridor improvements. The following are a few tools for improving strip commercial centers:

1. Limit existing commercial districts to under a half-mile in length;
2. Fill in fronts of large parking lots with small, closely spaced or attached storefronts to build a street frontage with courtyard parking behind;
3. Place buildings upfront with attractive architecture, wall signs and sidewalks features along the frontage, not parking lots and pole signs;
4. Consolidate entrances along the road to a few main driveways with internal service streets based on a block system to connect businesses in between;
5. Help unify the streetscape and improve the appearance of public right-of-ways with continuous street trees and planted medians, high quality landscaping, decorative pavements, street furniture (benches, trash receptacles), or streetlights.
6. Build sidewalks and crosswalks throughout the area to create connections to shared parking, public transportation, walking between stores and to nearby housing;
7. Encourage a mix of housing and other uses adjacent to the shopping to begin to build a walkable neighborhood rather than a strictly commercial driving district.

Sources: "Tools for Improving Strip Commercial Corridors," Georgia Department of Community Affairs; and "Commercial Strip Redevelopment," Dutchess County Planning and Development, New York, 2003.

Figure 25

Evaluation of new construction or redevelopment projects should address the following:

Location: How appropriate is the site within the larger community? Is the project functionally and locationally feasible? Does it complement the existing commercial structure? Are there design features complementing and enriching the surrounding area?

Time: Does the commercial project support the day and night routines of the surrounding area as well as the seasonal changes? Does the project provide a sense of continuity within the area?

Movement: Is the project equally accessible to the transit users, the pedestrians, and the automobile users?

Compatibility: Is the project being evaluated using guidelines that consider: roof pitch, spacing, height/width of buildings, window heights, street frontage, character, building, massing, and material. Is the lighting coordinated with signs, utilities, street trees and location of parking lots and drives?

Source: "Building a foundation to assess the broader social, economic and environmental issues of development," Kinnelon Commons, New Jersey, 2001.

Figure 26

"Design appropriate for a particular locale is simply good business. It is in the self-interest of retailers to conform to community standards as they have been legislated. The notion of retailing for convenience stores and gas stations is fundamentally a neighborhood business; most customers come from within a three-mile radius. It is vital to take into account the wishes of the community. The average person does respond well to good design. In 35 years of retailing, I can't think where we have been seriously disadvantaged by meeting the community's design standards."

—Robert Rosenburg, Former Chairman and CEO, Dunkin Donuts,

Source: Saving Face, APA Planning Advisory Service, Ronald Lee Fleming, 2002.

Figure 27

Design Guidelines—Place Making Tools

- The use of local materials
- Planter walls to define the sidewalk and street
- Extensive landscaping
- Signs or markers made by local artisans
- Pedestrian-oriented features, such as: sidewalks, indirect lighting, and generous landscaping
- Work with companies to individualize and customize their icon to best suit the local streetscape character
- Communities should insist on site-specific customized design
- Have local artists contribute to "relief" art on exterior walls
- Human scale facade and design, which encourages shoppers to make connections between destinations and supports longer periods of visitation and the increased purchase of goods and services
- Bigger and brighter is not always better

Source: Saving Face, APA Planning Advisory Service, Ronald Lee Fleming, 2002.

Figure 28

Service Station Design—An Updated Approach

1. Locate the building so that it fronts onto the street, with the pump island canopy to the rear.
2. Design the architecture of the building fully on all four sides.
3. Provide windows or some equivalent fenestration facing the street.
4. Strongly encourage pedestrian entrances on the street side of the building.
5. Require pedestrian connections to surrounding properties and the street.
6. Design freestanding signage as a monument sign at a human scale, or no larger than five or six feet in height. (Human scale is based upon the average adult height or the height, which does not overpower a person standing next to it.)

Source: A New Urbanism Approach to Service Station Design, American Planning Association, PAS Memo, January 2001.

PLANNING ISSUES—ECONOMIC AND WORKFORCE DEVELOPMENT

Objectives

1. To continue expanding Kane County's diverse economy and maintaining a competitive position in the regional, national, and global marketplace.
2. To provide employment opportunities for all residents in the job market.
3. To implement land use and transportation policies providing a range of housing options to meet the need of a diverse workforce and providing better transit and pedestrian access to employment centers.
4. To support efforts strengthening job training and educational programs ensuring a competitive workforce for the 21st century.
5. To maintain and strengthen the long-term economic viability of Randall Road.

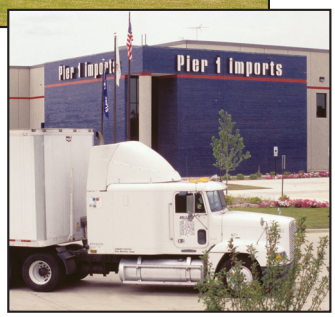
Chapter Focus

Kane County will prosper during the next 20 years because of its history as a business and government leader and because of its location within the robust Chicago metropolitan market. The challenge for Kane County is to maintain and strengthen its economic edge in light of demographic changes, workforce development, technology, and the rapidly changing global economy.

This chapter examines:

- Kane County Economy
- Workforce Development
- Randall Road Corridor
- Telecommunications

Kane County Economy



The Chicago metropolitan region has grown in population four times faster in the 1990s than in the previous two decades combined, increasing its population by nearly 11.4% between 1990 and 2000. The Chicago region gained more than 200,000 jobs, an increase of more than 7% from 1990 and 1998. During the 1990s the greatest relative increase in the number of new jobs occurred in McHenry, Will, and Kane counties, respectively. By the year 2020, 1.2 million new jobs will be created in the Chicago region.

Kane County currently has more workers than jobs. More resident workers are engaged in manufacturing, services, and transportation, communications and public utilities than available jobs in these sectors in Kane County. More jobs in Kane County in the wholesale and retail trade sectors exist than residents working in these sectors. A rough balance exists between the number of workers and jobs in the finance, real estate and insurance sector.

Since 1993, Kane County has experienced a relatively high employment growth rate. Fast growing sectors include services, construction and wholesale trade. The largest source of jobs (service industries) grew from 30% to 33% of Kane County's employment base. Manufacturing (27% of total employment) and retail trade (20% of total employment) are the next largest source of jobs, yet are growing at slower rates.

Overall countywide sales between 1993 and 1998 increased 14% from about $3.2 billion to $3.7 billion, adjusted for inflation. Automotive-related, general merchandise, food, drugs, and other retail sales, comprise about 69% of the county's total retail tax base. The highest growth categories were drugs and other retail (that is, jewelry and antiques, computer and office equipment, sporting goods, gifts, camera supplies, florists, etc.), automotive and furniture and household, followed by building materials, eating and drinking places and general merchandise. The forecast growth in population, per capita income, and sales are good indicators for a continued strong economy in Kane County.

Workforce Development

The county's economic position within the Chicago region is greatly dependent on maintaining a competitive and diverse workforce for the region's businesses and industries. There are three critical components to workforce development in Kane County: workforce training, improving the jobs/housing balance, and reducing commuter travel time.

In June 2003, Kane County compiled an inventory of technical training programs in Kane County. The inventory identified 184 programs with a high school and adult enrollment of 7,255. Gruen Gruen + Associates examined the inventory compared to the workforce needs in Kane County. While it was determined that the training programs available were more than adequate, not all workforce training needs were being met. The Gruen Gruen + Associates report stated that there is a need to increase collaboration with businesses and other educational entities to reduce potential duplication, making more efficient use of resources and providing more relevant training and preparation services, including certified occupational and workplace skills.

Kane County is fortunate to have two community colleges within its borders (Elgin and Waubonsee). Both of these offer various occupational programs as well as direct support to business and industry through customized training programs. They would serve as excellent catalysts for this concept.

The emerging information economy requires computer literacy as a basic skill standard of workforce training. It is estimated that almost all U.S. workers use some type of information technology in their jobs. The most desirable and high-paying jobs require competency in information technology. Efforts by Kane County public schools, private training organizations, corporations, colleges and universities must include, information technology as a necessary job skill component, accelerate employers and employees access to the digital network infrastructure, and increase information technology to create unlimited potential for business, industry, and innovation.

A balance between the number of jobs and the availability of housing is essential to a healthy workforce. According to Kane County's *Commuter Pattern Study*, Kane County employers hire approximately 66% of their workers from within Kane County, while 34% are coming from surrounding counties. The lack of affordable housing is contributing significantly to labor not being able to reside in Kane County.

Housing in Kane County is stable yet dominated by the single-family detached housing product. Availability of a variety of housing types for a community is critical to the county's ability to attract and retain a broad workforce. Each community should continually evaluate its residential housing stock to determine whether it is meeting the full spectrum of needs with its existing and new housing stock.

Chicago Metropolis in *The Metropolis Plan: Choices for the Chicago Region* states:

> "When there is a mix of housing choices near employment centers, workers can find moderately priced housing within a reasonable distance from home. Less of a household's budget—in terms of both money and time—must be spent on a long commute. Firms that have more attractive housing options for prospective employees gain a recruiting edge over their competitors."

Almost half of all Kane County residents leave the county daily to their place of work. According to *A Commuter Pattern Study*, prepared for Kane County, the number of residents commuting outside of the county each day for work has grown from 29% in

1980 and 40% in 1990 to over 49% in 2001. Without further policy changes, the jobs-to-household ratio is forecasted to decline as the proportion of Kane County residents working outside the county increases. Secondly, the lack of mid-level to high-end employment increases out-commuting of this talent level. These workers, predominantly engineers, managers, salespersons/marketers, and skilled manufacturers, are widely experienced, well educated and well trained. Approximately 72% of out-commuters would take a comparable job in Kane County, if available, as an alternative to commuting 30 to 60 minutes daily by car.

Expanding and diversifying the economic base can reduce the number of residents working outside of the county. Strategies for this goal vary depending on location. For example the Aurora Area Planning Partnership area and the Greater Elgin Partnership Area could focus on addressing the loss of jobs in the manufacturing, services, transportation, communications and public utilities sectors. These partnerships can also work to provide a higher proportion of executive, managerial and professional employment opportunities.

Randall Road Corridor

Randall Road is a major economic growth engine for Kane County and continues to experience considerable commercial development. Concerns exist that some development may not be competitive in the long run, compatible with existing community character, and not pedestrian oriented or well integrated with adjoining properties. Based on these concerns the County contracted with Gruen Gruen + Associates for a white paper titled, "Anticipating the Future: Revolutionary Changes and Policy Recommendations For Enhancing The Randall Road Corridor". The paper examined the shifting demographics and the income make-up of Kane County and reviewed key retail supply trends nationally. One of the major trends discussed was a shift from single-use to mixed-use development.

The policy recommendations from the paper suggest the desirability of encouraging the integration of a mix of retail, restaurant, entertainment, service, cultural, and office uses, as well as housing uses in compact areas. The recommendations also include encouraging a smaller number of dense, mixed-use community centers and discouraging independent retail centers. A mix of retail, service, public (that is, post office, library, etc.) office, and housing uses that allow pedestrian traffic between compatible uses reduces the amount of non-commute trips. The commute trips are increasingly becoming time consuming and travel intensive for many family households. Given the already heavy traffic on Randall Road, encouraging pedestrian-oriented, mixed-use environments will become progressively more important. Randall Road municipalities will do well to plan mixed-use environments that will dovetail well with the development of bigger and better regional shopping centers.

Specific recommendations from the white paper include:

1. Not adopting regulations limiting retail additions or restricting the growth of retail supply merely to protect existing retailers/shopping centers.
2. Use planning policies to avoid uses imposing externalities and opportunity costs and to encourage synergistic uses.
3. Discourage the stand-alone regional mall or power center.
4. Keep pace with the demographic make-up and consumer preferences in the primary market.
5. Use the information from the demographic and survey analysis to answer the question, "Why will consumers want to take the time and trouble to come to the development or shopping area?"

The paper concludes by stating that Kane County is transitioning to a future filled with opportunities and challenges for both communities and their businesses and citizens. Those communities that wisely choose the future and whose government, business and resident stakeholders work together to accomplish it, will realize an increased quality of life and standard of living.

Telecommunications

Telecommunication technologies consist of a diverse group of industries, including cable television, long distance and mobile telephone, internet providers, and local operating companies. These industries are offering a variety of options for voice, data, and video services to the consumer. Competition in this industry has become fierce as the ability and number of options to communicate between locations has become critical to our society.

Initially, telecommunication services were delivered primarily by copper wire and coaxial cable buried below ground. Now, fiber optic, satellite and wireless technologies are part of the mainstream industry and have helped to broaden and continue to change the definition of technology infrastructure.

Kane County municipalities should work to retain some level of local regulatory control over telecommunications infrastructure whether it is in the right-of-way or on public or private property, and for towers, antennas and related equipment facilities and structures. Telecommunication infrastructure has a visual, physical, and cultural impact on the county's landscape, as its location moves from below ground to above grade (Refer to Figure 31).

As the telecommunications technology advances there are more opportunities for cooperative partnerships between government, private industry, institutions and other non-profit organizations. Some municipalities are starting to look at integrated cable, television, and broadband Internet. Municipalities owning their own electric company have the advantage of using existing infrastructure and right of ways. This would enable communities to connect classrooms, city agencies, utilities, homes and businesses.

The growing application of the Internet will have implications on our land use patterns that have yet to be determined. Recent residential floor plans for new construction show exterior access for home food delivery ordered via the Internet. The Internet may also ultimately affect the amount and location of retail use required. Advances in technology allow the divisions between home and work to blur, which will undoubtedly affect travel and transportation patterns, as well as land-use decisions.

Touch screen kiosks strategically placed in grocery stores, malls and libraries offer another way to connect citizens with local government and other services. In nearby DuPage County, the county government, Ameritech, SBC global network, United Way of West DuPage County, the Daily Herald, and a private communications firm created "C.R.I.S." a Community Resource Information System, which offers data on health and social service local providers, as well as entertainment.

Telecommuting applications begin to address issues of updating the concept of universal access, bringing a phone to virtually every home in the U.S. To meet future social and economic needs, universal service will eventually include at least access to high-speed data and video transmissions in publicly accessible locations.

Policies

1. Foster a stronger Kane County economy through workforce training and development.
2. Continue monitoring workforce training needs and programs.
3. Achieve a more equal balance between the number of workers and jobs residing in Kane County.
4. Continue monitoring jobs opportunities and employment growth by sector in Kane County.
5. Encourage Kane County municipalities and the county to develop a mix of attractive workforce housing with a range of prices near employment centers.
6. Encourage and adopt commercial and mixed-use development along Randall Road compatible with community character, integrated with adjoining properties, promoting pedestrian accessibility, providing housing opportunities and supporting long-term economic viability of the county.
7. Monitor telecommunications conditions to enhance the future economic and quality of life for Kane County citizens.

Figure 29

Employer Assisted Housing

The City of St. Charles is the first municipality in Kane County that has made a commitment to Employer Assisted Housing. The program seeks to assist employees in purchasing an affordable home closer to work, while improving the city's employee retention and training costs. Qualified, full-time municipal employees with two years of work experience are offered a $5,000 loan for the purchase of a new or existing home. The loan is forgiven so long as the employee remains employed by the City of St. Charles for five years and maintains ownership of the home purchased. St. Charles, in cooperation with the Joseph Corporation also provides homeownership counseling to those employees that do not qualify for the program but wish to improve their financial situation.

Source: City of St. Charles, Employer Assisted Housing Program, 2003.

Figure 30

Transit-Oriented Development Bolsters Local Economy

Three characteristics define transit-oriented development: moderate and higher density housing, a mix of land use (complementing public uses, jobs, retail and services), and transit accessibility all within walking distance of a regional transit station.

Public and private investment linked with public transportation is forward thinking policy that can provide long-term economic gain. Transit-oriented development can help improve a struggling downtown core or bypassed neighborhood. A newly constructed commuter rail station can be used as the catalyst to create a well planned village. Building around a transit station not only supports the system itself, but helps in land appreciation (residences and commercial properties near train stations significantly increase in value). Local government benefits from the property tax increases typically realized in these locations. Transit accessibility also helps attract and retain a diverse workforce.

Figure 31

High Speed Wireless Technology

High-speed wireless technology creates an unprecedented, portable fusion of work, entertainment and communication. Being stuck in traffic or an airport no longer limits connectivity, if a laptop or some type of portable communication device is available. One implementation strategy for this emerging technology routes data from shoebox-size radio transceivers mounted on streetlights and utility poles to wired access points. The success of this system requires a region to be blanketed using existing infrastructure in the right of way.

Figure 32

Critical Skills Shortages Initiative

As part of a statewide undertaking to strengthen Illinois' system of workforce and economic development, the Governor's Office and the Department of Economic Opportunity have announced the need for local participation in the Critical Skill Shortages Initiative. The Critical Skills Shortages Initiative is designed to align regional workforce strategies with economic development to provide qualified workers for critical skill shortage occupations, and will include:

- Identification of skill shortage occupations that provide good wages and benefits in key sectors;
- Examination of both root causes and on-the-job factors that lead to shortages;
- Redirection of existing resources implementation of strategies to address these issues.

Source: The Workforce Boards of Metropolitan Chicago, 2004.

PLANNING ISSUES—ENERGY CONSERVATION

Objectives

1. To encourage energy conservation, renewable resources use, and clean and efficient transportation.
2. To promote energy conservation and sustainable development practices in county and municipal comprehensive planning.
3. To encourage energy efficiency in design, construction, and siting of new buildings, and support energy-saving innovations in existing buildings.
4. To offer assistance to developers, builders, and other governmental agencies in obtaining tax credits, rebates, and incentives offered by government and local utilities for energy-efficient design and construction.
5. To promote environmental and energy leadership, projects, and programs in Kane County.
6. To discourage the siting of peaker plants in agricultural areas of the county and encourage locations in industrial parks.

Chapter Focus

Energy consumption patterns in Kane County are similar to those across the U.S. with a high reliance on non-renewable, finite fossil fuel resources. Reversing this trend requires a reduction in energy use along with a greater use of renewable energy derived from the natural supply of sunlight, wind and vegetation. As Kane County residents and businesses modify energy consumption practices, we will move closer to sustainability, which means we can serve today's needs without jeopardizing the ability of future generations to meet their needs. Energy efficiency also provides significant local economic benefits. Lower expenditures for energy means more dollars are retained in the local economy. Higher energy efficiency levels help protect the local economy during periods of energy price spikes by flattening (reducing) the effects of higher prices. Kane County needs to develop a conservation ethic demonstrating responsible use of energy by improving energy efficiency.

This chapter examines:

- Energy resources
- Energy conservation and design
- Energy efficiency

Energy Resources

In Kane County, primarily Commonwealth Edison provides electric power from a variety of energy sources. The major portion is provided by nuclear energy, which supplies 59% of the county's electricity. Coal provides 39% of electricity, with the remaining produced by national gas, petroleum, and hydropower. Only hydropower, providing just 0.04% of Kane County's electrical power needs, is a renewable energy resource.

Electricity is distributed primarily by aboveground power lines. Commonwealth Edison distributes service to most of Kane County with the exception of the municipalities of Batavia, Geneva, and St. Charles that own and operate their own electric services. These municipalities purchase electric power from a national power grid providing reasonable rates and a constant reliable supply of electricity to their citizens.

Natural gas is a fossil fuel that originates from nonrenewable deposits of ancient plant and animal material. Natural gas is distributed through underground pipes from a central system. In Kane County, 88% of reported households use natural gas for

heating. Nicor gas is the primary distributor of natural gas in Kane County. Liquefied petroleum (LP) gas is fuel that is both portable and highly adaptable to many different uses. This makes LP gas ideal when other comparable fuels, such as electricity and natural gas, are not available. In Kane County, LP gas use is found primarily west of Route 47.

Solar and wind power are used in Kane County as an alternative resource on a limited individual basis. They are primarily used to supplement conventional utilities. Solar power is strongly dependent on site design criteria involving the use of appropriate building types and material, and setbacks, landscaping, site planning, and other design factors. Wind power has a long history in the region beginning with the U.S. Wind Engine and Pump Company in Batavia in 1863. By 1890, Batavia was recognized as the leading windmill manufacturing city in the entire world. Some of these windmills can still be seen today dotting the agricultural landscape of the county.

Energy Conservation and Design

Creating and using a diversity of energy sources allows less dependence on a single source. Sustainable and renewable resources offer an opportunity to use material otherwise wasted and to employ energy less degrading to the environment. Environmental design in building construction, land use, and transportation patterns can also help reduce the overall consumption of energy.

Municipal and other government agencies are setting standards for green buildings, often in cooperation with the U.S. Green Building Council and the Sustainable Buildings Industry Council. Both of these organizations, with representatives from all segments of the building industry, work to accelerate the adoption of conservation practices, technologies, and standards. Waste reduction is an important component of green buildings. This includes recycling, management of hazardous and construction waste, and a focus on energy and water savings. Selecting re-used or recycled content materials is also a green policy (Refer to Figure 33).

Effective land-use planning can also provide energy savings by reducing dependence on the automobile. When subdivisions and neighborhoods are designed and rehabilitated to maximize walkability, not only is energy saved, but also residents are able to enjoy several other benefits. These benefits include accessibility for all segments of the population, healthier lifestyles, less noise and cleaner air. There is an increasing consumer preference for location efficiency. Convenience to work, school, shopping, and transit is a key way to reduce the need to drive.

Kane County has begun to introduce energy conservation design in its planning efforts. In the Urban Corridor, energy conservation design can be applied through neighborhood revitalization, infill and redevelopment. In the Critical Growth Area, energy conservation is focused in new construction. Fox Mill and Mill Creek are two master planned communities approved by Kane County in the mid 1990's that include many of the same principles of energy efficiency including walkability, public transit and neighborhood design.

In Kane County, the primary mode of transportation is a petroleum powered, non-renewable, fossil-fueled automobile driven by a single occupant. As the number of vehicles in Kane County increases, there is an opportunity to offer cleaner and more efficient transportation options. Effective land-use planning can reduce the amount of total vehicle miles traveled, reducing the amount of fuel used and improving air quality. A vehicle's greenness (cleaner and fuel efficient) depends not only on its design, but also how it is used. A car is greener when it's carrying two people rather than one and it's greener still with three. And it's

greenest of all if left at home when there's an alternative cleaner way to go: by foot or by bicycle, by bus or by train, and even by electronic telecommunication.

Smart Growth principles result in energy savings by including the following in land-use plans and site plans:

- Compact and mixed use development
- Redevelopment and infill development of existing areas
- Multiple and convenient transportation options by way of sidewalks, bikeways, vanpools, buses and trains
- Affordable housing options for employees wanting to live closer to work, reducing travel times
- One-stop destination shopping centers catering to walkability and leisure activities

Because power lines and facilities are a visible part of the landscape, it is a challenge to site them appropriately, whether in rural or urban settings. There has been a tendency to site power lines in rural areas, which incur the majority of environmental and visual impacts, yet it is dense urban populations that consume most of the energy. A balance between rural and urban concerns should be taken into account when siting electric distribution systems. Strict criteria should be adhered to when siting power lines and facilities because of potential health concerns, as well as visual, public safety, communication reception, and environmental issues. Peaker plants should be categorized as an industrial use and avoided in the county's agricultural area.

Energy Efficiency

Energy efficiency is becoming more important in this country. A number of creative energy-efficiency initiatives are being implemented as a result. Energy efficiency initiatives are most often created as a result of partnerships with government agencies and other organizations. Utility companies and the State of Illinois now offer significant incentives: grants, rebates and loans for installing wind and solar systems in homes and businesses. In 1999, the Illinois Clean Energy Community Trust was established to encourage the development of energy efficiency and renewable energy in Illinois. The trust offers grants, loans, venture capital support and other financial support for projects and programs to improve energy efficiency and develop renewable energy resources.

Community-based energy efficiency projects are also being established to reduce energy consumption and costs on a neighborhood basis. Emerging energy conservation strategies include energy service companies selling both electricity and energy efficiency; community utility network investments for improving system reliability; and energy buyers pooling electricity demand to cut costs and generate a demand for green energy.

The Center for Neighborhood Technology (CNT) in Chicago, Illinois advocates for sustainable, neighborhood-based solutions benefiting energy consumers and providers. CNT has created the Community Energy Cooperative, a non-profit membership organization, to develop sustainable sources of electricity and to help individuals and communities manage their energy use and control their energy costs. (Refer to Figure 39).

PLANNING ISSUES—ENERGY CONSERVATION

In July 2000, the City of Chicago joined with 47 other local government bodies in a collaborative municipal greening effort. The 48 government bodies have issued a request-for-services to the 13 power providers that have been licensed to sell power in Illinois' deregulated power market. To win as a service provider, the power company must lower energy costs for each member of the purchasing group and by 2005 generate 20% of their power from renewable sources, such as solar or wind energy. Once selected, their new provider must submit plans to reduce the pollution caused by the power they generate.

Policies

1. Partner with other governmental agencies, utility companies, and the private sector to conserve limited energy resources.
2. Encourage the development and use of renewable energy resource such as solar and wind power in Kane County.
3. Promote public information on methods to conserve energy.
4. Promote development patterns that will conserve energy and reduce the cost of providing additional utility facilities.
5. Encourage regional cooperation in siting utility, electric, and telecommunication transmission systems.
6. Enforce energy efficient building codes and encourage the use of new building materials and practices that promote energy conservation.
7. Encourage utility and telecommunication companies to incorporate native plantings in right of ways and easements.
8. Discourage the location of peaker plants in agricultural areas.

Figure 33

Green Building in Kane County

Green building is emerging in Kane County. In 2003, Judson College received a 7.5 million dollar federal grant for a new environmentally friendly library and academic center. The grant was secured from the U.S. Department of Energy's, Energy and Water Development Appropriation for 2004. An architecture firm in London familiar with green building design will design the building. The green building design strategies used in the library and academic center will be a model in Kane County. The energy conservation features include:

- Hybrid mechanical system, allowing both conventional heating/cooling and natural ventilation when conditions allow.
- A more energy efficient, daylight friendly building envelope
- Indirect lighting maximized to reduce the need for lights
- Geothermal heat pumps will utilize the mild temperature of the earth to heat and cool the building.

Source: Judson College, 2004.

Figure 34

Did you know that...

- Lighting accounts for 50% of a school's energy consumption.
- Switching from driving an average new car to a 13-mile-per gallon sport utility vehicle for a year would waste more energy than leaving a refrigerator door open for six years, a bathroom light burning for 30 years, or a color television turned on for 28 years.
- A personal computer and its peripherals typically boost power consumption in the home by about 5% per year.
- Renewable energy used in the U.S. accounts for only 6% of total energy consumption.

Source: "Renewable Energy," Energy Information Sheets, Energy Information Administration, Department of Energy, 2004; Huber, Peter, and Mark Mills, "Got a Computer? More Power to You," The Wall Street Journal, Sept. 7, 2000; Corning, Owens, "Smart Energy Decisions for Home and School," Owens Corning, In the News," NEWSCOM, Aug. 5, 1999; "Driving Up the Heat: SUVs and Global Warming," Global Warming & Energy, Sierra Club.

Figure 35

Wind Power

An energy efficient alternative

Although we are not far from the "windy city", Kane County, along with the majority of the state, is classified as having class two annual average wind power (class seven being highest). Although these wind speeds are not high enough to utilize large wind turbines, small wind turbines can be used at any wind speed. Wind turbines harness the renewable resource of the wind to generate electricity. Wind power can be generated for individual residences, however it is more economical to produce wind power for a number of houses or a subdivision. While the cost of capturing power from wind turbines is not inexpensive, the long-term benefits will outweigh the initial start-up costs over time. A number of financial incentive programs are available to help offset the initial investment needed to implement renewable energy systems in buildings and transportation systems. Federal programs include but are not limited to the U.S. EPA (Green Power Partnership), U.S. Department of Energy (Clean Cities, Rebuild America), and the U.S. Department of Transportation (Congestion Mitigation and Air Quality Improvement Program).

Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, 2003; and "PUBLIC Investment—Renewable Energy and Energy Efficiency Incentives for Local Governments," A special edition of the APA PAS Memo, American Planning Association, December 2002.

Figure 36

School Pool uses Collective Purchase Power to Reduce Electric Costs

SchoolPool, a partnership of Ohio school administrators, school business officials and the school board association, takes advantage of the collective purchase power of 660 Ohio school districts to obtain lower utility rates under deregulation. This partnership uses an energy management consultant to aggregate accounts and negotiate for efficient purchasing methods.

Source: "Ohio SchoolPool Selects Strategic," Strategic Energy, Pittsburg, PA, 2000.

Figure 37

Freedom CAR and Fuel Initiative

Freedom CAR and Fuel Initiative is a $1.2 billion federal fuel initiative to reverse America's growing dependence on foreign oil by developing the technology needed for commercially viable hydrogen-powered fuel cells—a way to power cars, trucks, homes and businesses that produce no pollution and no greenhouse gases. In partnership with the private sector, the fuel initiative will develop new vehicle and fuel technologies and infrastructure needed to make it practical and cost-effective for large numbers of Americans to use fuel cell vehicles by 2020.

Source: U.S. Department of Energy, Energy Efficiency and Renewable Energy, 2003.

Figure 38

Fuel Cells

Fuel cells, an energy device that converts hydrogen and oxygen into electricity, is thought to be one answer to the nation's energy needs. Not only are fuel cells powered by abundant, renewable hydrogen fuel, but they also produce no tailpipe emissions and are a true Zero Emission Vehicle as defined by the U.S. Environmental Protection Agency. Fuel cell technology has been used by the U.S. Space Program since the 1960's and is now undergoing research and demonstration projects with heavy investments from the federal government and major automotive companies. In partnership with Daimler-Benz and Ballard, the Chicago Transportation Authority is operating fuel cell powered buses as a demonstration project and as an initiative to reduce bus emissions in Chicago.

Source: EPA Newsroom, U.S. Environmental Protection Agency, 2003; and "The CTA Moved Into the Future With Alternative Fuel Technology," Chicago Transportation Authority, 2002; The Online Fuel Information Center, Fuel Cells 2000, website: www.fuelcells.org, 2003.

Figure 39

Planning for the Energy Future of Kane County

Kane County and the Community Energy Cooperative with funding from the State of Illinois have initiated a new project to study Kane County's energy options. This new project will chart the county's energy future. The project will evaluate how demand for energy is likely to grow in the county. It will explore strategies for using aggressive energy efficiency and demand reduction programs to manage growth and produce economic and environmental benefits. The project will:

- Analyze the projected growth in energy use in Kane County and its impact on future infrastructure needs.
- Assess the potential to manage growing energy demands and reduce costs to residents, businesses, and local governments. This will be accomplished through energy efficiency, demand reduction, and distributed generation strategies.
- Assess the potential of demand reduction to delay future expansion of energy infrastructure.
- Promote existing energy efficiency and demand reduction programs in Kane County, specifically the Energy-Smart Pricing Plan.
- Develop a plan for implementing the most cost-effective strategies.
- Educate public officials, developers and community and business leaders about energy use and cost reduction strategies.

Once the strategies are identified the project team will create an implementation plan and provide for community outreach and education. A project report will be issued that includes the implementation plan, results of the analysis of energy use, energy reduction strategies, potential impacts of infrastructure and recommendations.

Source: Kane County Development Department, 2004.

PLANNING ISSUES—TRANSPORTATION

Objectives

1. To provide safe, efficient transportation facilities and services linking the various parts of Kane County to the region, the nation, and the world.
2. To improve the quality of life for Kane County residents by expanding available travel options, increasing personal mobility, and reducing congestion through a balanced transportation system.
3. To maintain and improve the environment and air quality of Kane County by providing a range of transportation alternatives.
4. To coordinate transportation planning with county and municipal land use planning, so that the transportation system can accommodate the travel needs generated by land use.
5. To foster greater cooperation and coordination of transportation facilities and services at local and regional levels.
6. To encourage the effective preservation and protection of existing and potential rights-of-way for the transportation system.
7. To reduce congestion while preserving the county's transportation system and its carrying capacity.

Chapter Focus

Kane County has an extensive transportation system, including bicycle and pedestrian facilities, local roads and highways, bus and rail networks, and interstate highways. The projected population and employment growth in Kane County will challenge this transportation system given our society's current automobile dependency. The challenge will be to balance new development with transportation improvements while increasing mobility choices and protecting Kane County's environment and community character.

This chapter examines:

- Transportation and Land Use
- Kane County Transportation Planning
- Regional Transportation Planning
- Bicycle and Pedestrian Planning
- Rustic Roads
- Global Linkages

Transportation And Land Use

The land uses created to accommodate where we live, work and recreate are directly related to how we travel between these locations. The topics of land use and transportation traditionally have been discussed, researched, and implemented as separate topics. It is now recognized that because of their interconnectedness, land use and transportation must be addressed concurrently. It is especially important that Kane County and its 28 municipalities coordinate planning for transportation and land use. Given current development projections for Kane County, the next 20 to 25 years offers an unmatched opportunity to coordinate land use and transportation decisions.

We own more cars and make more road trips than ever before. The Chicago metropolitan region has been ranked, depending on the study methodology, as the third or fourth most congested region in the nation. The most common mode of travel in Kane County and across the Chicago metropolitan region is the "single occupant vehicle" described as one car/one occupant. The number of

registered vehicles in Kane County has increased from 280,661 in 1990 to 343,953 in 2000. Americans are now driving 88% farther than in 1969 to go shopping and an overwhelming 137% farther to accomplish family and personal errands (Refer to Figure 40).

Due to population and employment increases, evolving development patterns, changes in travel behavior, and an overall increase in the number of cars and trips, Kane County is potentially facing an unprecedented congestion level. In 2003, approximately one-quarter of Kane County's roads experienced congestion. By 2030, congestion will expand to nearly three-quarters of the county system. There are many measures used to calculate the performance of the transportation system and predict its future capabilities. Vehicle Miles of Travel (VMT), which indicates the quantity of travel on the roadway system, is expected to more than double between 2003 and 2030 for all county roads. Vehicle Hours of Travel (VHT), a measure that indicated the time that motorists spend on the roadway system, is expected to more than triple between 2003 and 2030. Vehicle Hours of Delay (VHD), the aggregate delay experienced by motorists due to congestion, is predicted to increase greatly. The consequences of congested roads in Kane County include poor air quality, a decrease in quality of life, and wasted time stuck in traffic (Refer to Figure 41).

There are several possible actions to mitigate projected road congestion, including changing our land development patterns and encouraging people to either walk, bike or use public transit for certain trips. Encouraging walking and biking requires more than providing paths, sidewalks and bike racks. Keeping services and shopping within a half-mile of residences and providing desirable and safe routes to reach the destination is essential.

There needs to be a shift from auto-dominated land development to those designed for mixed-use developments with a pedestrian and transit friendly environment. Site planning for pedestrian orientated development should address mixed uses, building orientation and scale, location of parking, logical and safe pedestrian connections to adjacent land uses, and building articulation including porches, arcades, overhangs, canopies, and window placement.

Municipalities and developers must begin evaluating both new construction and redevelopment projects using these standards. Redesign of the county's transportation network is an on-going process that will take a concerted effort to transform to a more balanced system with greater opportunities to use transit, walking, and bicycles. This can be accomplished cooperatively between the public and private sectors by implementing programs (such as ridesharing), as well as constructing improvements (i.e., intersection widening). Local government units are encouraged to provide fiscal and zoning incentives, partner with other governmental units, use redevelopment authority, and participate in all available federal and state programs to incrementally implement these policies.

Right-of-way protection and preservation is essential for the proper coordination of land development and transportation improvements. Within Kane County, right-of-way is occupied by rail, highways, public utilities, and pedestrian, bicycle, and recreational trails. Land adjacent to right-of-way is being developed at a rapid rate. Transportation and land use planning should include guidelines for right-of-way preservation and acquisition, maximizing opportunities for right-of-way

Kane County Transportation Planning

preservation as land is developed or becomes available for reuse. For example, as new development occurs, adequate arterial road rights-of-way should be preserved, and new rights-of-way should be provided for local roads, collector roads, trails, and greenway linkages. There is a KDOT policy in place that protects both existing rights-of-way and future corridors.

In 2004, the Kane County Division of Transportation issued a draft 2030 Transportation Plan. The 2030 Transportation Plan addresses the county's future transportation system, including a balanced approach of all travel modes — roadway, public transit, bicycle, pedestrian and air. The plan provides recommendations and policies in transit service expansion, commuter rail expansion, highway safety and intersection improvement, signal system upgrades, bicycle and pedestrian system expansion, and highway capacity improvements.

The 2030 Transportation Plan reflects the land use distribution proposed in the 2030 Land Resource Management Plan. In the Urban Corridor, transportation investment will support more intensive densities and established development patterns. In the center of the county, the transportation policies and strategies support the Smart Growth principles and Priority Place ideas planned for the Critical Growth Area. The plan also develops policies and implementation strategies that support agricultural preservation policies for the Agricultural Area. Kane County transportation policies, studies and projects also embrace other Kane County policies related to stormwater management, groundwater protection, natural resource protection and historic preservation (Refer to Figure 42).

The Kane County Board has long recognized the need for additional transportation funding for capacity improvements on the county highway system. In response to that need, the County Board in 2002 initiated the development of a Comprehensive Road Improvement Plan and Transportation Impact Fee Ordinance. In accordance with Illinois statutes, an Advisory Committee, including three municipal representatives, three County Board representatives, one homebuilder representative, one economic development representative, one realtor's representative, and one labor representative, was established to oversee the development of the plan and ordinance. Under the direction of this advisory committee, and through an extensive public process, Land Use assumptions and a Comprehensive Road Improvement Plan were developed and have been approved by the County Board. On January 13, 2004, the County Board adopted a Transportation Impact Fee Ordinance. This ordinance applies to all new development in Kane County, both inside and outside municipal boundaries. It requires developers to pay a fee in proportion to the transportation impacts of the development within the service areas established by the ordinance, and requires that fee to be paid prior to the issuance of a building permit by the county or a municipality. Transportation Impact Fees for Kane County went into effect on April 1, 2004.

In November 2002, Kane County in cooperation with the RTA published a market analysis study, entitled the *Kane County Transit Opportunity Assessment Study*, documenting the existing and potential travel markets and recommendations for future transit opportunities. This will serve as the basis for a future county-wide transit plan. This report provides different recommendations for addressing transit needs in Kane County's urban, critical growth, and rural areas. The study defines niche markets for transit use typically dominated by the automobile in Kane County's urban, critical

growth, and rural environments. The urban areas along the Fox River lend themselves to more traditional forms of transit service due to the higher density and street system connectivity. The expanding suburban growth areas near Randall Road require more flexible systems due to lower development densities, separation of land uses, and a hierarchy of street systems facilitating automobile use, often at the expense of bicycles, pedestrians, and transit. Bus Rapid Transit is one viable option to improve traffic movement on Randall Road (Refer to Figure 44). Rural villages further west will have different transit needs than the other areas due to their separation from the county's urban areas. The study results in a package of recommendations identifying support options and appropriate land use planning policies, as well as focusing subsequent planning efforts on "transit areas"—smaller geographic sub-areas within the county that share transit-market characteristics.

Three proposed Fox River bridges represent some of the most significant system expansions in the county's transportation system. These bridges will serve an established east-west travel pattern and will alleviate congested bridge crossings through many Fox River communities. A lengthy and rigorous process to examine environmental impacts of several proposed corridors was completed in May 2002. Three primary corridors have emerged from the environmental screening: (1) Stearns Road Corridor; (2) Longmeadow Parkway Corridor (Bolz); and (3) Illinois Route 56 Corridor (Oak). Kane County has determined that it will lead the efforts to implement both the Stearns and Longmeadow corridors, and recommends that the Illinois Route 56 Corridor be considered by the State of Illinois. Right-of-way acquisition and preliminary engineering began in summer 2002. Kane County also encourages the building of local bridges.

Paratransit planning has been undertaken in Kane County to identify transportation alternatives for seniors and people with disabilities. In February 2003, the Kane County Board passed a resolution adopting the Kane County Paratransit Coordination Study. This study, undertaken by the Kane County Division of Transportation, was the result of a year's worth of data collection of existing paratransit services, surveying of providers and stakeholders, and interviews with key providers and stakeholders. There were six recommended coordination strategies developed from this study. These include the following: (1) establishing a Kane County Paratransit Coordinating Council; (2) developing a coordinated marketing program; (3) implementing a user-side taxi subsidy program; (4) adoption of uniform Dial-A-Ride operating and service policies; (5) providing Dial-A-Ride service for ADA customers; and (6) integrating separate Dial-A-Ride programs and Pace ADA paratransit service into one regional paratransit system. Implementation of these strategies will be incremental and based upon the initiatives taken on by the Kane County Paratransit Coordinating Council.

Regional Transportation Planning

All the jurisdictions within a region—the state, regional agencies, counties, townships, and municipalities—share in the use and the cost of transportation services. Traffic impacts go beyond jurisdictional boundaries. Long-range planning for regional transportation helps provide the coordination needed to achieve traffic mobility, cost efficiency, and environmental protection. The Chicago Area Transportation Study (CATS) is responsible for regional transportation planning in northeastern Illinois (the six county Chicago region). In October 2003, CATS released the 2030 Shared Path Regional Transportation Plan (RTP) a long range regional transportation plan for northeastern Illinois. The RTP plan identifies major projects and system improvements for Kane County, including:

- Metra Commuter Rail Extension along the Milwaukee District West line from the Big Timber station in Elgin to Gilberts, Huntley and then continuing into McHenry County to Rockford
- Commuter rail extension along the Burlington Northern Santa Fe from Aurora to Oswego in Kendall County. A longer extension terminating in Plano is also proposed.
- Metra extension along the Union Pacific West line from Geneva to La Fox and Elburn
- Additional lanes along I-88 and I-90
- Prairie Parkway from I-88 to I-80

Public transportation service is provided by Metra and Pace, operating divisions of the Regional Transportation Authority (RTA). Metra operates commuter rail service throughout the region; three of its lines—the Burlington Northern/Santa Fe (BNSF) Line, the Union Pacific (UP) West Line, and the Milwaukee District West (MDW) West Line—serve Kane County. Metra ridership increased by approximately 34% from 1991 to 2002 at the five stations within Kane County. Parking availability at the stations is nearing capacity. In order to increase ridership, parking at existing stations needs to be significantly expanded. Meanwhile, the expansion of commuter rail service west to La Fox and Elburn is expected to be operational by 2006. Pace, the suburban bus division of the RTA, operates fixed route bus service, express bus service, American Disabilities Act paratransit service, and vanpool/subscription bus service. From 1990 to 2000, PACE ridership has decreased by approximately 10.82% in Kane County.

Metra, in cooperation with other planning agencies in the Chicago region, is planning an innovative commuter rail service for the western suburbs. The Metra STAR (Suburban Transit Access Route) Line will become the first commuter rail line in northeastern Illinois designed to service commuters from suburb-to-suburb. The STAR Line, will utilize the existing EJ&E railroad line, which runs north to south. This line connects existing residential and employment centers along western Cook, DuPage just east of Kane County, and northwest Will County. The STAR Line will also link with other existing Metra commuter lines, running east to west into Kane County.

Bicycle and Pedestrian Planning

Kane County has approximately 120 miles of bicycle/pedestrian trails, providing one of the most extensive trail systems in northeastern Illinois. Bicycling and walking for transportation, recreation, and fitness is an area of study that is gaining the interest of transportation and land use planners. Pedestrian and bicycle circulation systems must be designed for the active and disabled users of all ages. Barrier-free accessibility linking buildings, parking, paths, sidewalks, employment and recreation is a goal for all of Kane County.

A safe and well-designed pedestrian and bicycle circulation system will help to divert a portion of short trips. It is also possible to fully integrate biking and walking with public transit. This requires changes in the design and engineering of the road and land use environment. Road design can be altered to make biking and walking safe, inviting, and convenient for children and adults. Ultimately, there should be a hierarchy of pedestrian and bicycle routes in Kane County linking neighborhoods to natural resources, small towns to the Urban Corridor, and city centers to the countryside.

In December 2002, the county adopted the first *Kane County Bicycle and Pedestrian Plan* in a collaborative planning process including the Kane County Council of Mayors, the Kane County Forest Preserve District, local park districts, bicycle advocacy groups, and other interested parties. One of the key products of the plan is the Kane County Bicycle Map that shows existing, planned, and longer-range conceptual bicycle/pedestrian facilities. The Kane County Bicycle Map is to be used by bicyclists in planning their route and navigating during their trip. The map includes the existing and proposed bicycle and pedestrian facilities with bikeways categorized as either regional or local facilities. The map also includes a Bicycle Level of Service (BLOS) rating for selected roadways. BLOS, together with FHWA's Bicycle Compatibility Index (BCI) are emerging national standards for quantifying the relative bike-friendliness of a roadway. These measures indicate bicyclist comfort level for specific roadway geometries and traffic conditions. In addition to the maps, the plan contains a best practices guide, a chapter on arterial roadway corridors and crossings, and a conceptual system for consistent countywide way-finding and signage. The plan, intended for use by all local agencies, also lists and describes potential funding sources for bicycle and pedestrian projects.

Rustic Roads

Many of the roads in Kane County reveal the rural character of the area. The view of the countryside along these roads gives a sense of stability in a fast-changing world. Points of visual interest along a rustic road, both natural and man made, add to the enjoyment of roadside scenery and to a sense of place. In Kane County, rustic roads provide views of Midwestern vernacular—gently rolling woods and expansive farm fields, the Fox River and its tributaries, autumn color, farmhouses, barns, hedgerows, and churches.

In July 2000, Kane County established a Rustic Roads Program to preserve road corridors and the surrounding features that define their character. Designated road corridors minimally include the road right-of-way and can include properties and features adjacent to the right-of-way. The program applies to roads located in unincorporated Kane County and can include municipal roads through intergovernmental agreement. Rustic Road designation does not "freeze" roads in time. During the designation process, a Corridor Management Plan is developed which defines the significant features of the road corridor that should be protected and enhanced. Traffic and life safety issues continue to be addressed while those significant features are preserved. This technique of corridor planning offers an opportunity to balance character and aesthetic design with engineering and maintenance. It may take more time and resources initially, yet yields a result that is appropriate for Kane County's uniqueness.

The Rustic Roads Program promotes:

- a sense of place in Kane County—improves community identity and quality of life;
- economic development—generates tourist revenue by promotion of the county's scenic beauty;
- recreation—provides enjoyment for the large percentage of the population who enjoys driving for pleasure and sightseeing; and
- resource protection—contributes to protection of the significant scenic, environmental, and historic resources that are often located within rustic road corridors (Refer to Figures 45 and 46).

The Lincoln Highway Association promotes and preserves America's first coast-to-coast highway, a section of which runs east-west through central Kane County. The association has state directors in the 12 states through which it runs, and is attempting to preserve parts of the original route, erect replicas of the original Lincoln Highway markers, and encourage governments and property owners to save roadside architecture and culture.

Global Linkages

A tremendous volume of goods and merchandise are moved through Kane County by rail, air, and surface roads connecting to larger national and international markets and transportation systems. Interstates I-90 and I-88, and the BNSF and Union Pacific Railroads directly connect Kane County with the rest of the U.S. and the world. Safe and efficient transportation systems are critical to the local economy.

Kane County's commercial airline needs are served by O'Hare International Airport and Midway Airport. Both airports are approximately 45 minutes travel time from the Fox Valley. Kane County is served by two major general aviation airports: Aurora Municipal Airport in Sugar Grove and the DuPage Airport just east of Geneva and St. Charles. The Aurora Municipal Airport, located on the western edge of Sugar Grove, is a publicly owned general aviation reliever facility for O'Hare and Midway Airports. It is a busy airport with a 2003 daily average of more than 425 take-offs and landings made by aircraft owned by private firms, public agencies, and individuals for business, training, and recreation. The airport employed 285 persons in 2003. The DuPage Airport, situated on Kane County's eastern border near St. Charles, is a general aviation airport that is an excellent resource for nearby industrial parks. In 2003, the DuPage Airport was the 3rd busiest airport in the state of Illinois. The DuPage Airport, as of 2003, averaged 511 daily take-offs and landings. The airport employed over 600 people in 2003. In addition to the Aurora Municipal and DuPage Airports, several small private airstrips dot the rural areas of central and western Kane County.

The Chicago region is a major transportation hub for freight movement and is one of the largest interstate trucking corridors in the country. The Chicago region carries over one-fourth of all U.S. rail traffic. This region is the third largest container port in the world after Singapore and Hong Kong, with 50% of all U.S. containers traveling through Chicago. According to Chicago Metropolis 2020, rail traffic is expected to increase 75% and truck traffic is expected to increase by 87% by the year 2030. These regional transportation facts highlight the need to constantly plan for improving the transportation system that serves as the engine for the county and regional economy.

Policies

1. Implement land use based transportation planning in cooperation with local and regional agencies.
2. Coordinate the 2030 Land Resource Management Plan with the 2030 Kane County Transportation Plan to develop a transportation system based on land use.
3. Provide leadership and information to employers in methods to achieve higher vehicle occupancy averages as mandated by federal regulations.
4. Work with regional transit providers to improve county public transit services, including bus services to railroad stations, regional bus service, as well as development of bus rapid transit and/or light rail service in the Urban Corridor, and commuter rail service.
5. Require that all development proposals comply with right-of-way dedications per adopted county policy.

6. Plan and develop safe bike and pedestrian paths to serve daily transportation and recreation needs in conjunction with new or existing development, roads, and transit facilities.
7. Improve the county's limited access freeways by developing and adopting intergovernmental agreements with municipalities for protecting and improving safe access.
8. Promote safe, compatible development near airports and encourage noise easements, land use, and other compatibility controls.
9. Support the efforts of the Lincoln Highway Association to promote the section of the Lincoln Highway that runs through Kane County.

Figure 40

Commuter Patterns in Kane County

The 2000 Census shows the average commute times for Kane County residents is 27.3 minutes, which is the lowest commute time in the six county region. The vast majority of workers commute by car (93.6%). Half of all Kane County workers leave the county each day to work, of those commuters, 79.9% drive alone to work. Of those commuters, approximately 6,300 or 12% of out-commuters travel over an hour one-way to/from work each day. The percentage of residents leaving the county is prevalent and on the rise. Residents employed outside the county translates into increased road congestion, lost retail spending and associated tax revenue losses, and reduced worker productivity. There are opportunities to mitigate these patterns by offering commuter based programs as incentives for business attraction and retention. These include:

- business incentives for companies that offer telecommuting;
- alternative work schedules;
- employee incentives for van and car pooling;
- Park and Ride facilities;
- parking management; and
- employee incentives for biking and walking

Source: A Commuter Patterns Study, prepared for the County of Kane, April 2002.

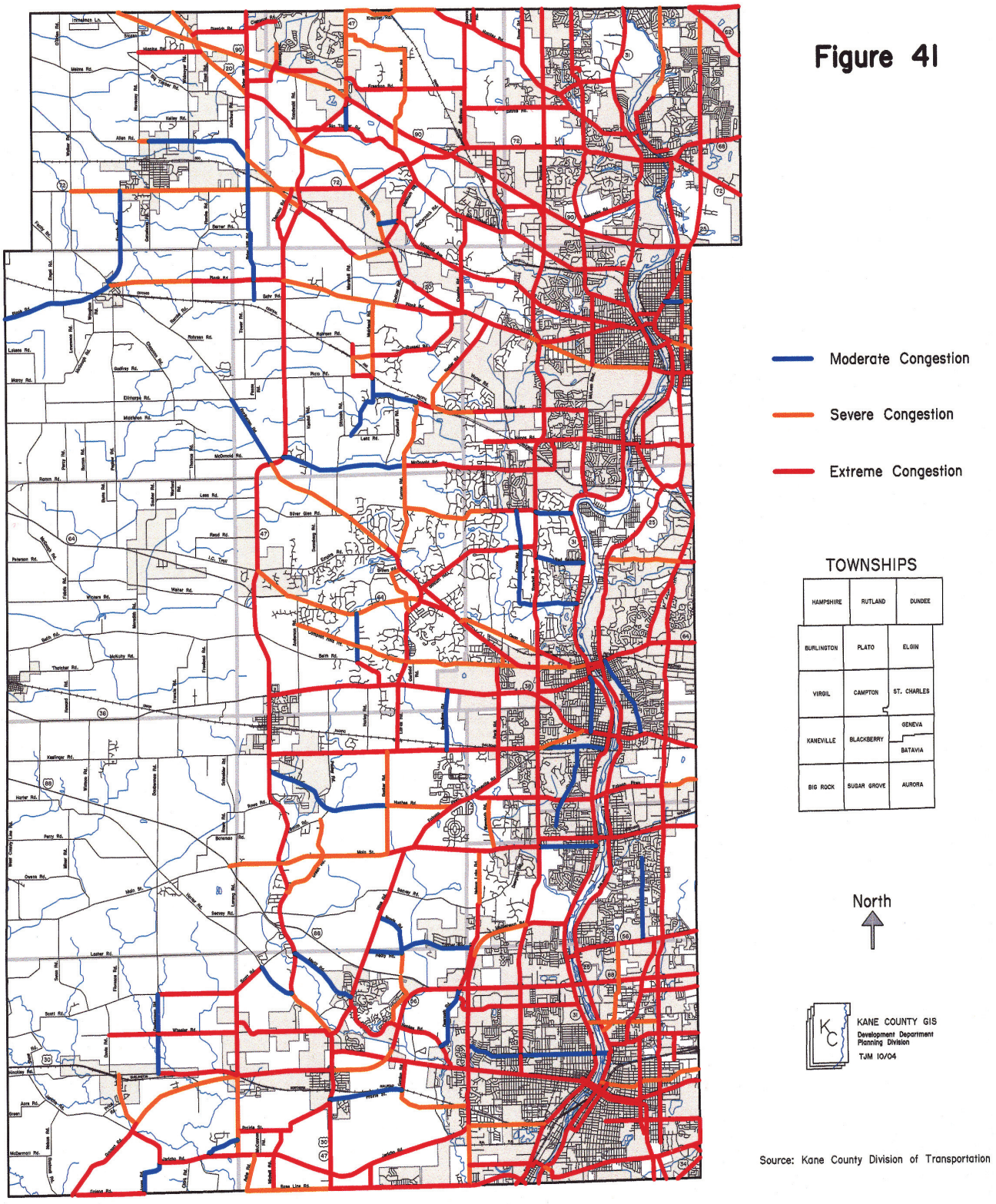
Figure 42

Kane County Transportation Planning Area Studies

The Kane County Division of Transportation is developing a series of detailed transportation improvement plans for each Transportation Planning Area (TPA) within the county. The goal of these plans is to enhance connectivity, reduce delay, be proactive towards development related infrastructure improvements, and distribute trips to appropriate facility types. Several priority sub-areas are identified based on transportation system performance for existing and future land use scenarios. A toolbox of solutions included improvements to the arterials, collectors, transit, bicycle/pedestrian facilities, regional connections, and access management. In conjunction with other planning efforts, the county and municipalities will use the plans to ensure that appropriate transportation infrastructure is provided as development occurs.

Source: Kane County Division of Transportation, 2004.

Figure 41—2030 Congested Road Map



Source: Kane County Division of Transportation

Figure 43

Making the Transportation and Land Use Connection

- Offer a range of travel modes to access housing, jobs, shopping, recreation, and civic uses essential to the daily life of residents.
- Size and arrange communities to limit travel distance to access basic necessities of living.
- Create a well-connected transportation system providing direct and interesting paths for pedestrians and bicyclists and organizing land uses so that they can be properly served by transit.
- Organize the regional network of urban communities around a regional system of transit rather than freeways by taking advantage of the strengths of the existing public transit infrastructure.
- Locate regional institutions and activity centers within major urban centers accessible to the regional transit network.
- Design transportation facilities complementing and supporting community character and identity.

Source: "Making Better Communities by Linking Land Use and Transportation, A New Urban Vision," Association of Bay Area Governments, CA, 1999.

Figure 44

Bus Rapid Transit

Bus Rapid Transit (BRT) is a roadway based rapid transit system offering the fast operating speeds and service reliability of a rail system while providing the flexibility of automobiles. BRT leverages the current investments dedicated to our road infrastructure allowing the system to be implemented at a fraction of the cost of rail. BRT may include the following features:

- Dedicated Right of Way—offers a congestion free corridor for BRT, high occupancy vehicles, and emergency vehicles. This maximizes speed and capacity.
- Attractive stations providing platform docking, weather protection, and fare collection.
- High-Frequency Service—BRT provides high frequency service throughout the day, eliminating the need to consult a trip schedule.
- Convenient Routes—Connections to high density nodes while integrating land use and transportation planning.
- BRT vehicle options—Low emission compressed natural gas buses, hybrid buses, or fuel cell buses.
- Opportunities for economic development—Because BRT is high capacity, it can support transit-oriented development around stations, providing routes from Metra to neighborhoods and office parks.
- Intelligent Transportation Systems—BRT can use ITS to track vehicle locations, control traffic signals, update passengers on travel times, and decrease travel times.

Source: Bus Rapid Transit Demonstration Program, Federal Transit Administration, U.S. Department of Transportation; "High Quality Rapid Transit for the 21st Century—A Policy Primer on Bus Rapid Transit," Breakthrough Technologies Institute—Washington D.C.

Figure 45

Features of Rustic Roads

Natural Features:

- Expansive views, such as overlooking stream valleys
- Unusual land forms, ridgelines, ravines, narrow valleys, rock outcrops
- Water
- Woods
- Wildflower glades, flowering native trees, or shrub masses
- Autumn color
- Evergreen groves
- Other areas of native vegetation

Man-made Features:

- Churches, old cemeteries
- Farmsteads
- Architecturally and/or historically significant buildings
- Monuments, memorials, or statues
- Historical markers
- Concrete automobile club guideposts
- Railroad and accessory features
- Landscape
- Roadway pavement, drainage, bridges, tunnels, or other features
- Local activity centers, such as farm supply stores, village stores, inns, mills, factories, or institutions

Source: Kane County Development Department, 2004.

Figure 46

Kane County's First Rustic Road

Thurnau Road, nominated by residents and property owners living along Thurnau Road, is the county's first designated Rustic Road approved by the County Board on February 10, 2004. Thurnau Road meets three criteria for the Rustic Road designation. It has character which is part of the heritage of the area, it is identified with a person who significantly contributed to the development of the county, and it has a unique location and natural features that warrant scenic significance. Thurnau Road is a tree-lined gravel road with fencerows along many sections. Since 1871, little of the roads features have been changed. Thurnau Road still has the same bends, some of the same stands of trees and the Starks family cemetery. Until the 1930's Thurnau Rd. was part of Route 47 and was the main corridor where the Starks community developed. The Old Starks Tavern is the original grocery store which was moved from its previous location next to the railroad crossing, where the local farmers used to buy goods and ship their milk from to points east. The Thurnau family, for which the road is named, lived and farmed on the road for many years and were well known to the community. Driving along Thurnau Road one can see views of productive farmland, farm structures, a horse farm with old stands of trees, a railroad crossing, the Old Starks Tavern, and the Starks family cemetery.

Source: Kane County Development Department, 2004.

Figure 47

Illinois Transportation System

Illinois has a competitive edge over many other states due to its central location and superior transportation system. More than 2,000 miles of interstate highway and 34,500 miles of other state highway make trucking of goods fast and efficient. Chicago is home to the largest rail gateway in the nation, connecting eastern and western United States. The state boasts some 1,100 airports, landing areas and heliports, including Chicago's O'Hare International, through which more than 65 million travelers pass annually. Illinois' 1,118 miles of navigable waterways, including the Illinois and Mississippi rivers, make barge traffic an excellent option for shipment of grain to the Gulf of Mexico.

Source: Facts About Illinois Agriculture, Illinois Department of Agriculture, August 2004.

PLANNING ISSUES—OPEN SPACE

Objectives

1. To preserve and protect Kane County open space as the cornerstone of natural resource protection and community well being.
2. To protect environmentally sensitive areas from deterioration or destruction by private or public actions.
3. To enhance and expand Kane County's green infrastructure by connecting water resources, natural areas, forest preserves, cultural and historic sites, and communities as part of the Northeastern Illinois Regional Greenways Plan.
4. To foster public awareness, education, and support for environmental and open space management.
5. To continue enhancing the county's visual and community character by preserving natural areas, landscapes, scenic vistas, and rustic roads and their historic, cultural, and archeological resources.
6. To provide a variety of open space opportunities and recreational activities in proportion to the needs of an expanding population.

Chapter Focus

The Kane County open space system provides a necessary and desirable counterpart to development. Open space is the armature of the 2030 Plan, providing the framework that complements all other land uses. The open space system is a tapestry of undeveloped public and private lands, with the Fox River and its tributaries as its backbone. The chief functions of open space are environmental protection and community well being. Open space can be acquired and preserved a number of ways through public and private efforts, including forest preserve and park district acquisitions, the development approval process, and dedication of conservation easements.

This chapter examines:

- Open Space Armature
- What is Open Space?
- Open Space Assets
- Green Infrastructure
- Community Benefits of Open Space
- Continuing the Green Legacy

Open Space Armature

Open land in the Chicago region is being consumed at an alarming rate. From 1970 to 1990, the metropolitan region's population grew 4.1%, yet its residential area expanded an estimated 46%. Located at the western edge of the metropolitan region, Kane County is experiencing continued pressure on land for conversion from agricultural land and open space. At this crossroads, the county has two choices: to manage growth or to allow development pressure to result in suburban sprawl.

Open space is the counterpart of the built environment. Open space often contains natural resources that are too valuable to lose. Protection of these resources ensures a continuity of nature for future generations. Along with environmental protection, open space provides "breathing room," recreational opportunities, visual beauty, spiritual enrichment, educational opportunities, and other benefits. As the county and municipalities grow, the challenge will be to use new development to restore, conserve, and enhance, and where appropriate preserve open space. With planned,

compact development, open space can receive the highest level of protection possible, even in a time of growth and development.

The Kane County open space system is the armature of the 2030 Plan—a combination of large and small green spaces with the Fox River and its tributaries as the backbone. A network of greenways connects the larger and smaller green spaces with the Fox River and its tributaries. Greenways are linear corridors that protect and manage natural resources, provide recreational opportunities, and enhance the aesthetics of the built environment. Kane County's greenway preservation program is part of a long standing tradition in the metropolitan area that includes Chicago's lakefront park system, the boulevard system, and forest preserve acquisition along the Chicago, Des Plaines, DuPage, and Fox Rivers.

Open space protection and the greenway network have strong roots in Kane County policy dating back to the 1967 Five Point General Development Policy. The 1976 Comprehensive Plan called for a countywide greenway system to protect natural areas. The 1982 Comprehensive Land Use Plan continued the greenway system and stressed the need to preserve remaining natural areas, to provide connections between open spaces, and to ensure a full range of recreational opportunities. The 2020 Land Resource Management Plan introduced a bold, comprehensive approach to open space preservation. The 2030 Plan aggressively promotes and further implements the countywide greenway planning tradition. A goal of the 2030 Plan is that 50% of the area of Kane County will be in agriculture and open space in spite of the unprecedented population growth and community development of the next two and a half decades.

As the county and municipalities continue to face growth pressures, the preservation and expansion of open space, particularly along the Fox River and its tributaries, will help to balance the increased population and create safe, healthy, and livable communities.

What is Open Space?

The amount of open space in Kane County has greatly increased in the last 40 years. Along with this expansion, the diversity of open space ownership, function, and type has also increased. Open space in Kane County includes forest preserves, municipal and township parks, school and neighborhood playgrounds, greenways, golf courses, bicycle/pedestrian trails, and cemeteries. An additional component of the open space inventory includes institutional lands consisting of large acreage holdings such as the Max McGraw Wildlife Foundation and the Fermi National Accelerator Laboratory. For 2030 planning purposes, open space consists of public and private lands, ranging from large forest preserve tracts to small parks and playgrounds.

Open space is categorized as passive, active, or scenic. Passive areas may include floodplains, wetlands, and other natural areas that offer protection to indigenous biota, comprising the flora and fauna, of the region. Active areas may include recreation areas such as parks and playgrounds, urban plazas and golf courses. Scenic areas include viewsheds, observation points, and rustic roads.

There is no minimum size or shape required for land to be valued and protected as open space. Open space may be privately owned with limited public access or it may be publicly owned, but intended to preserve and protect environmentally sensitive areas with restricted access. It may be common open space intended for use by a specific group, but in most cases it is publicly owned and intended for use by the entire community. See Figure 50 for the different types of open space.

Open Space Assets

Kane County's greatest open space asset is the Fox River. The major natural feature of the region, the Fox River is a significant greenway consisting of wildlife and aquatic habitat, as well as a recreational resource. The Fox River has served as a magnet for development and recreation since early settlement. The appearance of the riverfront has improved greatly since the time when heavy industries and junkyards were located along its shoreline. The municipalities have recognized the Fox River as an open space and community amenity by acquiring riverfront acreage and designing riverwalks to link housing, parks, shops, offices, and restaurants in their downtowns. Such development beautifies downtown centers as well as revitalizes the economy. Parkland along the river is a prime spot for picnicking and recreation, including bicycling and walking along the Fox River Trail. In some communities riverfront amenities also include boating and canoeing. A scenic driving route was established along the Fox in 1989. This route, designated as the Fox River Road established on parts of both Routes 31 and 25, accentuates the natural beauty of the Fox River Valley.

The largest proportion of public open space in Kane County is Forest Preserve land, consisting of more than 13,000 acres as of the beginning of 2004. The majority of Forest Preserve holdings are comprised of mixed grasslands (old farm fields, wetlands, turfgrass, hayfields), woodlands, and agricultural land. The Forest Preserve has restored over 1,137 acres of preserve land to native prairie grasses. Portions of eight Kane County Forest Preserves contain Illinois State Nature Preserve acreage: Bliss, Burlington, Freeman Kame, Helm Woods, Johnson's Mound, Nelson Lake Marsh, LeRoy Oakes-Horlock prairie, and Underwood.

A 1993 Forest Preserve inventory determined only 736 acres of the county's total 334,031 acres contain the undisturbed, original flora of the region. The remainder of the county has been disturbed through agriculture, urbanization, or other activities, which have permitted the invasion of non-native vegetation. Therefore, the District places its highest land acquisition priorities on land that contains natural features, especially land supporting mature forest/prairie or wetland and endangered/threatened species.

The Kane County bicycle/pedestrian trail system totals over 90 miles and is one of the most extensive trail systems in the Midwest. It has been established jointly by the Kane County Forest Preserve District and local park districts. The most prominent trail is the Fox River Trail, a 32-mile greenway connecting Kane, Kendall, and McHenry Counties and comprised of county forest preserves, local parks, rail-trail conversion, local streets, and sidewalks. The Great Western Trail, once an abandoned railway, is now a 17-mile trail from St. Charles to Sycamore. This popular recreational trail passes through woodlands, prairie, farmland, small streams, wetlands, urban areas, and the county's agricultural villages.

In 1999, Kane County passed a $70 million referendum to acquire additional open space as recommended in the 2020 Plan. Other significant open space acquisition efforts in Kane County include open space protection programs by Dundee Township and Campton Township. In 1996, Dundee Township residents voted to establish an open space plan and sell more than $18 million in bonds to fund the acquisition of open space. By the end of 2003, 835 acres of open space, comprised of wetlands, dry hill prairie, forest, fen and farmland, had been donated or purchased by the township. In Campton Township, the citizens approved an $18 million referendum for open space preservation. To prioritize potential open space acquisitions, the township created An

Open Space Plan. The objective of the plan is to acquire open land for passive and active recreation purposes and for protection of farmland, historic landmarks, scenic roadways, wetlands, woodlands, wildlife, and geologically significant features. By the beginning of 2004, Campton Township had purchased just under 700 acres. These efforts have preserved important environmental and historically significant features, such as the headwaters of Blackberry Creek and Corron Farm, a 442 acre farmstead that has been farmed by the Corron family for five generations.

In 2002, the City of Aurora adopted a Countryside Vision Plan promoting an innovative living environment in harmony with nature. The plan was created in part as a response to Kane County Forest Preserve District acquisitions within the area. The Countryside Vision Plan states that open space forms the framework that compliments all other land uses. The Village of Wayne, in cooperation with the Nature Conservancy, acquired title to a 26-acre wildlife sanctuary from the Illinois Audubon Society. Named the Barbara Dunham Dole Wildlife Sanctuary, in honor of the Dole family's stewardship of the land, the property consists of prairies and woodlands. The Village of Wayne has shown their commitment to the preservation of the sanctuary by placing a conservation easement on the property. In 1997, the City of Geneva voters approved a $10 million referendum for the Prairie Green project. The City of Geneva in partnership with Kane County and the City of St. Charles assembled 540 acres for the Prairie Green project, located west of Peck Road and south of Route 38. Prairie Green is envisioned as a multi-faceted watershed management demonstration project that includes prairie restoration, wetland restoration, regional stormwater management, passive recreation facilities and selected active recreation facilities.

These efforts at the county, township, and municipal levels indicate the high value placed on open space protection and greenway implementation by the citizens of Kane County. The challenge for 2030 is to continue to work together to expand Kane County's open space armature and achieve the goal of more than 50% of the county in open space and farmland.

The countywide open space system cannot be preserved solely by government. Private individuals or nonprofit organizations such as the Fox Valley Land Foundation and the Conservation Foundation may place conservation easements on a piece of land so that its natural features are permanently preserved. Through this legal technique the property owner retains ownership while waiving some of his/her development rights. Conservation easements can protect natural areas that function as greenways and habitat corridors, and other sensitive areas such as wetlands, floodplains, ridgelines, slopes, and viewsheds.

Green Infrastructure

The green infrastructure of Kane County is the interconnected network of land and water that supports native species, maintains natural and ecological processes, sustains air and water resources, and contributes to the health and quality of life for people and communities. Green infrastructure includes the following principles and strategies:

- Emphasizes the importance of planning and protecting green infrastructure before development.
- Connects ecosystems for both conservation and development purposes.
- Develops greenways that recognize the physical linkage between open space elements as the key to sustaining natural ecosystems.
- Considers the needs of both nature and humans—addressing both environmental effects of proposed development and economic well being of a community.

The various jurisdictions responsible for acquiring open space in Kane County have often concentrated on protecting individual parcels, pieces of land, or sites for open space. Preserving only "islands" of open space reduces the range and diversity of plant and animal species. An understanding of the connectivity of green infrastructure helps restoration, acquisition and management efforts to complement each other. A successful green infrastructure model requires long-term acquisition planning and long-term management of open space.

Large tracts or hubs of open space are needed to provide continuity of habitat and genetic disbursement required by birds, mammals, fish, plants, and other wildlife. Such tracts, when interconnected by the greenways, help maintain the county's biodiversity and water quality, provide flood and stormwater control, and serve as the foundation for balanced development. Large tracts of open space also provide scenic views, promoting a sense of place and community identity, as well as leisure driving and sightseeing.

Greenways are part of the green infrastructure. Along with environmental protection, greenways provide bicycle and pedestrian trail access between homes, shopping, schools, parks, and commuter rail and transit stations. When managed wisely, greenways along waterways are effective filter strips that trap sediment and pollutants that damage water quality. The vegetation in greenways also helps remove pollutants from the air, reduces noise, and moderates summer heat and wind. Greenways provide space for streams and wetlands to function naturally and accommodate stormwater flows.

Kane County's green infrastructure is a key component in the metropolitan region's Greenways Plan, unveiled in 1990 by the Northeastern Illinois Planning Commission and the Chicago-based Openlands Project. The goal of the Greenways Plan is to preserve expanses and corridors of open space connecting neighboring counties and communities, and ultimately, the entire Chicago region. Several of the priority links in the Greenways Plan are found in Kane County, including the Fox River and the Fox River Trail, Blackberry Creek and the adjacent Virgil Gilman Trail, Mill Creek, the Great Western Trail, and the Illinois Prairie Path. The regional Greenways Plan is a reminder that natural areas and wildlife habitat traverse municipal and county boundaries (Refer to Figure 53).

Community Benefits of Open Space

Too often in the past, open space has been viewed strictly as an amenity. It is now recognized that open space enhances development, reduces the cost of sprawl, and produces strong economic benefits. Economic benefits derived from open space include:

- Flood damages and erosion problems are prevented, reducing costs to homeowners or local governments.
- Water quality is improved as native vegetation and wetlands filter pollutants before entering streams, reducing the community's cost of treating and filtering drinking water.
- Increased tourism to large open spaces or greenway trail system draws investment to the surrounding areas.
- Recreation related businesses increase.
- Community enhancement and investment advances, increasing the local tax base and enhancing surrounding property values.
- Retail and service occupations increase along greenways.

Further, since open space is not intensely developed, it requires limited tax supported infrastructure (schools, roads, water and sewer lines). This cost savings ultimately provides a more reasonable tax structure for businesses and residents.

Permanent protection of open space offers many opportunities to shape the built environment. Open space identifies a community by surrounding it and defining boundaries. Open spaces such as streams, greenways and parks create identifiable neighborhoods and landmarks. Open space serves as a central, unifying focus providing gathering places for community activities. Parks and open space create a high quality of life for residents and attracts tax paying businesses to communities (Refer to Figure 54).

There are clear connections between open space, community character and quality of life. Community character and quality of life attracts tax-paying businesses and skilled employees. According to Steve Lerner and William Poole, the authors of Economic Benefits of Parks and Open Space, corporate CEO's say quality of life for employees is the third-most important factor in locating a business, behind only access to domestic markets and availability of skilled labor. Owners of small companies ranked recreation/parks/open space as the highest priority in choosing a new location for their business. Today, employers shop for appealing locations that will attract and retain employees.

According to the National Park Service, at present rates of growth, the tourism/leisure industry will soon become the leading U.S. industry of any kind. The recreation and relaxation opportunities provided by open space are a significant benefit to the physical, mental, and economic health of a community. These opportunities can be for active, passive, and educational recreation. Active recreation generally involves intensive uses and requires substantial facilities including playing fields, swimming pools, campgrounds, and tot lots. Passive recreation provides widely spaced picnic areas and trails for hiking, biking, and cross-country skiing. Recreational/educational facilities include nature interpretation centers, cultural and historic sites, and teaching areas.

Open space provides opportunities for long-term scientific research and education. Natural, undeveloped areas afford scientists the opportunity to study how ecosystems function, especially those adjacent to urbanized areas. Open space provides places to teach children an appreciation for the environment and natural resources. Examples in Kane County include the Max McGraw Wildlife Foundation and the Fermi National Accelerator Laboratory.

Continuing The Green Legacy

It is crucial to continue to acquire and protect sufficient open space to meet the county's needs during the next 25 years of unprecedented population growth. Therefore, the 2030 Plan takes an aggressive and unrelenting approach to the implementation and preservation of the county's green infrastructure. Additional open space is needed in three general categories: (1) large tracts of natural areas, also referred to as hubs; (2) greenway linkages; and (3) recreational facilities.

Advanced identification and planning of open space is fundamental to protect and expand the countywide green infrastructure. One way to enhance Kane County's green infrastructure is to prepare Green Plans for the five major watersheds in the county's Critical Growth Area. Such plans would provide a comprehensive analysis and a long-range open space plan for each watershed. Each plan would include a detailed map to identify existing open space, trails, natural areas, gathering places, and

opportunities for open space enhancement and protection. Green Plans would tie together open space planning with community development and Smart Growth. Implementation of the county's green infrastructure requires cooperation from various public jurisdictions, private property owners, developers, and state and federal government agencies. Long-range planning and management of green infrastructure will lead the county towards the goal of achieving safe, healthy, and livable communities.

Policies

1. Implement the open space and green infrastructure network depicted in the 2030 Plan for its environmental, aesthetic, social, and economic benefits.
2. Protect biodiversity by preserving, regenerating, and restoring natural areas using the principles of the Biodiversity Recovery Plan.
3. Cooperate with the Forest Preserve District, municipalities, and local park districts in obtaining additional shoreline areas along the Fox River and its major tributaries to provide public trails, stream access, and resource protection.
4. Encourage the improvement and further development of a Fox River canoe paddleway in cooperation with the municipalities and park districts.
5. Incorporate environmental design criteria in development controls and county ordinances to protect natural, scenic, historic, archeological, and environmental areas and to minimize adverse impacts.
6. Connect new subdivisions and neighborhoods with bike trails and walkways as a means of encouraging walking and biking.
7. Encourage the increased use of non-acquisition techniques such as conservation easements, tax adjustments, and dedication as alternative methods for implementing local, county, and regional open space plans.
8. Protect scenic views through viewshed preservation and enhancement by implementation of the county's Rustic Roads Program.
9. Coordinate open space planning and preservation with protection and maintenance of county water resources.
10. Prepare cooperative green plans for each of Kane County's five watersheds in the Critical Growth Area.

Figure 48

"Like winds and sunsets, wild things were taken for granted until progress began to do away with them."

—Aldo Leopold

Figure 49

Burnham Legacy

In 1909 Daniel Burnham coauthored a visionary and farsighted plan for the Chicago region. A major part of that plan was the creation of a large interconnected open space system extending from Lake Michigan westward. A 1956 follow-up coauthored by Daniel Burnham, Jr. recorded the accomplishments of the 1909 plan and sounded a call to continue its vision.

The 1956 Burnham Plan recognized Kane County for its efforts in establishing a Forest Preserve District and in acquiring open space. Kane County began open space conservation in 1926 with the acquisition of Johnson's Mound Forest Preserve. This was followed in 1928 by the acquisition of Bliss Woods, Elburn, and Tyler Creek Forest Preserves.

The 2030 Land Resource Management Plan carries forth the Burnham legacy and challenge.

Figure 50

Types of Open Space

Passive	Active
Natural Area	Bicycle and Pedestrian trails
River and Stream Buffers	Parks and Playgrounds
Retention and Detention basins	Equestrian Facilities
Wetlands	Formal Gardens
Floodplains	Golf Courses
Geologic Features	Playing Fields including those with Detention Facilities
Steep Slopes	Courtyards and Squares
Urban	Scenic
Urban Plazas	Viewsheds
Urban Streetscapes	Road Corridors
Landscape Mediums	Rustic/Historic Features
Rooftop Gardens	Air Quality
Utility Corridors with Easements	Community Separators
Cemeteries	Observation Points

Figure 51

Biodiversity

Biodiversity is the totality of genes, species, and ecosystems in a region. For example, a healthy prairie community would normally include dozens of plant species as well a habitat for various species of birds, mammals, reptiles, amphibians, insects, mites, fungi, and bacteria. Within a region the size of the Chicago area, the number and variety of natural communities that exist side by side in a given area, such as oak savannas, meadows, and wetlands can measure biodiversity. A high degree of biodiversity is normally an indication of a healthy, sustainable natural community, ecosystem, or region.

Source: Biodiversity Recovery Plan, Chicago Wilderness, 1999.

Figure 52

Biodiversity Recovery Plan

The Kane County Regional Plan Commission adopted the Biodiversity Recovery Plan as an advisory supporting document to the Kane County 2030 Land Resource Management Plan. The Biodiversity Recovery Plan published in 1999 by Chicago Wilderness is a plan and process for guiding the Chicago region in efforts "to protect the natural community of the Chicago region and to restore them to long-term viability, in order to enrich the quality of life of its citizens and to contribute to the preservation of global diversity." As the Chicago region continues to grow and develop, the Biodiversity Recovery Plan provides a vision and guide for regional conservation planning. The goal of the plan is to "establish a broad policy of beneficial coexistence in which the region's natural heritage is preserved, improved, and expanded even as the metropolis grows."

Source: Biodiversity Recovery Plan, Chicago Wilderness, 1999.

Figure 53

Chicago Wilderness

The Chicago Wilderness coalition is a collaborative partnership of more than 170 public and private organizations, in addition to thousands of volunteers, that pool their resources and expertise to study, protect, restore and manage the region's natural lands and the plants and animals that inhabit them. Stretching from southeastern Wisconsin, through northeastern Illinois and into northwestern Indiana, Chicago Wilderness is a regional nature reserve containing some of the rarest natural communities in the world. Embedded in one of North America's largest metropolitan regions, Chicago Wilderness is a mosaic of natural areas that includes more than 250,000 acres of protected lands and waters, as well as many that are unprotected. These natural areas are home to a wide diversity of life: thousands of native plants and animals live here among the more than nine million people who also call the region home.

Source: 1999-2003 Progress Report, Chicago Wilderness.

Figure 54

Economic Benefits of Open Space

Easy access to parks and open space has become a new measure of community wealth—an important way to attract businesses and residents by guaranteeing both quality of life and economic health. American cities large and small are creating parks as focal points for economic development and neighborhood renewal.

Attracting reinvestment:

In the early 1980's, Chattanooga, Tennessee, was facing rising unemployment and crime, polluted air, and a deteriorating quality of life. Departing residents explained they were moving to the cleaner, greener, and safer suburbs. To lure them back, local government, businesses, and community groups decided to improve Chattanooga's quality of life by cleaning the air, acquiring open space, and constructing parks and trails. Chattanooga today has green spaces surrounded by a bustling commercial and residential district. From 1988 to 1996 the number of businesses and full-time jobs more than doubled. Assessed property values went up more than $11 million, an increase of 127.5%.

Revitalizing cities:

For years, an unsightly parking garage occupied a two-acre parcel in Boston's financial district. In the early 1980's, at the urging of surrounding businesses, the city joined a unique public-private partnership to demolish the structure to create an underground garage covered by a park. Today, the park features a spreading lawn, polished granite walls, teak benches, a 143-foot formal garden, a walk-through sculpture fountain, and a café. This open space in Boston's financial district has boosted the value of surrounding properties while providing an elegant green focus to a crowded commercial area.

Boosting tourism:

Hiking and biking trails can stimulate tourism. Trails along former railroad corridors also pay handsome dividends. In Dunedin, Florida, store vacancy rates tumbled to zero after the Pinellas Trail was built through town beginning in 1990. A 1994 study of the 20-mile Northern Central Rail Trail near Baltimore found that whereas the trail cost $191,893 to maintain and operate in 1993, it returned $304,000 in state and local taxes. A National Park Service study found that three rail trails in Iowa, Florida, and California contributed between $1.2 million and $1.9 million per year to their home communities.

In 1978, the Great Western Trail became one of the first rails to trails conversions in the country. The Great Western Trail runs 17 miles from St. Charles to Sycamore.

Creating jobs:

In 1996, outdoor recreation in the United States generated at least $40 billion, accounting for 768,000 full time jobs and $13 billion in annual wages.

Source: 1. "Economic Benefits of Parks and Open Space," Trust for Public Land, 1999; 2. "Economic Benefits of Outdoor Recreation," Outdoor Recreation Coalition of America, State of Industry Report, 1997; 3. "Economic Benefits of Parks and Open Space," Public Investment," APA PAS Memo, September 1999

PLANNING ISSUES—MINERAL RESOURCES

Objectives

1. To protect productive and valuable sand, gravel, and dolomite resources ensuring their availability for future generations.
2. To minimize conflicts between the mining industry and other land uses.
3. To promote proper reclamation techniques ensuring future use of mined land for recreation, open space, agriculture, or residential development.

Chapter Focus

Mineral resources—sand, gravel, and limestone—have historically played an important role in the development and economic growth of Kane County. Kane County is the second leading producer of sand and gravel in Illinois. Kane County's mineral resources should be managed carefully to ensure availability for future generations. After removal of the mineral resources, it is imperative that sites be properly reclaimed to beneficial land uses.

This chapter examines:

- Economic impact of mineral resources
- Mining and deposits
- Mineral resource management

Economic Impact Of Mineral Resources

The sand, gravel, and limestone deposits of Kane County are its more valuable mineral resources. Stone quarries in South Elgin and Batavia were once the chief source of limestone used locally in buildings and foundations. In the 1890's, some county residents earned a living by simply digging a hole in the ground, removing the layers of limestone, then transporting it to a local contractor in the Fox Valley. By the early 1900's, six street car loads of crushed limestone were transported to Chicago each day for use as packing stone in streets and roads.

Natural aggregate production is closely related to the population and levels of industrial development of a specific area. Based on 1996 data, the major aggregate-producing states in descending order were Texas, California, Ohio, Pennsylvania, and Illinois.

Kane County contributes to Illinois' high rank in the nation in sand, gravel, and limestone production. The demand for Kane County sand, gravel, and limestone primarily used for construction aggregate, will continue to rise because of the strong housing market and continued road construction in the western suburbs of Chicago. Because of its low unit price and high transportation costs, most construction sand and gravel is not shipped more than 50 miles. Limestone is also used in chemicals, agriculture, as well as for other purposes. Kane County also has small deposits of building stone, which is used as veneer in house construction, retaining walls, rubble, and flagging. The U.S. Geological Survey predicts vast quantities of crushed stone, sand, and gravel will be mined nationwide. It is anticipated that the amount of aggregate mined in the next 25 years will equal almost all the mining in this country during the past 100 years.

Mining and Deposits

In 2000, Kane County had 26 pits and quarries, most for sand and gravel extraction, on more than 2,406 acres concentrated in south central and northeastern Kane County. This includes just over 100 acres added since 1994. Blackberry, a south central township, has more than 550 acres in mining, mostly along the Kaneville Esker, a large glacial deposit extending into the thick sand and gravel deposits in

southeastern Kaneville Township. The other area with considerable mining and quarrying activity is the northeastern township of Dundee with 545 acres.

Areas with good potential for sand, gravel, and limestone deposits are shown by the Illinois State Geological Survey Earth Materials map of Kane County (Refer to Figure 55). Sand and gravel deposits—formed by glaciers 10,000 to 15,000 years ago—are often prominent features in the landscape, taking the form of plains, hills (kames), and ridges (eskers).

The most productive sand and gravel deposits are outwash plains 20 to 60 feet thick. The largest concentrations occur in northeastern Kane County, specifically eastern Dundee Township and parts of Elgin and northeastern St. Charles townships.

Kame and esker deposits vary widely in gravel size and composition. The Kaneville Esker, running roughly between Harter Road and Illinois Route 56, is especially rich in sand and gravel deposits. However, many of the kames and eskers in Kane County are too small or isolated for commercial extraction. Other areas with high sand and gravel mining potential are northwestern Hampshire, southern Sugar Grove, and parts of Virgil, Burlington, and Blackberry townships (Refer to Figure 55).

Limestone occurs in major deposits along the Fox River and in Big Rock Township, where limestone is within 50 feet of ground level. Other deposits with some potential for mining exist in Kaneville, Sugar Grove, Blackberry, and St. Charles townships.

Mineral Resource Management

Kane County's approach to mineral resource management is to plan and preserve, regulate and reclaim. The long-term benefits of this approach are mineral resource protection for future generations, economic development support, and desirable subsequent use reclamation.

Land use planning and geologic information are vital to the protection of mineral resources for future generations. A study by the Illinois State Geological Survey, Geology for Planning, has provided valuable information on the distribution and location of mineral deposits. Major potential deposits should be protected until extraction becomes feasible. Further, many deposits are groundwater recharge areas that need to be protected from contamination. Areas protected for future extraction must be far enough away from residential development and sufficiently buffered. Current pits and quarries should also have a sufficient buffer to allow for possible future expansion.

Besides planning and preservation, regulation and reclamation are important aspects of the mineral resource industry. As regulated by the Kane County Zoning Ordinance, mining is allowed as a Special Use within the "F" Farming District. A mining license, effective for five years, is required. An approved reclamation plan is required as part of the licensing process. Semi-annual on-site inspections monitor the status of the reclamation plan for that area already mined out. The license can be revoked if the reclamation progress is unsatisfactory. A performance guarantee is required to ensure that after mineral extraction is complete the land is returned to a productive and environmentally sound use instead of becoming an unsightly and useless wasteland. Achieving a balance between no regulation and too much regulation requires cooperation between the state, county, and mining operators.

The county's reclamation regulations are some of the most rigorous in the state. In the mining and preparation of sand and gravel, fine sediments coating sand and gravel need to be washed to meet industry standards. Wash water for this process

comes from lakes, often created as a result of mineral resource extraction. Fine sediments washed from the sand and gravel accumulates at the bottom of the lake, making the lake shallower over time. These lakes can be managed to prevent sediment accumulation by avoiding lakeshore erosion and by using only a portion of the lake for washing. Berms can keep washed sediments contained in one side of the lake to improve the reclamation of the lake for future uses. After the site has been exhausted of its mining opportunities, the remaining lake provides many long-term opportunities for water sport recreation, a visual amenity for bike trails and hiking, wildlife habitat, and potentially a focal point for a new residential community (Refer to Figure 56).

Quarries often leave behind an expanse of vacant land, spring fed lakes and considerable relief, creating ideal opportunities for open space preservation and for master planned communities in the Urban and Critical Growth Corridors. The potential for the adaptive reuse of quarries in Kane County is substantial. When quarries are reclaimed, local economies are boosted as open space sites generate investment and creative mixed-use developments are successfully built to cater to the communities needs. The trend has already begun for this transformation. In Carpentersville, town homes, condos, and single-family homes are being built surrounding a 13-acre reclaimed lake, prized as the centerpiece of the development. A walking path surrounds the lake with a bridge connecting two gazebos at the lakes center. In Algonquin, houses are being built surrounding three reclaimed lakes that will provide recreational amenities to the community as a beach and launching area for canoes or paddleboats.

Policies

1. Discourage development likely to interfere with potential mineral extraction.
2. Cooperate with the Illinois State Geological Survey and other state or federal agencies to identify and more precisely map mineral deposits.
3. Allow controlled expansion of existing sand and gravel pits and dolomite quarries when consistent with adjacent land uses.
4. Encourage extraction in new mineral areas, tied to county and regional growth forecasts and market conditions.
5. Require land reclamation plans prior to extraction as well as adequate buffer zones and landscaping between mining operations and potentially incompatible land uses.
6. Encourage environmental stewardship to ensure that mineral development is environmentally sound, and protects groundwater resources, and mined areas are reclaimed to be safe, free of pollution and suitable for future uses.
7. Encourage research on improved mining and reclamation techniques.
8. Enforce the licensing and reclamation provisions of the Kane County Code.
9. Require reclamation plans to specify that lakes used for wash plant operations should be managed so that no more than 25% of sediments from wash plant operations are allowed to encroach on the remaining 75% of the lake.

Figure 55—Earth Materials Map

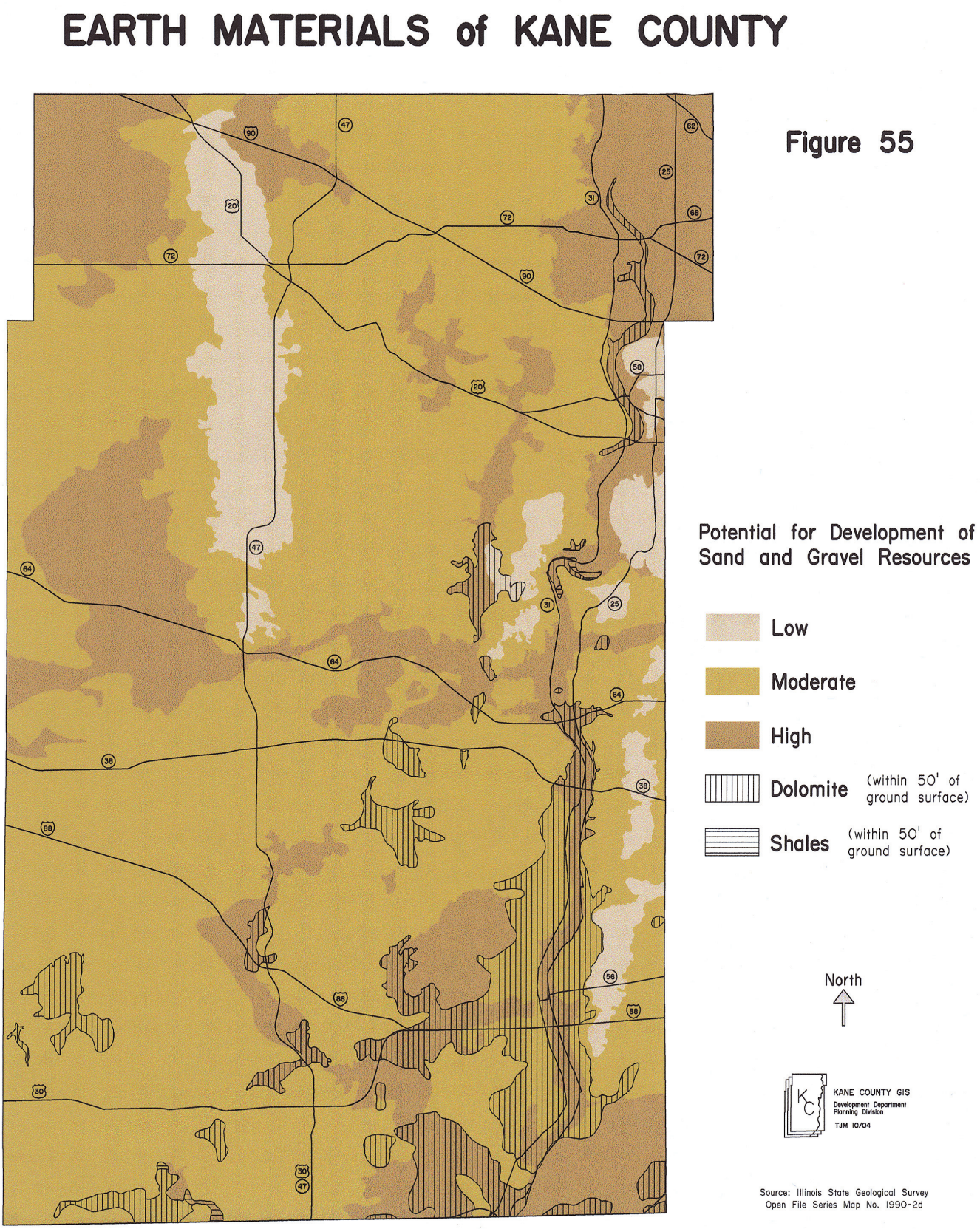


Figure 56

Big Rock Quarry

Big Rock quarry is a fine example of the use and reclamation of a stone quarry located in one of Kane County's western townships. The original quarry, 95 acres in size was approved for mining by the county in 1973. Upon depletion of the commercial quality of sand and gravel, the Meyer Material Company took over operation to produce crushed limestone. At this time it was expanded to 135 acres in size. To comply with county requirements, an expansion and reclamation plan was prepared and approved. The average depth of the limestone was 70 feet.

At the time the reclamation plan was prepared, the vegetation on the site was mixed. Some of the land was used for cultivation and pasture, while other parts were wooded. Big Rock creek traversed the site in an east-west direction. The previous mining operation left behind the quarry, spoil banks, the plant site, stockpiles and associated haul roads. Water infiltrated the quarry at a rate of 50,000 gallons per day. The water was collected by sump pump and discharged into Big Rock Creek.

The goals of the reclamation plan were as follows:

1. To produce the maximum amount of material consistent with good reclamation practices.
2. To provide for efficient and economically sound operation of the quarry.
3. To provide for the restoration of the site to a condition closely resembling the surrounding terrain.

The Kane County Forest Preserve District acquired the land in 1995 and it is now a deep-water lake with excellent fishing. It is open to the public for other recreational purposes.

Source: Meyer Material Company, 2000.

PLANNING ISSUES—WATER RESOURCES

Objectives

1. To recognize an interacting system of land and water resources is a major component of our natural environment.
2. To preserve and protect the quantity and quality of potable groundwater and potable surface water supplies and to ensure sustainable yields for current and future generations.
3. To protect and improve the surface water quality and beneficial uses of ponds, lakes, rivers, streams, and wetlands.
4. To reduce point and non-point source discharges of pollutants into lakes, rivers, and streams.
5. To preserve and protect the recharge of our groundwater aquifers for current and future potable water supply needs of Kane County.
6. To maintain or achieve for every stream in Kane County a Class B or better water quality rating as defined by the Biological Stream Characterization system of the Illinois Environmental Protection Agency.
7. To conserve water resources via lawn watering restrictions, water-conserving plumbing fixtures, and reuse and recycling of reclaimed wastewater.
8. To promote watershed based planning in a holistic manner for water supply, stormwater management, and wastewater reclamation.
9. To promote stormwater management practices that maximize groundwater recharge potential.

Chapter Focus

The Fox River and its tributaries along with the tributaries of the Kishwaukee River are Kane County's major surface water resources and one of its greatest natural assets. Beneath the earth's surface is an equally important natural asset, the groundwater resource in the shallow and deep aquifers that will provide potable water for current and future generations. A primary challenge facing Kane County is to manage future growth to ensure that all necessary steps are taken to maintain high water quality in our surface water and sustainable yields in our subsurface resource. Kane County has provided leadership in utilizing Best Management Practices in the county's watersheds and in implementing countywide stormwater management. Watershed planning is the most effective means of addressing countywide water quality because it is a holistic approach that encompasses (1) minimizing impervious surfaces, (2) utilizing Best Management Practices, and (3) cooperative governmental planning for the management of streams, lakes, wetlands, floodplains, stormwater, and wastewater throughout an entire watershed.

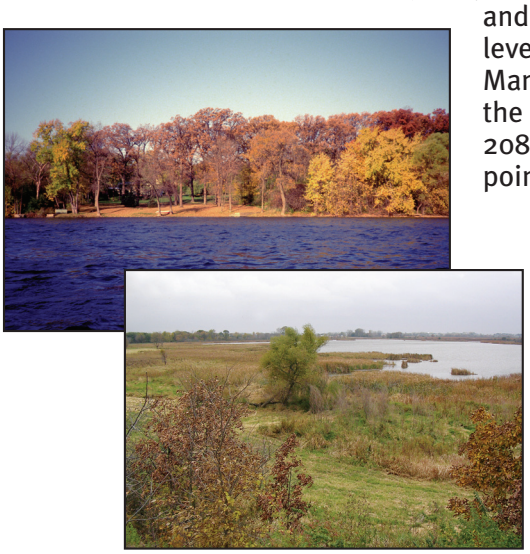
This chapter examines:

- Water resources
- Water supply
- Water resource management
- Watershed planning

PLANNING ISSUES—WATER RESOURCES

Water Resources

The hydrological cycle is the movement of water from the oceans to the atmosphere and land, then back to the oceans. It is a complex and interrelated system essential to life on earth. The importance of our nation's water resources was highlighted in 1972 when Congress approved the Clean Water Act, which set very high water quality goals for the U.S. The Clean Water Act required that plans for restoring and maintaining water quality be prepared at the regional and state level. In compliance with that mandate the 208 Areawide Water Quality Management Plan was endorsed by Kane County and adopted in 1979 by the Northeastern Illinois Planning Commission (Refer to Figure 57). The 208 Plan recommends strategies to local governments to control both point and non-point sources of pollution (Refer to Figure 58).



The two major components of Kane County's water resources are surface waters and groundwater aquifers (Refer to Figure 59). Surface water and groundwater aquifers have undergone significant changes since early settlement times in Kane County. Intensive farming and industrial activities between 1830 and 1940 were responsible for altering many of the county's creeks, wetlands, and of course, the Fox River. Settlers cut down woodlots, plowed under most of the native prairie, drained the majority of wetlands, and dredged the creek channels. Runoff from farm fields eroded topsoil into the streams and river. The raw and partially treated effluent from industries and cities was discharged into the Fox River.

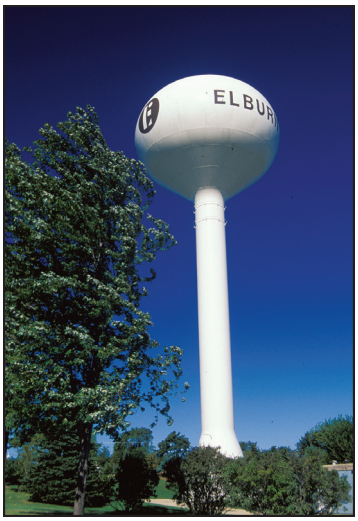
In recent years, the quality of Kane County's surface water resources has improved. Municipalities have made progress in the treatment of wastewater and elimination of combined sewer overflows. However, urban and suburban development continues to strain the ability of surface waters to remain clean and stable. Wastewater treatment plants, while having made major advances in protecting public health and the health of our streams and rivers by improving the quality of treated wastewater, wastewater treatment plants still discharge excess nutrients and other traces of pollutants into streams and rivers. Groundwater aquifers are affected by the activities occurring on or around the recharge areas which replenish the water. The surrounding land uses, over pumping, and pollution affect the groundwater aquifers. These issues must be addressed by protection of the recharge areas, not exceeding sustainable yields, and land use management.

The quantity of water for drinking and other uses has historically been adequate in Kane County. However, recent population forecasts and the localized lowering of some of the aquifers in the county and surrounding areas indicate that by the year 2030 the potential for potable water shortages exists in certain areas of the county depending on groundwater for their water supply. Because the historic data is either too old or has not been compiled in a computerized database, detailed geologic and aquifer information is currently not available to address these potential shortages (Refer to Figure 60).

Water Supply

The most important use of our water resources is providing potable water for human consumption. Because Lake Michigan water will not be available, the county must remain self-sufficient for its potable water needs and confront the relationship between new suburban growth and long-term, sustainable water supply. The two chief sources of potable water in Kane County are groundwater and Fox River water. Groundwater is tapped by private and public wells from two aquifer zones: 1) the shallow aquifer zone located roughly 30 to 400 feet below the ground surface, and 2) the upper sandstone aquifer located from 600 to 2,000 feet below the ground surface.

PLANNING ISSUES—WATER RESOURCES



All Kane County municipalities supply potable water through public water supply systems, except for Big Rock, Lily Lake, Pingree Grove, Virgil, Wayne, and a portion of Barrington Hills. The county encourages public water supply extensions into developing areas annexed to municipalities. Potable water withdrawl rates from the Fox River and from high capacity municipal, industrial, and irrigation wells have historically increased and are projected to continue rising. Not only has Kane County's population increased, but the gallons of water used for each person per day living in Kane County has increased (Refer to Figure 61).

Most Kane County municipalities have depended primarily on groundwater from the upper sandstone aquifer that is 600 to 2,000 feet deep. Both water quantity and water quality problems have arisen with this aquifer in Kane County. Water quantity problems include the regional decline in water supply due to over pumping in northeastern Illinois and local declines in water supply due to over pumping in southeastern and northern Kane County. Water quality problems include radium levels and barium levels that sometimes exceed U.S. Environmental Protection Agency standards. The lower sandstone aquifer, which contains water below 2,000 feet, also contains salts and minerals making it non-potable.

Due to these water quantity and water quality problems, some Kane County municipalities have begun utilizing the Fox River or the shallow aquifers, which have a faster recharge rate and contain insignificant levels of barium and radium. Another water supply solution has been to mix upper sandstone aquifer water with treated Fox River water. This option however is not totally accepted by residents because of taste and odor complaints during the summer months. The most cost-effective solution to supplying potable water in the county continues to be shallow aquifer groundwater.

Most private wells in unincorporated Kane County draw from the shallow aquifer zone, which is a dependable source of potable water. Widespread deposits of sand and gravel along with the upper portions of the fractured limestone bedrock in Kane County provide relatively shallow sources of potable groundwater and are presently used by several communities. Other shallow aquifers have the potential for future municipal and household use. However, sufficiently detailed geologic and aquifer data have not been compiled and studied to fully understand the long term water quantity and water quality issues arising from dependence on the shallow aquifer as a sustainable water supply. Water quantity issues include insufficient geologic data for evaluating the location and pumping capacity of wells, the amount of water that can be pumped from the aquifers on a sustainable basis, the location of recharge areas, the loss of recharge capability due to urbanization, and the effect of pumping on the water table, wetlands and base flows in streams. The major water quality issue is the potential for contamination from pollutants that may be introduced into the shallow aquifers from development on the land surface.

To address the problems and unknowns of the deep and shallow aquifer systems and the Fox River surface water supply in Kane County, the Illinois State Water Survey and the Illinois State Geological Survey under contract with Kane County are doing additional aquifer, geologic, and water accounting studies. Their work will compile existing and new data into a Geographic Information System (GIS) and into computer models of the geology and aquifers of Kane County to use as planning tools for future water supply and land use decision-making. Following completion of the studies, priority should be given to developing a comprehensive countywide potable water resource management policy.

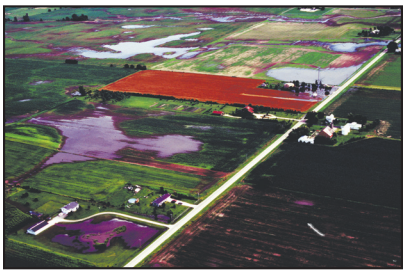
A better understanding of the hydrologic cycle under the land surface and how groundwater interacts with our surface water resources is essential for Kane County to continue to preserve and to protect its potable water resources, as well as to ensure sufficient water supply and water quality to a growing population.

Water Resource Management

Many of Kane County's water resources reach beyond county boundaries. Thus federal, state, and regional coordination is needed for effective water resource management in Kane County and across the northeastern Illinois region. At the local level, Kane County and its municipalities need to continue to strengthen implementation measures to protect and manage its water resources, especially the shallow aquifers and the Fox and Kishwaukee Rivers and their tributaries (Refer to Figure 62).

Stormwater Management

Prior to settlement, there was very little stormwater runoff in Kane County except in areas of well-defined streams and rivers such as the areas immediately adjacent to the Fox River. Runoff rates were quite low because of absorption by the undisturbed prairie soils and deep-rooted native vegetation. The volume and rates of stormwater runoff have increased greatly since pre-settlement times. This is due to farming activities that have drained fields and channelized streams, and to urbanization that has increased impervious surfaces.



Past stormwater management practices have resulted in a substantial increase in flooding and stream bank erosion, and have caused severe water quality problems. Water may be polluted from street and parking lot runoff containing heavy metals, bacteria, excess nutrients and petroleum byproducts. Federal and state requirements do not control the quantity of stormwater runoff from new developments. However, the quality of stormwater runoff is regulated by the U.S. Environmental Protection Agency.

Stormwater runoff affects the entire watershed in which it occurs. If one municipality or development within a watershed does not properly manage its stormwater, flooding and water quality problems can occur throughout the watershed. These issues, along with record flooding in Kane County in July 1996, brought about the adoption of the Comprehensive Stormwater Management Plan for Kane County in October 1998. The goals of the plan call for a uniform stormwater management framework addressing both the quantity and quality of our surface and groundwater resources. The Countywide Stormwater Management Ordinance is a product of the plan and became effective in January 2002. It provides the means for cost effective, safe, aesthetic, and reasonable stormwater drainage and erosion control that minimizes stormwater runoff, water quality degradation, and habitat loss. It also provides the ability to implement best management practices and water quality benefits for both incorporated and unincorporated areas.

Best management practices (BMPs) for stormwater runoff control include structural improvements and devices that transport, temporarily store, and treat urban stormwater runoff to remove pollutants, to reduce flooding, and to protect aquatic habitats. BMPs also include nonstructural approaches, such as public education efforts to prevent the dumping of household chemicals into storm drains.

Because agricultural development has significantly increased runoff volumes and rates, the Natural Resources Conservation Service and the Kane-DuPage Soil and

Water Conservation District have promoted many erosion control and floodplain protection practices in agricultural areas. Farmers throughout the county have been encouraged to use conservation tillage, grassed waterways, terracing, and other methods of erosion control and floodplain protection. In May 2003, the county also adopted the Farmland Drainage Assistance Program to achieve net watershed benefits by educating and assisting farm owners with implementing stormwater BMPs and in reestablishing drainage districts.

River and Stream Management

The Fox River and its five major tributaries and the Kishwaukee River tributaries are major features of Kane County. These water resources are one of the county's greatest natural assets and must be protected.

A key Best Management Practice (BMP) in river and stream management is to protect the river and stream corridor. The corridor then acts as a buffer strip to protect stream banks from erosion, filter out pollutants, store and transport flood waters, provide wildlife and aquatic habitat, and screen sensitive areas from potential adverse effects of development.

The Fox and Kishwaukee Rivers and their tributaries have been classified as fair to good in biotic integrity by the Biological Stream Characterization (BSC) program (Refer to Figure 63). The BSC is a five-tiered classification system, ranging from excellent to very poor, developed by the Illinois Environmental Protection Agency and the Illinois Department of Conservation. The BSC rating was instituted to determine the environmental condition of streams and to monitor changes in the streams over time.

Kane County has an active role in the management of its streams through the BMPs contained in the Countywide Stormwater Ordinance and through other programs and initiatives. A stream-cleaning program was begun in 1997 to remove blockages and keeps our streams free flowing and healthy. It has also participated in several restoration projects including the removal of dams and shoreline restoration along the Fox River and its tributaries. As Kane County develops, it is essential that these programs continue so that the BSC rating for each individual stream be maintained and improved wherever possible.

Wetland Management

Wetlands are a sensitive environmental resource, containing unique ecosystems integral to the hydrologic cycle. Wetland ecosystems are periodically inundated by water. There are several types of wetlands, differentiated by duration of water inundation, soils, topography, and plant species. Wetland types found in Kane County are wet prairie, marsh, fen, bog, swamp, and riverine wetlands (Refer to Figure 64).

Wetlands provide multiple uses and benefits to the human and natural communities in Kane County. Some of these include: (1) providing temporary floodwater and runoff storage; (2) providing recharge or discharge from groundwater aquifers and completing the hydrologic cycle; (3) protecting water quality by absorbing floodwater contaminants; (4) providing important wildlife habitat through food, water, cover, nesting, and breeding grounds; (5) shaping urban form by serving as logical boundaries to development and by buffering incompatible land uses; (6) providing educational and passive recreational opportunities; and (7) enhancing the natural beauty of the area.

Kane County has approximately 17,000 acres of wetlands, according to the 1987 National Wetlands Inventory. Currently, the emphasis of federal wetland regulations is on the dredging and filling of wetlands. At the federal level, large wetlands connected to rivers and streams are protected from major development activities by the U. S. Army Corps of Engineers. Resource limitations and recent court decisions constrain the Corps from protecting small isolated wetlands, like some found in Kane County. The Kane County Stormwater Ordinance regulates the potential impacts of development on these small isolated wetlands by requiring identification of wetlands and their quality prior to development and buffer strips, conservation easements or mitigation at the same time the surrounding development occurs. The county is also proactive in identifying high-quality wetlands prior to development interest. The Advanced Identification of Wetlands (ADID) program has been adopted in cooperation with the U.S. Fish and Wildlife Service, U.S. EPA, U.S. Army Corps of Engineers, Illinois DNR, NIPC, and Kane-DuPage Soil and Water Conservation District to alert landowners of these important water resources on their land. It is imperative that county wetlands be protected and enhanced because of their role in the hydrologic cycle and water resource management.

Floodplain Management

A floodplain is an area of low-lying, flat ground on either side of a river, stream, pond, or lake subject to periodic inundation by flooding. Floodplains perform important drainage and hydrologic functions. After heavy rains, snow melt, or ice jams, rivers and streams may overflow their banks causing considerable damage if the floodplain contains structures or other inappropriate uses. In the natural environment, floodplains store and convey floodwaters without erosion or other damaging effects to the environment. Any loss of floodplains will cause increased flooding and damage both upstream and downstream.

In addition to drainage, floodplains also (1) control pollution by settling out sediment from slow moving waters in flood storage areas; (2) allow streams and rivers to remeander over time without damage to the built environment; (3) provide wildlife habitat; (4) provide passive recreation areas for hiking, bicycling, and cross-country skiing and active recreation areas such as playing fields; (5) shape urban form; and (6) enhance scenic beauty.

Federal and state agencies provide only minimum regulations for new developments in floodplains. The Federal Emergency Management Agency (FEMA) requires only that new structures in floodplains be elevated to the level of the 100-year flood. This regulation is enforced in coordination with the Illinois Department of Natural Resources, Office of Water Resources (IDNR-OWR). The Office of Water Resources encourages local governments to adopt more stringent standards for development in floodplains.

Kane County is following the recommendation from IDNR-OWR in its Countywide Stormwater Ordinance by adding three feet to the Flood Protection Elevation (FPE) required by FEMA on the Fox River and two feet to the FPE on the Fox River and Kishwaukee River tributaries. It also calls for appropriate uses within floodways and restricts new construction. The floodway is the area of the floodplain that conveys flood flows, as opposed to the flood fringe portion of the floodplain that simply stores flood waters. Any construction in the floodplain requires the creation of one and one half times the volume of the floodplain storage lost.

The county recently began studies to update and improve floodplain mapping on over 20% of the county. The county has recently received digitized floodplain maps from FEMA that are now part of the county GIS. Flood reduction studies and construction has also been undertaken since the adoption of the Comprehensive Stormwater Management Plan in many areas of the county. It is important that floodplains be protected from development because of the potential for loss of life, economic loss, and environmental damage.

Wastewater Treatment

Proper wastewater treatment is vital to public health and water quality. There are three types of wastewater treatment systems generally available in Kane County: (1) conventional wastewater treatment plants; (2) private wastewater disposal systems such as septic systems and aerobic treatment plants; and (3) extended aeration wastewater recycling and reuse facilities with land application.

The construction of polishing wetlands adjacent to Gilbert's wastewater treatment plant to improve the treatment of effluent before entering Tyler Creek.

Conventional wastewater treatment plants use a central location to collect, treat, and discharge treated wastewater to a stream or river. Pollutant discharge limits are regulated by National Pollution Discharge Elimination System (NPDES) permits. The level of present technology has done an excellent job in addressing the public health issues of wastewater from the past. However, excess nutrients, mostly nitrogen and phosphorus based compounds, and other traces of pollutants continue to degrade water quality in our streams with discharges from wastewater treatment plants. Also, when wastewater volumes exceed treatment plant capacities or when the capacity of combined stormwater and wastewater sewers in some of the older Fox River communities are exceeded, excess wastewater flows may be discharged directly into a waterway and become an additional source of pollution.

As part of the 1972 Federal Clean Water Act, and the 1979 Areawide 208 Water Quality Management Plan endorsed by Kane County, adopted by NIPC, and being enforced by the IEPA, Total Daily Maximum Load (TMDL) requirements are being addressed now by wastewater authorities along the Fox River. Pollutant levels in streams can vary depending on location, temperature, and other factors. For the first time, in Kane County, a coalition of the wastewater authorities are working together to develop a set of uniform requirements along the Fox River to remove pollutants from their reclaimed wastewater. The Fox River Study Group is recognized and has received grant monies from the IEPA as part of the Integrated Management Plan for the Fox River in Illinois. The Plan is being implemented by IDNR. This planning by the wastewater authorities along the Fox River for the first time on a watershed basis will further enhance the water quality by removing additional pollutants impairing the beneficial uses of the river.

All private sewage disposal systems in Kane County are under the jurisdiction of the Kane County Code enforced by the Health Department. Private sewage disposal systems, commonly referred to as septic-systems, are the second type of wastewater treatment used in unincorporated Kane County. These systems typically occur in areas that have been developed under the traditional concept of rural subdivisions (lots of one acre or greater). Private systems may be either septic systems or aerobic treatment plants (ATPs). The county requires that each lot must contain favorable soil conditions and must be large enough to provide ample room for two disposal fields should one happen to fail. County zoning requires a minimum lot size of 40,000 square feet for private disposal systems. Where soil conditions are not favorable on

existing platted lots or where existing systems fail, an aerobic treatment plant may be used. These plants provide circulation and aeration in addition to bacteria to decompose organic matter. The treated effluent then flows into a disposal field that may be smaller in area than a septic disposal field.

Extended aeration wastewater recycling and reuse facilities with land application are the third method of treating wastewater in unincorporated Kane County (Figure 65). The Clean Water Act of 1972 and the U.S. Environmental Protection Agency encourage these facilities because they eliminate all point source discharge to rivers and streams. They do not require a NPDES permit. Further, they reuse and recycle the treated effluent and nutrients for irrigation of plants or crops. The nutrients that remain in the effluent, mostly nitrogen and phosphorus-based compounds, are taken up by the plants and do not contaminate sub-surface water. A number of extended aeration wastewater recycling and reuse facilities are successfully operating in Kane County. It is county policy that extended aeration wastewater recycling and reuse facilities be owned and operated by a sanitary district, water reclamation district, or municipality. This ensures continued operation and maintenance of the facilities and the ability to collect user fees.

To facilitate effective wastewater planning and to protect water quality, Facility Planning Areas (FPAs) have been established in northeastern Illinois with the authorization of the federal Clean Water Act. For each FPA, a management agency (a municipality, reclamation or sanitary district) is required to develop a facility plan documenting existing and projected land use, population, and wastewater service needs. Facility Planning Areas play a role in influencing the direction and extent of future development in the county. Access to sewer service can largely determine where land developments can occur. Presently, the Illinois Environmental Protection Agency (IEPA) evaluates requests for amended FPA boundaries or expanded treatment plants based on cost-effectiveness and water quality impacts. Applications to amend an FPA are first made to the Northeastern Illinois Planning Commission (NIPC), which has established detailed criteria for FPA expansions. NIPC then makes a recommendation to the IEPA. A downside of this approach is that it is based on the economics of serving new development with wastewater treatment and collection systems, an idea originating in the 1972 Clean Water Act and that is not in line with the current level of watershed based planning in Kane County and in other levels of state government. Even though FPA amendments are sometimes development-driven, the FPA review process does require wastewater planning that otherwise might not occur. IEPA has the final authority to approve FPA amendments. There are instances where they have overridden the recommendation from NIPC.

Watershed Planning

Watershed planning:

- Promotes an ecosystem-based approach to environmental and land use planning at the watershed level.
- Gives government agencies, land developers, and agricultural operators specific water protection guidelines.
- Shifts water resource planning to a proactive approach that stresses protection, preservation and enhancement of the environment, rather than pure economics or remediation of existing problems.
- Places emphasis on the health of the environment, sustainability and the hydrologic cycle.

Watershed planning is the most effective means of addressing countywide water quantity and water quality. The key components of watershed planning in Kane County are: (1) minimizing impervious surfaces (roads, driveways, and parking lots) in new developments; (2) utilizing BMPs - effective techniques commonly accepted and promoted by water resource management agencies; and (3) cooperative planning between various units of local government (Refer to Figure 66).

Imperviousness

Imperviousness represents the imprint of development on a watershed. Impervious surfaces include rooftops, roads, driveways, sidewalks, and parking lots and to a lesser extent turf areas. The amount of impervious surface in a watershed directly affects the quantity and quality of runoff, in turn impacting both surface water and groundwater resources within the entire watershed.

Because it can be measured, imperviousness provides a unifying theme for watershed protection that can be used by planners, engineers, landscape architects, scientists, local officials, and concerned citizens. Newly developed sites should be designed so that impervious areas are in the range of 10 to 15%. If imperviousness is greater than 15%, water quality begins to degrade.

Imperviousness affects water resources in at least four ways: (1) water quality-runoff from developed areas are often contaminated with oils, grease, gasoline spills, tire wear, de-icing salts, etc; (2) the shape of streams—flooding is more severe and more frequent, and stream channels respond by widening their banks and deepening their beds; (3) stream warming—impervious surfaces absorb heat, increasing ground and water temperatures, often adversely affecting aquatic habit; (4) aquatic biodiversity— when imperviousness exceeds 10 to 15%, streams have shown a sharply lower diversity of species; (5) Extensive impervious surfaces limits absorption of rainfall and results in rapid runoff into river systems preventing groundwater recharge.

Innovative site design methods can significantly minimize the percentage of impervious surface in a watershed. Such design methods include (1) clustering buildings to decrease road and parking lot surface; (2) reducing building setbacks to lessen the length of driveways and entry walks; (3) reducing street widths, which also lowers maintenance costs and creates a more neighborly environment; and (4) utilizing flexible street standards.

Best Management Practices

Best Management Practices (BMPs) are the second key component of watershed planning in Kane County. The goal of BMPs is to minimize the adverse impacts of development and to maximize the protection and enhancement of both surface water and groundwater resources.

An effective BMP system:

- protects floodplains and open space adjacent to waterways, in wellhead protection areas, and in significant groundwater recharge areas;
- requires buffer strips along streams and wetlands;
- stabilizes severely eroded stream banks through structural or preferably vegetative means;
- preserves and protects native plant species and encourages their use in new development; and

- minimizes trace pollutants and controls nutrient loading into our surface water and groundwater resources from wastewater treatment facilities, new development and agricultural land uses.

Porous pavers, a BMP, in the Kane County Government Center parking lot.

The first step in the design of a BMP system that protects watersheds is selecting an appropriate and achievable watershed target. Target is a term that refers to the level of stream quality within a watershed that will exist when all development is completed. Although there are a number of possible watershed targets, the Illinois Biological Stream Characterization (BSC) rating system provides a quantifiable measure of water quality. The target for all Kane County streams should be a Class B (good) rating or better.

The second step is using the guidance provided by an aquifer sensitivity map. An aquifer sensitivity map (Refer to Figure 67) relates to geologic materials below the land surface and the sensitivity of the materials to transmitting pollutants in the runoff from developed land into aquifer systems. For example, sand and gravel, if present near the ground surface, may connect to the shallow aquifer system.

Cooperative Planning

Because watershed boundaries often overlap governmental boundaries, cooperation between various units of government is the third key component to effective watershed planning and the achievement of water quantity and water quality goals throughout Kane County. The county and various local agencies have been working cooperatively in several areas to integrate watershed and land use planning techniques in our watersheds.

The Mill Creek watershed offers extraordinary opportunities for watershed planning. The Fox Mill and Mill Creek development, as well as the soon to be developed Prairie Green site, are examples of cooperative planning with municipalities and wastewater reclamation districts. Other examples of cooperative planning based on watersheds in Kane County include the previously mentioned Fox River Study Group; the Blackberry, Waubonsie, and Big Rock Creek Watershed Plans; the Blackberry Creek Alternative Futures Plan; and, at the state level, the previously mentioned Integrated Management Plan for the Fox River Watershed as prepared by the Fox River Ecosystem Partnership and adopted by IDNR in 1999. The Kane County Forest Preserve District and local park districts are also cooperating in establishing the greenway system along our creeks and rivers. Last but not least, is the cooperative planning that was done between the county and the municipalities to adopt the Comprehensive Stormwater Management Plan in Kane County and the adoption and enforcement of a unified set of stormwater regulations across the county. The success of the stormwater management program in Kane County should be an inspiration for future cooperative planning that is needed to protect our irreplaceable surface water and groundwater resources. After completion of the ISWS/ISGS Water Resource Investigations, a comprehensive countywide source water protection plan, followed by a countywide water supply management ordinance, will be needed to help provide a sustainable drinking water supply for the future.

PLANNING ISSUES—WATER RESOURCES

Policies

1. Preserve and protect the quantity and quality of groundwater and surface water, the principal sources of potable water in Kane County, and encourage water conservation programs.
2. Develop a countywide source water protection plan, which would incorporate watershed based planning and scientific data on the geology and aquifer systems of the County in order to protect recharge areas and provide sustainable drinking water supplies for projected populations.
3. Preserve and improve the water quality of the Fox River and its tributaries and the tributaries of the Kishwaukee River in order to maximize their potential for wildlife habitat, recreational, and other uses.
4. Review and periodically update the Countywide Stormwater Management Plan and Stormwater Ordinance to incorporate new planning goals, new technology, updated regulations, and the results of watershed based planning.
5. Reclaim wastewater in an environmentally sound manner and conducive to public and aquatic health, including the encouragement of wastewater recycling and reuse systems, land applications of reclaimed wastewater, and wetland or other types of treatment to reduce and eliminate the impacts of nutrient discharges into rivers and creeks.
6. Maintain coordinated stream gauging, rainfall monitoring, and water quality stream sampling programs for all major streams in Kane County in cooperation with local, state, and federal agencies and programs.
7. Cooperate with the Forest Preserve, local government entities, and private landowners in the development of watershed preserves, conservation areas, greenways, wetlands and buffers in order to minimize the negative impacts of developing areas in our watersheds.
8. Develop watershed management plans for the remaining four major streams (Eakin, Tyler, Ferson-Otter, and Mill Creeks) in the Critical Growth Areas of Kane County.
9. Maintain a coordinated NPDES Phase II Program with local government entities under the Countywide Stormwater Management Program in order to reduce stormwater pollutants and to enhance water quality, aquatic health, and biodiversity in our streams and riparian areas.
10. Initiate legislation for the 6 county NIPC region to authorize creation of a countywide water authority in order to give the county authority to adopt a water supply management ordinance, but not including the authority to regulate the agricultural use of water.
11. Require that the Illinois Environmental Protection Agency deny amendments to any Facility Planning Area that would create a new or increased point source discharge where such discharges would prevent streams from achieving or maintaining a Class B or greater water quality stream rating.
12. Require that all FPA expansion requests include the water demand aspect of land use plans within the municipal planning area and the area of the proposed expansion and identify the source of supply to meet the long-term demand.

13. Require that all new or expanded wastewater treatment facilities, whether conventional or reclamation and recycling, be owned and operated by a unit of local government capable of assessing property taxes and imposing user fees.
14. Protect and preserve wetlands as an essential component of the hydrological system and wildlife habitat, and restore degraded wetland areas where possible.
15. Promote and encourage the use of design techniques, Best Management Practices, and other methods to ensure that imperviousness within developing watersheds does not exceed 15%.

Figure 57

Goals of the 208 Water Quality Management Plan for Northeastern Illinois

1. Restoration and maintenance of the chemical, physical, and biological integrity of the region's waters.
2. Elimination of all pollutant discharges into the region's waterways by 1985.
3. Water quality, which provides for the protection and propagation of fish, shellfish, and wildlife and provides for human recreation, wherever attainable, by July 1, 1983.
4. Elimination of all discharges of wastes or pollutants into Lake Michigan.

Figure 58

Point and Non-point Sources of Pollution

Point Sources:

- Conventional wastewater treatment plants
- Combined sewer overflows
- Industrial plants
- Illegal septic pumpage dumping
- Yard waste dumping
- Mining operations
- Landfills
- Feed lot and livestock runoff
- Illicit connections to storm sewers

Non-point sources:

- Construction site soil erosion
- Agricultural soil erosion
- Agricultural chemical runoff
- Lawn chemical runoff
- Impervious surface runoff, including oils, grease, gasoline spills, tire wear, de-icing salts, etc. from roadways, driveways, and parking lots
- Acid rain from air pollution
- Hydrologic modifications; for example, stream channelization, wetland filling and draining, etc.

Figure 59—Preliminary Map of Major Quaternary Aquifers

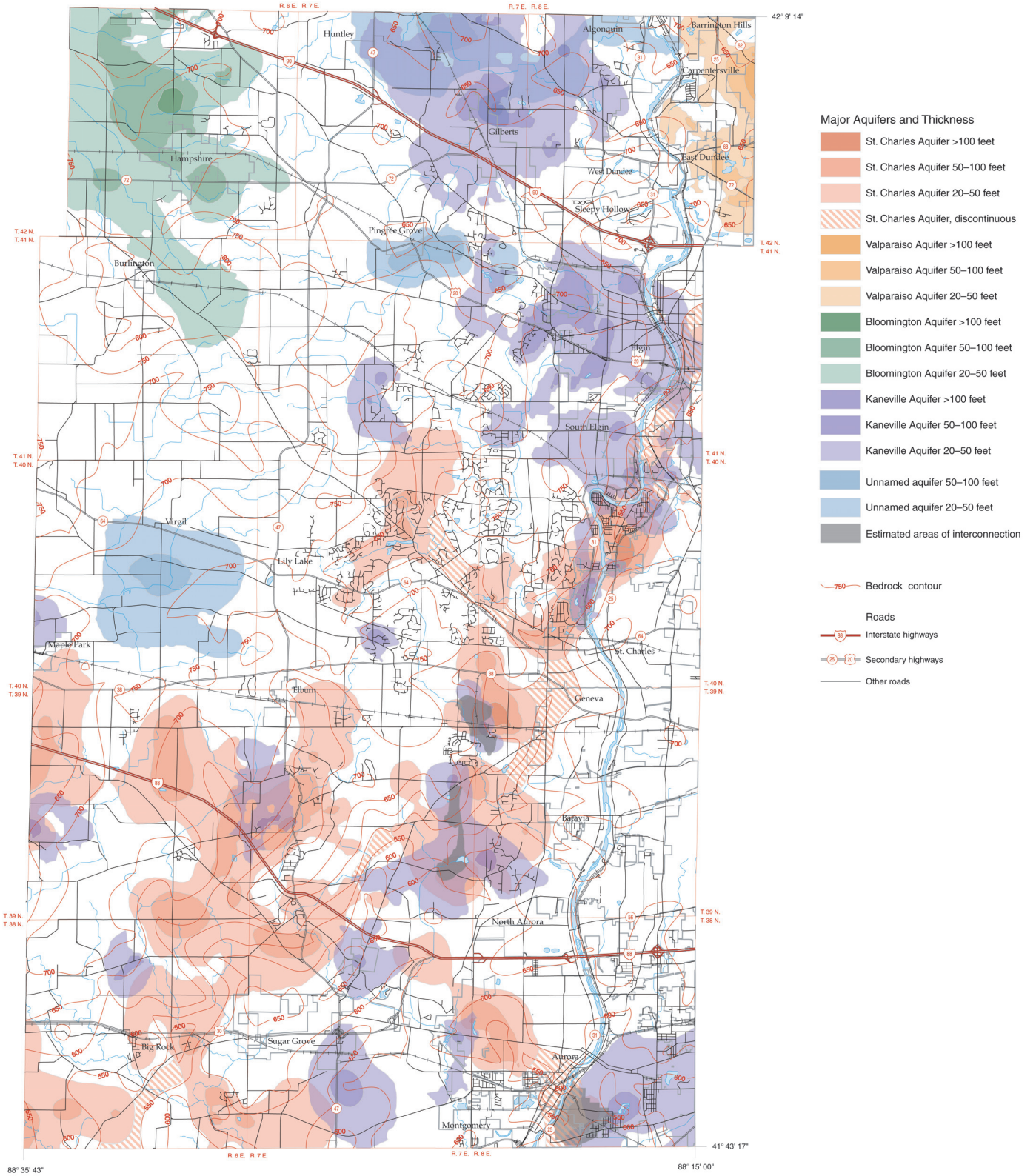


Figure 59 *continued*

Major Quaternary Aquifers

This map was produced as a part of *Kane County Water Resources Investigations: Interim Report on Geologic Investigations* (Dey et al. 2004) as part of a contract report for the *Water-Resources Investigations for Kane County, Illinois* (Meyer et al. 2002). Ongoing work by the Illinois State Geological Survey and Illinois State Water Survey will evaluate the groundwater resources of Kane County through three-dimensional geologic and groundwater flow modeling to estimate sustainable yields from major aquifers in Kane County.

According to Berg et al. (1989), in Illinois, major aquifers are defined as geologic units (sand and gravel or fractured and/or permeable bedrock) capable of yielding at least 100,000 gallons of water per day to wells completed in them (a designation consistent with the Water Use Act of 1983 P.A. 83-700). Quaternary aquifers in Kane County are thick sand and gravel deposits. At this preliminary stage of the project, it is impossible to accurately predict yield from any aquifer. The *Preliminary Map of Major Quaternary Aquifers*, *Kane County, Illinois* map depicts the location of large, contiguous sand and gravel deposits that may have the potential to meet the definition of major aquifer. The mapped units are greater than 50 feet thick at some points and are several square miles in extent. Boundaries were described where the aquifer thickness became less than 20 feet in order to conform to the aquifer sensitivity standard established by Berg (2001). The 20-foot thickness also was used to produce the *Preliminary Map of Aquifer Sensitivity to Contamination, Kane County, Illinois* (Dey et al. 2004).

Following the descriptions of Curry and Seaber (1990), Vaiden and Curry (1990) mapped four Quaternary aquifers that had the potential to be developed as public water supplies in Kane County:

1. The St. Charles Aquifer located in the St. Charles Bedrock Valley and its tributaries in eastern and southern Kane County. The St. Charles Aquifer is composed of sands and gravels of the Ashmore Tongue of the Henry Formation and Glasford Formation.
2. The Valparaiso Aquifer, located in northeast Kane County immediately below the ground surface. The Valparaiso Aquifer is composed of the surficial sand and gravel of the Henry Formation, the Beverly Tongue of the Henry Formation, and the Haeger Member of the Lemont Formation. Although Curry and Seaber (1990) included the Haeger diamicton in their definition of this aquifer, it is omitted on this preliminary map because too much uncertainty exists concerning the hydraulic properties of the diamicton.
3. The Bloomington Aquifer, located west of Marengo Ridge in northwestern Kane County. The Bloomington Aquifer consists of surficial sand and gravel of the Henry Formation and the Ashmore Tongue of the Henry Formation.
4. The Kaneville Aquifer (a member of the Elburn Aquiformation) is located discontinuously across Kane County. The Kaneville Aquifer is composed of surficial sands and gravels of the Henry Formation and sand and gravel deposits associated with the Batestown and Yorkville Till members of the Lemont Formation.

Methodology

The *Preliminary Map of Major Quaternary Aquifers, Kane County, Illinois* was constructed by compiling appropriate individual isopach (thickness) maps for each of the major sand and gravel units in the county. For example, the St. Charles Aquifer was delineated by combining isopach maps of the sands and gravels of Ashmore Tongue of the Henry Formation and sand and gravel deposits of the Glasford Formation. The combined thicknesses were superimposed on the bedrock topography map. The St. Charles Aquifer was identified as the thick sands in the vicinity of the St. Charles Bedrock Valley and its tributaries the Elburn and Montgomery Bedrock Valleys as well as the unnamed bedrock valley entering western Kane County near Maple Park. The crosshatching indicates probable areas of the occurrence of the aquifer, based on the geometry of the bedrock valleys but unsubstantiated by boring records.

Other potential aquifers were identified that were composed of the same sand and gravel units as the St. Charles Aquifer. These potential aquifers are not associated with the St. Charles Bedrock Valley or its tributary valleys and are identified as unnamed aquifers on the map.

The Valparaiso Aquifer was similarly delineated using isopachs of the sands and gravels defining it. The thickness is conservative since the overlying Haeger diamicton may have aquifer-like hydraulic properties. Also, other major sand and gravel units are present within the aquifer's boundaries. Forthcoming three-dimensional geologic modeling and groundwater flow modeling should clarify the interconnectivity of these units and the applicability of the Haeger diamicton as an aquifer.

In the eastern portion of the Bloomington Aquifer, the surficial sand and gravel of the Henry Formation is separated from sands and gravels of the Ashmore Tongue by more than 100 feet of Tiskilwa diamicton. In the west, the Tiskilwa diamicton is absent, and the sands and gravels form a single unit. The entire area is underlain by greater than 20 feet of sand and gravel of the Glasford Formation but is usually separated from the Bloomington Aquifer by greater than 20 feet of diamictons of the Glasford Formation. Where the aquifer extends into DeKalb County, the lower Glasford sands may be hydraulically connected to the Bloomington Aquifer. As with the Valparaiso Aquifer, ongoing investigations on this project should clarify any connection between these aquifers.

The Kaneville Aquifer is depicted where the sand and gravels defining it have a combined thickness of more than 20 feet and an area greater than 1 square mile. Three-dimensional modeling will assess where the Kaneville Aquifer has significant hydraulic interaction with the St. Charles Aquifer and other underlying aquifers. Initial estimates of these areas are indicated on the map as dark gray areas. The areas indicated are where the fine-textured units separating the St. Charles and Kaneville Aquifers are less than 3 feet thick or absent.

Application

This map is useful for county-scale planning. Three-dimensional geologic modeling and groundwater flow modeling will undoubtedly change the delineation and possibly the definition of the specific aquifers shown on the map. Groundwater modeling should provide estimates of sustainable yield from these aquifers. This map should not be used as a substitute for site-specific work. A revised version of this map is scheduled to be published in April 2005.

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Disclaimer:

Geology based on field work by authors.

Digital cartography by A. Davis, Illinois State Geological Survey

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Base map compiled from the United States Geological Survey 1:100,000-Scale Digital Line Graph Data North American Datum 1983. Transverse Mercator Projection.

This Illinois Preliminary Geologic Map (IPGM) is a lightly edited product, subject to less than the IGQ (Illinois Geologic Quadrangle) mapping products. A final product is due to be published in April 2007.

The Illinois State Geological Survey, the Illinois Department of Natural Resources, and the State of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this document and accept no liability for the consequences of decisions made by others on the basis of the information presented here. The geologic interpretations are based on data that may vary with respect to accuracy of geographic location, the type and quantity of data available at each location, and the scientific/technical qualifications of the data sources. Maps or cross sections in this document are not meant to be enlarged.

Figure 60

Influence of Impervious Cover on the Hydrologic Cycle

As precipitation falls, it is captured by plant leaves, infiltrates into the soil, quenches plant roots, and replenishes base flows to streams and rivers. Urban pollutants are filtered and groundwater reservoirs are recharged. Development creates impervious surfaces, such as roads, parking lots, and buildings. Impervious surfaces refer to land cover, both natural and human-made, that cannot be penetrated by water. As impervious surface area increases, precipitation is not allowed to infiltrate naturally into the soil, causing rapid surface runoff. During rains, stormwater quickly runs from impervious surfaces to storm drains and often directly into our streams and rivers. Pollutants that have accumulated on roads, driveways and urban lawns are directed into our streams and rivers. Impervious surface coverage as low as 10% can destabilize a stream channel, raise water temperature, and reduce water quality and biodiversity (EPA). Fortunately, there are many ways to minimize the damage caused by mass grading, paving, and construction.

Source: Environmental Protection Agency.

Figure 61

Kane County Projected Water Withdrawls

Compared to Population and Per Capita Usage 2010-2030

Year	Population	Total Water Withdrawls All Uses	Gallons Per Capita Per Day Water Withdrawls All Uses
1980	278,000	37.5 mgd	134.89
1990	317,000	44.5 mgd	140.38
2000	404,000	61.0 mgd	150.99
2002	443,000	67.0 mgd	151.24
2010	**466,000**	**73.5 mgd**	**157.81**
2020	**550,000**	**91.1 mgd**	**165.71**
2030	**692,000**	**120.1 mgd**	**173.60**

High Capacity (⇢10,000 gdp)

Municipal, Industrial and Irrigation Wells

Figure 62

Water Resource Protection Guidelines

Groundwater:

- Proper handling and disposal of chemicals and fertilizers
- Proper installation and maintenance of private sewage disposal facilities
- Lining of landfills and proper treatment of the leachate
- Sealing of abandoned wells
- Use of water conservation plumbing fixtures and repair of plumbing leaks
- Use of native plants and plants that require little or no water

Surface Water:

- Soil erosion and sediment control on construction sites
- Conservation tillage and proper application of chemicals and fertilizers for agriculture production
- Water quality standards and Best Management Practices for new site development
- River, stream, and wetland buffer strips

Both:

- Reduce air pollution from fossil fuels that create acid rain
- Reuse and recycle wastewater
- Wetland protection and recreation
- Appropriate planning and management of wastewater discharges from new development

Figure 63—Fox River & Kish River Tributaries in Kane Co. Map

FOX RIVER and KISHWAUKEE RIVER TRIBUTARIES in KANE COUNTY

and their Biological Stream Characterization

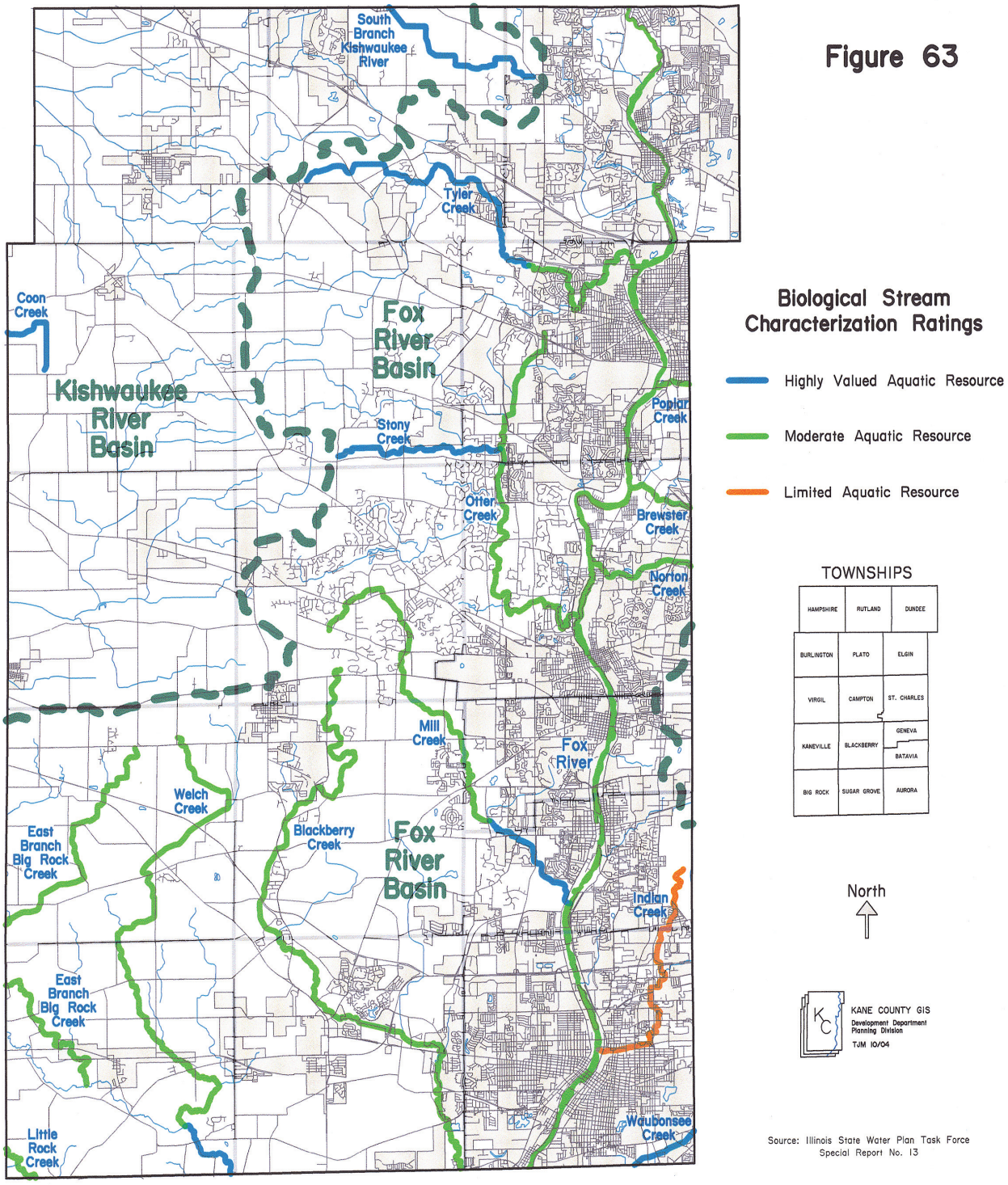

Figure 64

Ecological Functions of Wetlands

- Protect the quality of surface waters by slowing the erosive forces of moving water.
- Reduce flood peaks by providing a natural means of flood control, pollution filtering, and storm damage protection, thereby protecting against the loss of life and property.
- Improve water quality by intercepting and reducing water-borne sediments, excess nutrients, heavy metals, and other pollutants.
- Provide food and shelter, breeding, spawning, nesting, and wintering habitats for fish and wildlife, including migratory birds and commercially and recreationally important species.
- Provide habitat protection for many threatened and endangered species of plants and animals.

Figure 65

Extended Aeration Wastewater Recycling and Reuse Facility

An extended aeration wastewater recycling facility with land application treats wastewater as a recyclable resource rather than a disposable commodity. Extended aeration lagoons treat and store effluent. Treated wastewater is sprayed over a large area, such as a farm field, golf course, pasture, or other open space. Vegetation absorbs nitrogen and phosphorus as the water percolates through the soil. Instead of being treated and discharged to surface water where they are non-beneficial, these essential nutrients are recycled for plant growth, especially applicable to irrigation of agricultural fields, golf courses, landscaped areas, etc. While many conventional wastewater treatment plants struggle to meet federal standards, land application eliminates point source discharge to surface waters, and produces effluent that meets regulatory standards. Land application systems, through the elimination of point source discharges, help maintain and improve the quality of Kane County's major water resources, as well as provide opportunities to meet the objectives of the countywide open space system.

Figure 66

Watershed and Biodiversity Protection

Encourage local citizens to offer ideas for habitat preservation and restoration in community visioning exercises.

Identify lands with high habitat value and lands with good restoration potential and designate them as natural resource preserves in comprehensive plans and watershed plans.

Designate stream corridors, swales and hydric-soil networks as open-space links in watershed and comprehensive plans.

Adopt zoning ordinances that require developers to protect and restore natural resources, to provide buffers for wetlands and streams, to minimize impervious surfaces and to cluster home sites. Adopt subdivision regulations that require:

- inventory of natural habitats, designation of hydric soils, and location of underground tiles at the sketch-plan stage;
- design of detention areas to achieve or approach zero discharge for two-year storms;
- preservation of habitats and hydric soil systems; and
- buffers for wetlands, streams, and drainage corridors.

Creatively design annexation and development agreements to protect and restore natural resources to the highest possible degree, including immediate identification and protection of major resources and a process for identification and protection of other resources in later stages.

Adopt intergovernmental agreements between or among neighboring communities to coordinate protection and restoration of natural resources and of hydrology.

Source: Biodiversity Recovery Plan, Chicago Wilderness, 1999.

Figure 67—Preliminary Map of Aquifer Sensitivity to Contamination Map

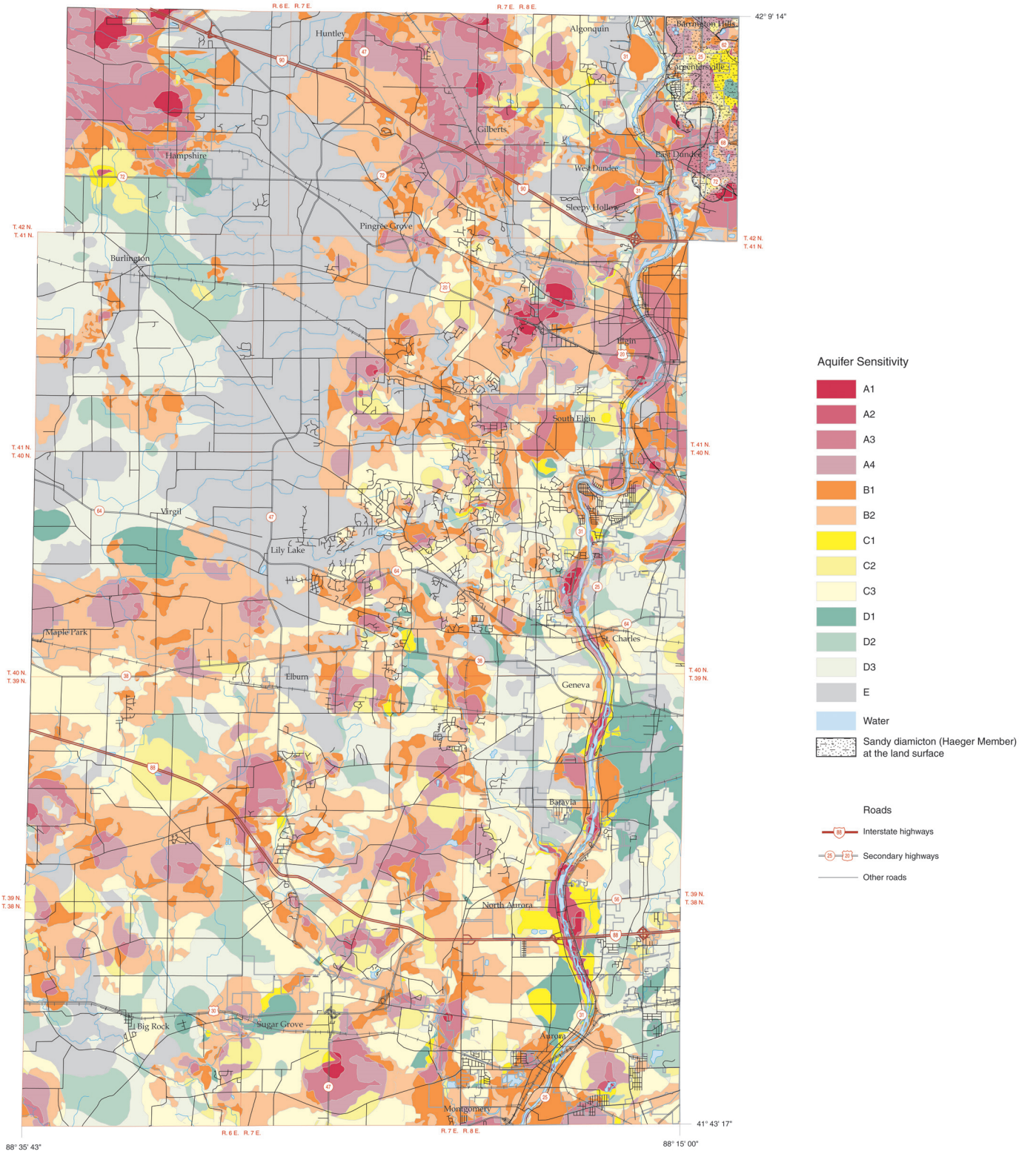

Figure 67 *continued*

Aquifer Sensitivity Map

This map was produced as a part of *Kane County Water Resources Investigations: Interim Report on Geologic Investigations* (Dey et al. 2004) as part of a contract report for the *Water-Resources Investigations for Kane County, Illinois* (Meyer et al. 2002). This map depicts relative potential for aquifers to become contaminated from sources at or near the ground surface. The method for classifying aquifer sensitivity used in this map is based upon work by Berg (2001). Aquifers are defined as geologic materials that are saturated and sufficiently permeable to yield economic quantities of water to wells or springs (Fetter 1994). In Kane County, shallow aquifers are generally composed of unlithified, well-sorted sand and gravel deposits or bedrock units of fractured carbonates. For this map, sand and gravel deposits were defined as an aquifer where the units were greater than 5 feet thick and extended over at least one square mile. Carbonate bedrock of Silurian age was defined as an aquifer where it was the uppermost bedrock unit and greater than 15 feet thick. The Silurian rock tends to be heavily fractured at its surface (Graese et al. 1988). Geologic materials that would be classified as an aquifer, but which above the water table (and therefore not saturated), were grouped with aquifers in the interpretation for this map. Glacial diamicton (an unsorted mixture of gravel, sand, silt, and clay-commonly called till), windblown silt (loess), peat, silty and clayey river and lake sediment, shale, and unfractured carbonate bedrock are not considered aquifers because they are generally fine grained and have limited potential to yield water to a well. This map was produced by combining isopach (thickness) maps of aquifers with maps that indicate the depth to the aquifer's uppermost surface.

Aquifer Sensitivity Map Units

The aquifer sensitivity classification rates sequences from Map Unit A to Map Unit E according to decreasing sensitivity to aquifer contamination (Berg 2001).

Map Unit A: High Potential for Aquifer Contamination

Map Unit A is defined as areas with sand and gravel or high-permeability bedrock aquifers greater than 20 feet thick and where the upper surface of the aquifer is within 20 feet below the land surface.

Map Unit A1 Areas where aquifers are greater than 50 feet thick and are within 5 feet below the land surface.

Map Unit A2 Areas where aquifers are greater than 50 feet thick and are between 5 and 20 feet below the land surface.

Map Unit A3 Areas where aquifers are between 20 and 50 feet thick and are within 5 feet below the land surface.

Map Unit A4 Areas where aquifers are between 20 and 50 feet thick and are between 5 and 20 feet below the land surface.

Map Unit B: Moderately High Potential for Aquifer Contamination

Map Unit B is defined as areas where aquifers are less than 20 feet thick and its upper surface is within 20 feet below the land surface.

Map Unit B1 Areas where sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick and either aquifer type is within 5 feet below the land surface.

Map Unit B2 Areas where sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick and either aquifer type is between 5 and 20 feet below the land surface.

Map Unit C: Moderate Potential for Aquifer Contamination

Map Unit C is defined as areas where the upper surfaces of sand and gravel or high-permeability bedrock aquifers are between 20 and 50 feet below the land surface and the overlying material is fine grained.

Map Unit C1 Areas where aquifers are greater than 50 feet thick and are between 20 and 50 feet below the land surface.

Map Unit C2 Areas where aquifers are between 20 and 50 feet thick and are between 20 and 50 feet below the land surface.

Map Unit C3 Areas where sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick and either aquifer type is between 20 and 50 feet below the land surface.

Map Unit D: Moderately Low Potential for Aquifer Contamination

Map Unit D is defined as areas where the upper surfaces of sand and gravel or high-permeability bedrock aquifers are between 50 and 100 feet below the land surface and the overlying material is fine grained.

Map Unit D1 Areas where aquifers are greater than 50 feet thick and are between 50 and 100 feet below the land surface.

Map Unit D2 Areas where aquifers are between 20 and 50 feet thick and are between 50 and 100 feet below the land surface.

Map Unit D3 Areas where sand and gravel aquifers are between 5 and 20 feet thick or high-permeability bedrock aquifers are between 15 and 20 feet thick and either aquifer type is between 50 and 100 feet below the land surface

Map Unit E: Low Potential for Aquifer Contamination

Map Unit E is defined as areas where no sand and gravel or high-permeability bedrock aquifer is within 100 feet below the land surface and the overlying material is fine grained.

Overprint Pattern: Sandy Diamicton (Haeger) at Land Surface

The overprint pattern indicates where the Haeger diamicton is at the land surface. Diamicton of the Haeger Member of the Lemont Formation is a sandy loam and contains abundant, discontinuous lenses of sand and gravel. This diamicton's presence over an aquifer does not offer the same potential protection from contamination as an equal thickness of finer-grained diamicton. Areas with the pattern have higher sensitivity to contamination than areas without the pattern.

Applications

This map is intended to be used for county-scale planning and is based on generalized textural properties and assumptions about hydraulic characteristics of geologic materials and hydraulic gradients, but is not based on results from water quality or groundwater flow analysis. This map should not be used as a substitute for evaluation of individual sites. A revised edition of this map is scheduled to be published in 2007.

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Disclaimer:

Geology based on field work by authors.

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Base map compiled from the United States Geological Survey 1:100,000-Scale Digital Line Graph Data North American Datum 1983. Transverse Mercator Projection.

This Illinois Preliminary Geologic Map (IPGM) is a lightly edited product, subject to less scientific and cartographic review. A final product is due to be published in April 2007.

The Illinois State Geological Survey, the Illinois Department of Natural Resources, and the State of Illinois make no guarantee, expressed or implied, regarding the correctness of the interpretations presented in this document and accept no liability for the consequences of decisions made by others on the basis of the information presented here. The geologic interpretations are based on data that may vary with respect to accuracy of geographic location, the type and quantity of data available at each location, and the scientific/technical qualifications of the data sources. Maps or cross sections in this document are not meant to be enlarged.

Figure 68

Lawn Care—Water Conservation Methods

Simple water conservation and lawn maintenance techniques can greatly reduce the amount of water wasted through evaporation and surface runoff.

- **Set mower blades high**

  Maintaining grass at a 2.5- to 3-inch height helps grass and soil to retain moisture, helps grass grow deeper root systems, and minimizes weed growth.
- **During droughts, if you have a well-established healthy lawn, let it go dormant**

  Lawns naturally turn brown and become dormant to survive heat and dry spells. Your lawn will survive a drought period and will recover once rain and cooler weather return.
- **Leave grass clipping on lawn**

  Grass clippings replenish moisture and add nutrients, such as nitrogen, to the soil.
- **Replace portions of your lawn with native plants.**

  Once established, native plants grown long root systems, becoming self-sufficient.
- **Consider a water-conserving turf grass.**

If you choose to water your lawn, use wise watering practices:

- **Limit watering to the early morning or evening.**

  Watering in the early morning or evening, during the coolest part of the day, will allow nearly all of the water you use to be effective. Watering between 10 p.m. and 8 a.m. can reduce evaporation loss by 15 to 20%.
- **Don't water during hot or windy times of the day.**
- **Keep your spray pattern coarse, low and slow.**
- **It's more beneficial to water once a week for a longer period of time, than more frequently.**

  This trains the grass roots to grow deeper in the soil, which is healthy for the lawn. Plants that are used to infrequent watering will grow deeper roots and get along with less water than plants that continually receive water.

PLANNING ISSUES—HISTORIC PRESERVATION

Objectives

1. To protect and maintain historic and architectural resources that contribute to Kane County's heritage and historic character while protecting identity and unique sense of place.
2. To incorporate the efforts of the county's Preservation Program in planning and development review.
3. To promote public awareness regarding the value of architectural, natural, and historic resources within the county.
4. Promote the Rustic Road Program and expand the list of rural and scenic byways that are designated and protected in order to preserve and enhance the county's rural character.
5. To maintain and improve preservation partnerships with municipal governments and encourage all municipalities to adopt preservation ordinances.
6. To coordinate county preservation efforts with state and local preservation agencies and organizations.

Chapter Focus

New development and the resulting changes in the landscape prompted the Kane County Board to adopt a historic preservation program in 1988—1989. The program's aim is to preserve the character of the county's unique communities and to protect its valuable historic resources. The components of the program—the 2030 Land Resource Management Plan, Rural Structures Survey, Historic Preservation Ordinance, Preservation Plan and Register of Historic Places and the Rustic Road Program—are all tools used by the Historic Preservation Commission and the Kane County Board to address preservation issues facing the county. The county has designated 30 historic landmarks, 13 since 1996, one rustic road and one historic district. The historic preservation program addresses a variety of issues, including the preservation and redevelopment of older downtowns, protection of historic resources and landscapes to balance new development, and the preservation and adaptive reuse of agricultural buildings.

This chapter examines:

- Historic Character
- Historic Resource Protection
- Kane County Historic Preservation Program

Historic Character

Over time, development has had conflicting effects on the historic character of the Urban Corridor, the Critical Growth Area, and the Agricultural/Rural Village Area of the county. These three distinct areas have different types of historic resources and different issues of development or neglect that require varied and innovative approaches to ensure their continued or adaptive use.

Located in the eastern portion of the county, the Urban Corridor contains most of the county's historical commercial and residential buildings. As communities grow and change, these buildings provide opportunities for rehabilitation and reuse while also enhancing the original urban and neighborhood character. Historic resources are often threatened and sometimes lost when significant buildings or development patterns are not recognized and protected. The county's Preservation Program provides local communities with assistance and support to sustain their historic resources. Furthermore, the Preservation Program fosters cooperation between municipalities that have established preservation

ordinances and offers assistance to municipalities that have yet to fully recognize and protect their historic resources. Educational conferences and mobile tours cosponsored by the Kane County Historic Preservation Commission provide opportunities for these groups to work together to develop strategies for meeting the preservation challenges within the Urban Corridor.

The Critical Growth Area also provides unique historic preservation challenges and requires planning and innovative actions. As previously farmed and natural areas are developed either by municipal incorporation or by County Board action, there is a great potential for loss of character-defining landscapes and important historic resources. The county has integrated preservation planning into the earliest phases of the development review process to minimize loss of historic resources. Developers are made aware of important sites identified by the Rural Structures Survey and are strongly encouraged to incorporate existing houses and farmsteads into new developments. The protection of these sites contributes to the important visual characteristics of the area.

The Agricultural/Rural Village Area in western Kane County contains rural villages that are long-time centers of commercial and social activities. In its adopted Preservation Plan, the County Board recognized the importance of these rural villages and called for careful treatment of their historic qualities. Although the quantity and type of their commercial uses have changed over the years, rural villages still provide a social and cultural focus as well as limited services to the surrounding area. Further, the villages are the best location for new shops and services needed for expanding residential development. It is important that the villages retain their character and sense of identity as they change or grow. Businesses should be encouraged to locate in existing buildings. New buildings and site layouts should complement and reinforce existing development patterns and building architecture.

The agricultural area of the county includes historic and scenic resources nestled within highly productive farmland. Historic farmsteads dot the countryside providing visual landmarks and serving as the working elements of 150 years of agricultural history in Kane County. Fences, hedgerows, and scenic vistas combine with farmsteads to define the area's character. Intrusions into this setting easily distract from its appeal and diminish its unique beauty. The continued viable use of the different elements of a working farm challenges preservationists and farmers to work together to develop innovative solutions for integrating historic farm structures with modern farming practices (Refer to Figure 69).

Historic Resource Protection

Historic resources in Kane County include residential buildings from different periods, farmsteads and agricultural outbuildings, rural villages, scenic vistas, geological features and landscapes, commercial and industrial buildings, and road corridors. Structures such as water tanks, windmills, bridges, and cemetery art have historic significance in Kane County. Some of these resources are in pristine condition, while others may be in states of decay or alteration. The county preservation program recognizes there is more to historic preservation than merely preservation of buildings and structures. Vistas, landscapes and geological features also have historic significance.

These resources are threatened by demolition, inappropriate rehabilitation, widening and new construction of roads, and new development. Neglecting historic resources

reinforces public perception that old buildings and structures are of little value. As Kane County grows, it is important to plan for the protection of historic resources, especially along transportation routes. The construction of new roads and the widening of existing roads can endanger or adversely affect historic buildings and alter the character of rural villages and landscapes. Locations and parking layouts for new or expanded commuter rail stations should be planned with consideration for surrounding community features and character. Careful planning of trail systems can allow greater access to historic sites and resources as well as provide opportunities for the public to enjoy these assets.

Preservation of historic resources is best accomplished through advanced and coordinated planning efforts. As municipalities annex land, newly incorporated areas may include historic resources. Some of these resources may be on the Kane County Register of Historic Places while others, although not designated, may have significant historic value. As of 2003, six municipalities had preservation ordinances offering designation and protection of landmarks. Some offer as much protection as the county's Historic Preservation Ordinance, while others do not. Coordination between the county and municipalities is critical to preserve significant buildings and landscapes so that none are demolished or significantly altered as a result of annexation.

Kane County can protect municipal landmarks through intergovernmental agreements, technical assistance in establishing programs in communities without preservation tools and help to strengthen municipal ordinances. The continued success of the Kane County Historic Preservation Program requires citizen support. The county must work with the municipalities, historical and historic resource preservation organizations, and the general public to communicate the importance of Kane County's historic resources.

Kane County Historic Preservation Program

A Kane County Historic Preservation Study committee was established in 1987 to oversee the Rural Structures Survey, evaluate historic resources, and determine if action was needed to protect the county's historic resources. After completing the survey, the committee recommended a preservation ordinance and establishment of a Historic Preservation Commission.

The 1986—1987 Rural Structures Survey inventoried all structures built before 1945 in unincorporated Kane County and unincorporated rural villages west of the Fox River, Urban Corridor. Identified structures varied from homes and barns to water tanks and a bridge. Three age groups were used in the survey: 1800—1859, 1860—1910, and 1910—1945. Only 14% of the buildings in the survey were built between 1800 and 1859. The limited number of buildings remaining from the early settlement period strengthens the argument for their protection. Results of the Rural Structures Survey were reported in *Built for Farming: A Guide to the Historic Rural Architecture of Kane County* published in 1991.

Adopted unanimously by the Kane County Board in 1988, the Historic Preservation Ordinance was the first such ordinance adopted by a county in the State of Illinois. The ordinance established a Historic Preservation Commission with authority to recommend landmarks and historic districts for designation by the County Board to the Kane County Register of Historic Places. The commission has the authority to review significant exterior alterations, additions, new construction or demolitions proposed for designated landmarks or within historic districts.

PLANNING ISSUES—HISTORIC PRESERVATION

In 1989, the County Board adopted the Kane County Historic Preservation Plan as an amendment to the county's 1982 Land Use Plan. Included in the plan are specific goals, objectives, and strategies for preserving the county's character and protecting historic resources. With the adoption of the Historic Preservation Ordinance and Plan, Kane County was the first county in Illinois to be recognized as a Certified Local Government, making the county eligible for historic preservation grants.

The Kane County Register of Historic Places is the official list of county landmarks, historic districts and road corridors recognized for their historical, architectural and scenic significance, as well as for their architectural or aesthetic importance, interest, or value. Resources having local, state, or national significance are eligible for designation and may be protected by the Historic Preservation Ordinance. Properties placed on the Kane County Register of Historic Places are protected from demolition or damaging alterations through county review processes (Refer to Figure 70).

As of July 2000 the Historic Preservation Ordinance was amended to allow for the designation and preservation of rustic road corridors in Kane County. A rustic road corridor preserves and protects the road's unique features as specified by the Corridor Management Plan. Rustic roads tell part of the story of Kane County's history by preserving natural and built features along the road. Thurnau Road in Rutland Township was designated as Kane Country's first rustic road by the County Board on February 10, 2004. Thurnau Road is a gravel road that meanders through cropland and stands of mature oak trees passing by horses and 100-year old barns. Brundige Road in Blackberry and Campton Township is in the process of being designated a rustic road corridor.

Descriptive permanent bronze plaques are placed on designated landmarks to foster public awareness and appreciation. The county is dedicated to expanding the Register of Historic Places by systematically reviewing potential historic and/or scenic sites and areas, encouraging nominations, and publicizing new landmarks, historic districts, and road corridors.

Policies

1. Encourage preservation of older irreplaceable structures such as houses, outbuildings, bridges, and fences to retain a sense of local identity, visual beauty, and architectural diversity.
2. Protect Kane County's scenic character and visual beauty.
3. Facilitate the reuse of existing buildings in ways appropriate to their character.
4. Encourage new development in village centers compatible with existing architecture and community character.
5. Enhance property values by encouraging the continued maintenance of buildings.
6. Provide opportunities for education and encourage continued study of county architectural and historic resources through publications such as *Built for Farming: A Guide to the Historic Rural Architecture of Kane County*, brochures, programs such as "That Darn Barn", and other resources.
7. Provide technical information to assist property owner's research and restoration efforts.
8. Assist historical societies, museums, and other preservation organizations in Kane County with their public education and preservation efforts.

9. Work in partnership with municipalities to promote and to protect historic resources, encouraging adoption of historic preservation ordinances when appropriate.
10. Retain the county's status as a Certified Local Government through the Illinois Historic Preservation Agency.
11. Support Kane County's Rustic Roads Program to preserve character and scenic vistas for future generations.

Figure 69

Kane County Rural Structures Survey—

Historic Resources Surveyed

In 1986—87 Kane County surveyed 3,966 sites containing approximately 26,000 historic resources. These resources include:

Residential Buildings

Queen Anne	Greek Revival
Prairie Square	Italianate
Bungalow	Colonial Revival
Tudor Revival	Federal
Carpenter Gothic	Vernacular

Agricultural Outbuildings

Barns	Chicken Coops
Corn Cribs	Summer Kitchens
Silos	Outhouses
Granaries	Smokehouses
Hog Houses	Pump Houses

Churches

Public Buildings

Commercial Buildings

Industrial Buildings

Structures

Water Tanks	Bridges
Windmills	Cemetery Architecture

Rural Hamlets and Villages

Archeological Sites

Landscapes and Natural Features

Source: *Built for Farming: A Guide to the Historic Rural Architecture of Kane County*, Kane County Development Department, 1991.

Figure 70—Kane Co. Landmarks Map

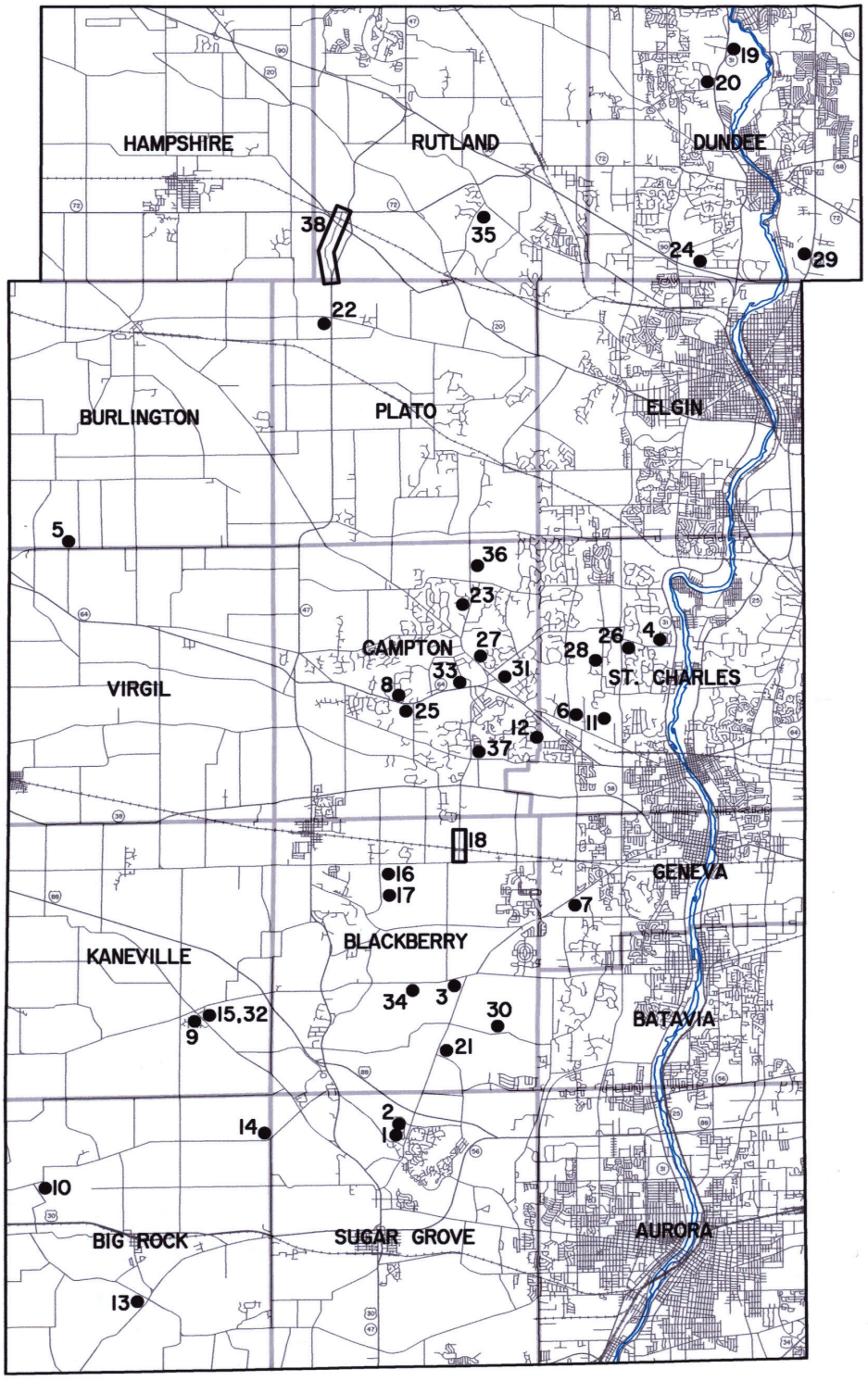


Figure 70

1. J.H. Bliss Homestead
2. P.Y. Bliss Homestead
3. Stearns-Wadsworth House (also on National Register)
4. Red Gate Farm
5. South Burlington Community House
6. Wilson Homestead
7. Peck Homestead
8. Eber Chaffee Farmstead
9. Dr. Hardy's Office
10. Lamson Homestead
11. Durant-Peterson House (also on National Register)
12. Daniel Lincoln Homestead
13. Withered Oaks
14. Benjamin George House
15. Benton Homestead
16. Pouley Estate
17. Blackberry Creek Farm
18. La Fox Historic District
19. Perry-Lathrop Homestead
20. Meadowdale Country School
21. Norris House
22. Old St. Peter's Church Building
23. God's Little Acre Cemetery
24. John Schmidtke House and Landscape
25. Campton Town Hall (also on National Register)
26. Harlow Hooker Homestead
27. Fischer Homestead
28. Primrose Farm
29. Country Tea Room
30. Reckinger Farm
31. Eddy-Swanson Farmstead
32. Farley House
33. Campton Community Center
34. Hinds Farmstead
35. Damisch Farmstead
36. Corron Farm
37. Beatty Homestead - Mongerson Farm
38. Thurnau Road (Rustic Road)

Figure 71

Kane County Rustic Roads Program

Many of the roads in Kane County reveal the rural character of the area. The view of the countryside along these roads gives a sense of stability in a fast-changing world. Points of visual interest along a rustic road, both natural and man made, add to the enjoyment of roadside scenery and to a sense of place. In Kane County rustic roads provide views of Midwestern vernacular—gently rolling woods and expansive farm fields, the Fox River and its tributaries, autumn color, farmhouses, barns, hedgerows and churches.

Roadside land is often the first and most visible land converted to residential or commercial uses. The **Rustic Roads** program was established under the Kane County Historic Preservation Ordinance to designate and preserve natural character and scenic vistas for future generations. The Rustic Roads program promotes:

1. **A Sense of Place**, by preserving community identity and quality of life;
2. **Resource Preservation**, by protecting the significant scenic, natural and historic resources that are often located within rustic road corridors.
3. **Economic Development**, by generating tourist revenue through the promotion of the scenic beauty of the county; and
4. **Recreation**, by providing enjoyment for those who enjoy driving for pleasure and sightseeing.

The designation process includes gathering input from property owners within and adjacent to nominated road corridors, the appropriate highway authority public officials and other governmental jurisdictions.

Rustic Road designation does not "freeze" roads in time. During the designation process, a Corridor Management Plan is developed that defines the significant features of the road corridor that should be protected and enhanced. Traffic and life safety issues continue to be addressed while those features are preserved. Designated road corridors minimally include the road right-of-way and can also include properties and features adjacent to the right-of-way. The program applies to roads located in unincorporated Kane County and may include municipal roads through intergovernmental agreements.

Source: Kane County Development Department, 2004.

Figure 72

15 Year Anniversary of Historic Preservation in Kane County

June 2003 marked the 15th anniversary of the Kane County Historic Preservation Program and the Historic Preservation Ordinance. This 15-year period is highlighted by the following accomplishments:

- 35 individual landmarks designated by the Kane County Board
- The first unincorporated historic district in Illinois designated by the Kane County Board
- Rustic Roads Program adopted as an amendment to the Preservation Ordinance
- Seven national, state, and local preservation awards recognizing the efforts of the County Board, the Preservation Commission, and Development Department staff
- Publications: *Kane County Preservation Plan, Built for Farming,* and *That Darn Barn*
- Calendars: 1997 That Darn Barn, 2002 Rustic Roads, 2004 Preserving Kane County's Heritage
- Co-sponsorship of county-wide preservation conferences and bus tours
- Advocacy for over $3 million in riverboat grants awarded by the Kane County Board for preservation projects.

Source: Kane County Development Department, 2004.

PLANNING ISSUES—PUBLIC SAFETY

Objectives

1. To support a high level of law enforcement protection to Kane County in a cost-efficient, coordinated, cooperative, and effective manner.
2. To support a high level of fire protection and ambulance services for Kane County in a cost-efficient, coordinated, cooperative, and effective manner.
3. To support a high level of emergency dispatch for Kane County in a cost-efficient, coordinated, cooperative, and effective manner.
4. To support disaster mitigation, preparedness, response, and recovery from all types of disasters that may befall Kane County.

Chapter Focus

One of the fundamental responsibilities of a local government is to ensure the health, safety, and welfare of its citizens. This responsibility is addressed in a number of different ways: police protection, traffic and pedestrian safety, fire protection and ambulance service, emergency dispatch, emergency management, and public safety design. These services are supported by wise land uses and building designs fostering a sense of community and a secure environment.

This chapter examines:

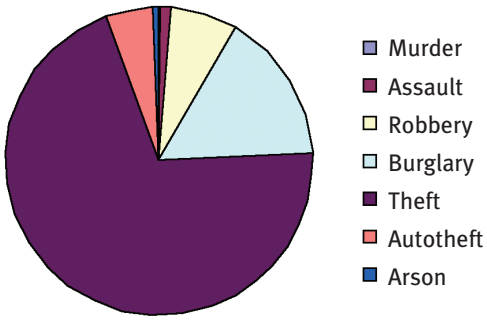
- Police Protection
- Traffic and Pedestrian Safety
- Fire Protection and Ambulance Service
- Emergency Dispatch
- Emergency Management
- Public Safety Design

Police Protection

In 2001, Kane County was served by 1,135 highly trained, full-time law enforcement officers from 23 government units, according to the Illinois Statistical Abstract. Of these officers, 92% were employed by 22 municipal police departments and 8% were employed by the Kane County Sheriff's Office. Both the police departments and the sheriff's office are responsible for the protection of life and property. The sheriff's office has the additional duty of providing security for the Circuit County and the county correctional facilities. The Illinois State Police provide an additional level of patrol on state and county highways.

Figure 73

Crime in Kane County—2002



Note: Crimes reported to sheriff's departments and not reported elsewhere. *Source: Illinois County Statistical Abstract, 2003.*

When a village submits a request for incorporation to Kane County, Ordinance 90-226 requires that the County Board first determine the proposed incorporation is compatible with the official county land use plan and all necessary municipal services will be provided to village residents. The most fundamental of these services is police protection.

In 2000, there were 13,105 traffic accidents in all of Kane County, both incorporated and unincorporated. Of those accidents, 4,398 or 34% involved injuries. In 2001, 13,121 crimes were recorded in the county. Of these, 89% were property crimes (burglary, theft, motor vehicle theft, and arson) and 11% were violent crimes.

Kane County has several community crime and drug prevention programs: Operation Identification, Officer Friendly/McGruff Crime Prevention Dog, Operation Child Identification, sexual assault prevention education, gang awareness, education for gang evasion, and drug abuse resistance education.

Traffic and Pedestrian Safety

Safe roads, sidewalks, paths, and public transportation facilities such as bus and train depots are essential for overall community well being. As the region becomes more suburbanized, the result is a higher number of arterial streets with high-speed traffic, fewer sidewalks or crosswalks, and stores, shops, and offices accessible only by car. According to the Surface Transportation Policy Project, these environments have been shown to be the most dangerous for walkers. The injury and fatality rates for young pedestrians is unnecessarily high—pedestrian crashes are one of the biggest killers of children ages 5 to 9. Children are often engrossed in play activities and don't know or understand the danger of moving vehicles.

Traffic-calming techniques are physical measures that reduce the negative effects of motor vehicle use and improve conditions for nonmotorized street users. Traffic-calming circles, raised crosswalks, and boulevards are some of the techniques applied in residential neighborhoods and in local commercial shopping districts. The U.S. Department of Transportation, Federal Highway Administration, summarizes the general objectives of traffic calming:

- Promote safe and pleasant conditions for motorists, bicyclists, pedestrians, and residents,
- Improve the environment and livability of neighborhood streets,
- Reduce vehicular speeds,
- Discourage use of residential streets by non-citizens cut through vehicular traffic, and
- Encourage citizen involvement in the traffic calming process by incorporating the preferences and requirements of the citizens (Refer to Figure 74).

Other safety solutions include substituting angled parking for parallel on street parking, reducing traffic speeds to help drivers detect children, and providing safe places for children to wait for school buses. Roadways, ditches, and missing connections between sidewalks are unsafe and can easily be improved to provide safe bus stop locations.

It is important to note that safety is also a perception, and cannot be solely captured by traffic statistics and data. Roadways, sidewalks, and bikeways should provide the user with a level of comfort and safety. Road design has traditionally focused on efficient movement of vehicles as the primary objective. An alternative approach equally weighs the safety, both perceived and real, of pedestrians and bicyclists with that of the motorist. This means comprehensively designing the road network to include sidewalks and crossings for pedestrians, clearly designated bike paths for bicyclists, and vehicle lanes. Inclusive road design benefits all of the user groups. One application is lighted crosswalks that are triggered when a pedestrian enters the crosswalk. This benefits both the motorist and the pedestrian, especially at dusk or dark.

Fire Protection and Ambulance Service

Kane County is served by 38 fire protection agencies (Refer to Figure 75). The fire districts in Kane County received ratings ranging from 3 to 9 (on a scale of 1 to 10) from the Nationwide Insurance Service Office. Ratings are used to set insurance premiums. A major criterion for achieving high ratings is a reliable municipal water supply system for hydrants and fire suppression systems. Historically in Kane County, coordination and assistance between fire departments has been exceptional. In the greater Chicago region, virtually all municipal and rural fire protection districts belong to the Mutual Aide Box Alarm System. This system allows for greater fire protection through the use of resources from neighboring fire districts for an emergency exceeding the capabilities of the requesting fire department. In Kane County, there are two divisions of the Mutual Aid Box Alarm System: the northern 6 townships are in division two, while the remaining 10 townships are in division thirteen.

Along with coordination and assistance between fire departments and districts, fire prevention and education programs also play an important role in fire safety. Fire prevention and education programs include Sparky the Fire Dog, Children's Safety Town, Learn Not to Burn, Fire Prevention Week, Fire Fighter for the Day, home fire drills, home fire safety advisory checks, and business and industrial fire brigades.

The use of the ambulance has profoundly changed delivery of medical care. At one time, the emphasis of the ambulance rested on the speed with which the patient could be transported to the nearest hospital. Today, however, fully equipped vehicles and technically trained personnel have transformed the ambulance into an emergency room on wheels. A similar emergency service is the aeromedical helicopter service, which operates in Kane County. Staffed by two pilots, a paramedic, and a nurse, the medical helicopter transports severe trauma and non-trauma patients to the nearest trauma center. These "life-flights" have roughly a 200-mile service radius, placing high quality and specialized medical care within an hour's flight time.

Kane County has four hospitals: Provena Mercy Center for Health Care Services in Aurora, Delnor Community Hospital in Geneva, and Saint Joseph Hospital and Sherman Hospital in Elgin. All of these hospitals have a Level II trauma center, in which board-certified surgeons are on duty 24 hours/7 days a week. Future medical services in Kane County may include mobile health units that screen patients for health problems and provide immunizations, health education, and basic medical treatment, as well as MedNite, a satellite uplink for both audio and video specialized medical consultation.

Emergency Dispatch

Emergency dispatch is the routing of law enforcement, fire protection, and emergency medical services to an emergency location. The 911 emergency telephone number covers all of Kane County. Dialing 911 connects the caller to one of ten emergency dispatch centers in Kane County. Kane County is currently utilizing the Enhanced 911 System. Enhanced 911 displays the telephone number and location of the phone originating the call, an emergency route, and the correct responding public safety agencies. Each telephone service line is coded to the correct emergency dispatch center, and another nearby emergency dispatch station backs each dispatch center. Cell phones at this time are the exception to the Enhanced 911 system, because they do not provide place of origin when placing a 911 call. However, cell phones do provide fast response times where a home phone cannot be accessed in emergency situations. Technical advances being implemented by emergency dispatch include computer-aided dispatch, telecommunication devices for the deaf, multi-lingual language line, silent dispatch, and pre-arrival instruction. Many of these advances are available from emergency dispatch centers in Kane County.

Emergency Management

The Federal Emergency Management Agency (FEMA) is responsible for establishing policies and programs for emergency management at the federal, state, county, and municipal levels. This responsibility includes the management of national procedures for the full range of disasters, whether natural or technological, or national security crises. The most likely disasters that may affect Kane County are tornados, flooding, and hazardous materials incidents.

In Kane County, the Kane County Office of Emergency Management (OEM), formerly known as the Kane County Emergency Services and Disaster Agency was established to prevent, minimize, repair, and alleviate injury or damage resulting from natural or man-made disasters. To achieve this task, the OEM has developed an emergency operation plan that charges several service and governmental agencies with performing specific duties during an emergency. These agencies include local law enforcement, building departments, fire districts, and school districts; the American Red Cross and Salvation Army; the Kane County Board and Chairman; and the Kane County Coroner, Development Department, Forest Preserve District, Health Department, and the Division of Transportation.

The Kane County OEM also has agreements with local emergency service and disaster agencies for joint assistance during emergencies; and has assisted in the preparation of specific disaster plans for local businesses, industries, and institutions. The Kane County OEM has assisted the Elgin Community College and the Juvenile Justice Center to develop a disaster plan, and has developed a model disaster plan for Kane County schools.

The Kane County OEM utilizes 30 trained uniformed, organized, and ranked volunteers for a number of functions. These functions include snow, water, and forests search and rescue; mobile command and communication that includes a broad spectrum of emergency public safety frequencies; disaster lighting; and transport of materials such as sandbags to construct flood protection. Specific weather-related Kane County OEM operations are Power Outage, Noah's Ark for flooding, Snowflake for blizzard, and Thunderhead for heavy rains. Another regional emergency management volunteer organization is the Multi-County Severe Weather Warning System coordinated by the National Weather Service. In Kane County, about 40 trained volunteer weather spotters assess severe weather conditions at specific locations near their work or home. When the National Weather Service issues a severe weather warning, spotters are alerted by radio and travel to their assigned locations near their work or home from which they radio-relay details of weather conditions. Kane County is one of 16 counties in the region which belongs to the Multi-County Severe Weather Warning System.

Due to the increased demand for terrorism preparedness, the Kane County OEM has placed 80% of their functioning in association with terrorism preparedness. The Kane County OEM sits on the Governor's Terrorist Task Force, works with all municipalities to write policies and procedures in preparation for terrorism attacks, and has written a new plan titled the *County's Response to Terrorism*.

Public Safety Design

A major part of protecting life and property is crime prevention. Traditionally, crime prevention has sought to discourage criminal behavior by apprehending and removing lawbreakers from society. Another approach to crime prevention focuses on the built environment instead of on the criminal. A safe, well-used and maintained environment consists of public spaces including: parks, plazas, and central squares; pedestrian friendly streets with sidewalks and paths; and open, well lit buildings. In such public safety designed spaces, the opportunity for crime is minimized and the fear of crime is reduced.

A well-designed neighborhood creates a strong sense of ownership, pride, and enjoyment in the total environment. Principles of design can be applied to neighborhoods so that its surroundings are under the view of community residents and therefore significantly more secure.

This approach draws upon Jane Jacob's concept of "eyes on the street." Oscar Newman, author of *Defensible Space, Crime Prevention Through Urban Design*, has carried this concept further with the term "defensible space," which he defines as a safe, functional, and well-maintained environment. Defensible space utilizes land use planning and building design techniques that foster a sense of community. Residents share a common terrain and common responsibility for its security. Several elements of physical design can contribute to building a sense of place and a secure environment:

- provide common open space in residential areas to create a sense of community and to improve the watch over the neighborhood;
- create a sense of common terrain by using the same landscape, lighting, or paving material throughout the public spaces of a residential development;
- increase pedestrian usage while slowing vehicular traffic;
- place windows to allow for surveillance of interior and exterior space;
- design well-lit entryways; and
- place appropriate lighting in parking areas at shopping and work places.

Defensible space gives people confidence in their neighborhoods. The goal of defensible space design is to make communities the setting for neighborly connection, thus deterring crime. Common public spaces for adults and play areas for children bring people together. Improving the physical security of a community encourages a climate of civility.

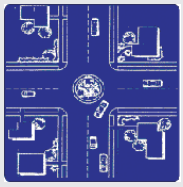
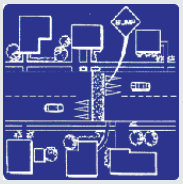
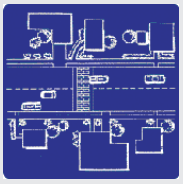
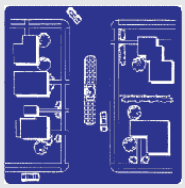
Neighborhood Watch, Block Watch, or Citizen Crime Watch are popular community policing programs that reduce crime and criminal opportunity by promoting the concept of neighbors looking out for each other. These community-policing programs facilitate communication and cooperative relationships between neighbors as well as create real and psychological deterrents to criminal activity. Homeowner organizations make ideal neighborhood watch units to establish forums for neighborhood meetings to discuss crime prevention programs and self-help techniques (Refer to Figure 76).

Policies

1. Assist the appropriate Kane County governmental agencies in protecting the health, safety, and welfare of county residents.
2. Promote crime prevention through the incorporation of defensible space techniques and other crime prevention programs.
3. Include standards for neighborhood and pedestrian safety in design and subdivision review.
4. Include the strict enforcement of fire prevention standards in all county building codes.
5. Support continued cooperation between the separate emergency dispatch centers.
6. Support Kane County Emergency Management Agency disaster programs.
7. Require that any proposal for new incorporation clearly demonstrate the capacity to provide full level police protection and patrol service.
8. Support the establishment of a countywide Neighborhood Watch task force to achieve better cooperation between individual municipal and county Neighborhood Watch programs.

Figure 74

Provide Safe Pedestrian Environments With Traffic Calming Techniques

TRAFFIC CIRCLES	Barriers placed in the middle of an intersection, directing all traffic in the same direction.		
SPEED HUMPS	Rounded raised pavement devices placed across roadways to slow and/or discourage traffic. a.k.a. road humps, undulations		
RAISED CROSSWALKS	Flat-topped speed humps often constructed with a brick or other textured material to slow traffic.		
BOULEVARDS	A broad thoroughfare with landscape, sidewalk, or pedestrian improvements, often with a landscaped median or center divider, that functions as a linear open space.		

Source: Traffic Calming Measures, U.S. Department of Transportation, Federal Highway Administration; A Planners Dictionary, APA PAS Report Number 521/522, American Planning Association; www. trafficcalming.org (drawings) and City of Seattle (pictures).

Figure 75

Kane County Fire Protection Agencies

Fire Departments

Algonquin Fire Department
Aurora Fire Department
Batavia Fire Department
Carpentersville Fire Department
Caterpillar Tractor Fire Department
East Dundee Fire Department
Elgin Fire Department
Fermi National Accelerator Laboratory Fire Department
Geneva Fire Department
Huntley Fire Department
Montgomery Fire Department
St. Charles Fire Department
Sugar Grove Fire Department
West Dundee Fire Department

Fire Protection Districts

Algonquin Fire Protection District
Bartlett/Countryside Fire Protection District
Batavia Fire Protection District
Big Rock Fire Protection District
Burlington Fire Protection District
Carpentersville Fire Protection District
East Dundee Fire Protection District
Elburn/Countryside Fire Protection District
Geneva Fire Protection District
Hampshire Fire Protection District
Huntley Fire Protection District
Kaneville Fire Protection District
Maple Park Fire Protection District
Marywood Fire Protection District
Moecherville Fire Protection District
Montgomery Fire Protection District
North Aurora Fire Protection District
Pingree-Plato Fire Protection District
Rutland and Dundee Fire Protection District
South Elgin/Countryside Fire Protection District
South Park Fire Protection District
St. Charles Countryside Fire Protection District
Sugar Grove Fire Protection District
West Dundee Fire Protection District

Figure 76

Ten Steps to Create a Safer Neighborhood

Planners Al Zelinka and Dean Brennan in their recently published book *SafeScape: Creating Safer, More Livable Communities Through Planning and Design* show how to use design, planning and zoning to enhance community safety.

1. **Park your car and walk.** In addition to being good exercise, walking puts "eyes on the street" and provides an opportunity to interact with neighbors. Seeing and being seen in your neighborhood is an essential ingredient in preventing crimes of opportunity.
2. **Check that street signs — both directional and safety — are in place.** A lack of wayfinding information makes people uncomfortable and hesitant to visit a neighborhood. Ask neighbors to post house numbers so they are visible from the street both day and night.
3. **Make sure all streetlights function properly and provide as much illumination as possible.** Street lighting helps illuminate potential hiding places both along the street and around houses and other structures.
4. **Hold a neighborhood clean-up day.** Properties that are well maintained signal pride in a community. When pride is lacking, disrespect for, and erosion of, neighborhoods grow. A poorly maintained neighborhood sends a mental message that it is an unsafe neighborhood.
5. **Prune trees and shrubs.** Overgrown trees and shrubs provide hiding places and limit the ability of the residents to see what's going on along the streets and sidewalks. Trees and shrubs can also provide hiding places around houses, allowing someone to break in without being seen.
6. **Plant a community garden.** Vacant lots attract unwanted activities and often become littered with debris. A garden, with plots available to residents, adds color and activity to the neighborhood in addition to providing nutritious vegetables for the dinner table. Community gardens can also serve as informal gathering places for neighborhood residents and facilitate resident interaction.
7. **Pull back your curtains, open your blinds, and sit on your front porch.** Spend time in rooms and outdoor spaces that allow you to observe what others are doing outside your home. It will help you recognize who belongs and who doesn't. The more "eyes on the street," the better.
8. **Slow down the cars and traffic.** Talk to local planners and governmental officials about "traffic calming" ideas. Speed humps, one-way designations, and traffic circles are just a few of the many tools in the traffic calming kit.
9. **Encourage schools and churches in your neighborhood to hold outdoor activities.** Church and school activities occur, all too often, inside a building. Ask school and church leaders to hold activities and events that bring students, parents, and congregants outside and provide more "eyes on the street." These facilities can also be used for neighborhood meetings and informal resident gatherings.
10. **Conduct a neighborhood safety audit.** Invite police, fire and planning officials to join residents for a walk through the neighborhood. The purpose of the audit, which should be conducted after dark since lack of adequate lighting is often a major contributor to unsafe conditions, is to identify potentially unsafe areas. Residents then can work with local government officials to address identified issues.

Source: Brennan, Dean and Al Zelinka, SafeScape: Creating Safer, More Livable Communities Through Planning and Design, APA Planners Press, 2001.

PLANNING ISSUES—EDUCATIONAL SERVICES

Objectives

1. To facilitate and support the availability of quality public school systems efficiently and conveniently serving all parts of Kane County.
2. To acknowledge the importance of the educational services provided by the school districts servicing Kane County by encouraging appropriate school district participation in the development review process.
3. To recognize that development impacts the capital and operational expenses of school districts and their ability to provide quality educational services.
4. To recognize the acquisition of school sites with other public improvements as an integral part of an overall system of community facilities.
5. To encourage municipalities to coordinate land use planning in recognition of the effects of new residential developments on school districts by ensuring that the capital costs of schools are incorporated in any land use decisions.
6. To advocate and support State of Illinois legislative action that will provide adequate funding of public education for both capital and operational expenses.

Chapter Focus

As growth and development occurs in Kane County, school districts experience increased student enrollment and require additional funds. The State of Illinois holds the primary responsibility for financing public education, according to the state constitution. However, the present level of state funding does not provide the majority of revenues to school districts. The majority of funding comes from local property taxes. Through local governments, schools receive additional funding from land/cash ordinances as a result of new development. It is important for local governments to facilitate relationships between developers and school districts to ensure compensation for new students. Through land use planning, local governments can also control growth in their communities, the necessity of new schools, and the influence and timing of new school construction. Kane County is committed to working with municipalities and will continue to coordinate land use planning activities with the municipalities, give school districts the opportunity to participate in the development review process, and annually review the county land/cash contribution ordinance. Cooperative efforts by the state, the county, municipalities, schools, and private developers can support one of the county's most important attributes, its educational services.

This chapter examines:

- Kane County school districts
- School funding
- School expenses and infrastructure
- Future directions for educational services

Kane County School Districts

There are 15 school districts whose areas are entirely or partially within Kane County. Nine of these school districts have their administrative offices within the county and are served by the Kane County Regional Office of Education. Figure 77 depicts Kane County school district and township boundaries. School districts administered by the Kane County Regional Office of Education are depicted in blue. School districts administered by adjoining counties are shaded in gray.

The nine community unit school districts of Kane County provide education for elementary, junior high/middle school, and high school students. Student enrollment in these districts during school year 2001 - 2002 increased by 25,000 since 1993 to approximately 105,000. It should be noted that the figure of 105,000 includes students residing outside Kane County, yet whose school districts report to the Kane County Regional Office of Education. For example, some students residing in Cook County may attend school in Elgin District #U-46, which is administered by the Kane County Regional Office of Education. Conversely, some students living within Kane County may attend school in a district reporting to an adjacent county. These students are not included in the 105,000 reported by the Kane County Regional Office of Education.

In school year 2001 - 2002, there were 11,033 students from Kane County and the surrounding area enrolled in non-public (private and parochial) schools in Kane County. These students comprised 11% of the total school population enrolled in public and non-public schools in the county. The majority of non-public school students attended approximately 30 private and parochial schools.

The rate of student enrollment growth in the nine community unit school districts of Kane County can be indicated by percentage growth or numeric growth (Refer to Figure 78). By percentage growth, the fastest growth school districts between 1993 and 2001 were Geneva School District #304 at 62%, Kaneland School District #302 at 38%, and Dundee School District #300 at 35%. Numerically, the fastest growing districts were Elgin School District #U-46 (an additional 8,621 students), Dundee School District #300 (an additional 4,482 students), and St. Charles School District #303 (an additional 2,762 students).

Increased student enrollment is due to four factors: (1) new residential development, (2) regeneration of older neighborhoods, (3) good quality schools, and (4) expanding families. New residential developments often attract younger families with school age children. As younger families regenerate older, existing neighborhoods, they contribute to the influx of school enrollment. Regenerated neighborhoods are often attributable to the good reputation of a community's school district. As families expand in size, school districts also gain additional children.

Over time, school districts experience population fluctuations as families with school-age children mature. This cycle generally occurs over a 20-to 25-year period. When the population cycle is at its lowest and there are smaller numbers of school-age children, the result is excess school capacity. When the cycle is at its height with larger numbers of school-age children, school districts may experience overcrowding. This cycle needs to be addressed when making investments for school facilities.

Higher Education

Kane County is served by two public community colleges, Waubonsee Community College (WCC) in Sugar Grove and Elgin Community College (ECC) in Elgin. The community colleges provide accredited coursework designed for Associate degrees and certificates. These include Associate of Art or Science and Associate of Applied Science in career and technical areas. In addition, adult basic education, English as a second language, non-credit continuing education, and workforce development are provided to the community. Bachelor and Master Degree opportunities are provided by Judson College (Elgin) and Aurora University (Aurora). A number of regional colleges and universities offer courses at the community colleges or in other local facilities in Kane County.

In 2001, the Elgin Community College student body included 9,636 students with 75% attending part time and 25% attending full time. Ethnic minorities were 37% of the total student body and the average age of an ECC student was 28 years old. One-third, or 1,000 of 3,000 area high school graduates, choose ECC every year.

Waubonsee Community College's (WCC) enrollment for spring 2003 was 9,362 with 21% attending full time and 79% attending part time. Ethnic minorities are approximately 37% of the total student body, and the average age of a WCC student is 30 years old. Of those students receiving Associate Degrees, 72% transfer to four-year schools. Of those, 85% of the transfer students attend Illinois colleges and universities.

In addition to college transfer programs, both community colleges are actively involved in workforce development. They serve by offering occupational degree and certificate programs in a number of areas leading to certification, continuing professional education, and customized training for business, industry and government organizations. Additionally, they are involved as partners in the Workforce Investment Act through their local Illinois Employment and Training Centers (IETCs).

Aurora University is an independent, comprehensive university founded in 1893 offering 40 undergraduate degrees, 6 masters degrees, and 2 doctoral degrees. More than 4,000 degree seeking students and approximately 10,000 non-degree program students are enrolled in Illinois, Iowa and Wisconsin. The average age is 24 years old for undergraduate students and 31 years old for graduate students. The university is organized into four colleges: the College of Arts and Sciences, George Williams College including the School of Nursing, School of Social Work and School of Professional Studies, College of Business, and College of Education.

Judson College is a fully accredited, four-year college in Elgin. The college is an American Baptist affiliated, evangelical Christian college of liberal arts, sciences and professions. It is co-ed and offers a Bachelor of Arts degree through traditional college course work. The college provides educational opportunities for working adults through the Adult Instructional Model Program, which enables working adults to earn an undergraduate degree through flexible class scheduling and college course credits over the Internet.

School Funding

According to the 1970 State of Illinois constitution, "The State has the primary responsibility for financing the system of public education" (Article 10, paragraph 1). However, state sources actually account for only about one-third of school funding, while local revenues, primarily the local property tax, supply over 50% of financing. In school year 2000—2001, the proportion of financing for all school districts in Illinois was local revenues, 52%; state, 38%; and federal, 10%. In Kane County, the proportion of school revenues was local, 70%; state, 26%; and federal, 4%.

An increase in state funding of education in accordance with the state's constitutional mandate is necessary. Increasing the state's share of funding could, if properly administered, benefit educational services, as well as serve to reduce individual property taxes. In addition, school districts should continue to seek alternative sources of revenue from grants, foundations, and other non-taxed funds.

Currently, approximately 65% of an individual's property tax supports public education. The exact percentage of property taxes given to each school district is derived from state aid formulas. The amount of state revenues provided to each school district varies with the relative wealth of each district (as measured by property values), the number of students attending, a measure of the incidence of poverty, and the local tax effort exerted by the school district, as measured by minimum qualifying property tax rates. This description of the state aid formula was taken from the report, "State, Local, and Federal Financing for Illinois Public Schools, 1994-95," p.1 published by the Illinois State Board of Education.

The property value component of the formula is calculated as one-third of the assessed market value as determined by the township assessor. This calculation is termed the equalized assessed valuation (EAV) of property; and is determined for each school district on a per-pupil basis. The equalization factor is determined at the state level. Kane County's equalization factor generally approaches 1.0. Differences in property values between districts sometimes results in inequities in state revenues received by school districts.

The amount of revenue each school district receives from property taxes is based upon a function of the total school tax rate multiplied by the EAV in the district. In 2001 - 2002, Kane County's total school tax rates per district ranged from 4.01% to 5.18% with a median of 4.38%. EAV had a far greater spread, ranging from $300 million in Central School district #301 to $3.2 billion in Elgin District #U-46, with a median of $747 million.

School districts listed by proportion of revenues received from property taxes approximate their order by EAV/pupil. In school year 2001 - 2002, Geneva School District #304 received the highest proportion of revenues from local sources (primarily property taxes) at 83%. East Aurora School District #131 received the lowest proportion at 36%. The median for all Kane County school districts was 72%. St. Charles District #303 had the highest EAV/pupil at $155,781, while East Aurora District #131 had the lowest at $45,208. The median for all county school districts was $113,513 (Refer to Figure 79).

School Expenses and Infrastructure

School financing is broken into two categories, capital and operational expenses. Funds for capital expenses are derived from voter-approved referendum bonds, primarily financed through property taxes and land/cash contributions from new developments. In recent years, the State of Illinois has provided some funds for capital expenses. However, the local school districts and taxpayers provide the majority of capital expense funds. When school districts face overcrowding, they must consider whether to pursue the construction of new buildings or additions, or to utilize existing facilities in new ways. A primary consideration by school districts is whether a new building will be utilized over the long-term as enrollment fluctuates. When a school district deems that new facilities are required to best serve the district's children, a property tax increase is usually necessary to finance construction.

Operational funds cover the costs of teacher and staff salaries; all moveable supplies; equipment, building and grounds upkeep and repair; transportation; and employee benefits. Over 60% of the operational funds for the school districts of Kane County are derived from property taxes. The remaining portion is contributed from state and federal sources. During 2001 - 2002, the average operating expenditure per child in Kane County schools (both elementary and high schools) was $7,518. Central School District #301 had the highest operating expenditure per child at $8,411; East Aurora #131 had the lowest at

$6,507 (Refer to Figure 79). The operating expenditure figures are based on per ADA (Average Daily Attendance).

A school districts' capital and operational funds are often impacted by new and existing residential land uses. Balanced growth management can help reduce a school district's needs for new capital infrastructure. This begins by a coordinated effort by the county and municipalities to plan for a balanced variety of land uses. In regard to educational services, the aim is to provide tax revenue sources and an appropriate distribution of residential development such that the educational services can be provided for residents in a timely manner. Municipalities have a powerful tool in the form of annexation agreements to assure full funding of school capital needs. Developments that do not provide capital contributions through annexation agreements to school districts should be discouraged.

Kane County school districts obtain a relatively small proportion of capital funds through land/cash contributions from new developments. In many cases, land/cash contributions account for less than 10% of the funds needed for facilities and land. The land/cash contribution for new development in unincorporated Kane County is authorized by state legislation and required by the Kane County Subdivision Regulations. The amount of a land/cash contribution is determined through a formula established by the Land/Cash Subcommittee of the Development Committee of the Kane County Board. The Development Committee reviews the Land/Cash Ordinance with the Regional Superintendent of Schools on an annual basis, amending it as needed (Refer to Figure 80).

In the past, there has been an effort to pass state legislation that would enable school districts to collect capital impact fees from new residential development (Refer to Figure 80). Capital impact fees would contribute a portion of the funds for the new and improved facilities required by increased student enrollment. They can be designed to be sensitive to revenue as well as demand and cost. Legislation allowing the use of capital impact fees would enable any county or municipality experiencing growth to enact ordinances to collect such fees. Several municipalities in Kane County have recently approved capital impact fee ordinances.

Legislation for impact fees should incorporate the following elements:

- needs assessment and long-range planning;
- clearly defined uses of fees including land acquisition and site improvements, construction of facilities, and/or additions to existing buildings;
- provisions to strengthen intergovernmental communication and cooperation;
- local discretion regarding details of procedure and implementation; and
- accountability requirement

Future Direction for Educational Services

Quality of life in Kane County is directly tied to the quality of its school system. The caliber of educational services is one of the most critical areas a family examines when deciding where to live, thus directly affecting property values. The school system also affects the county's economic vitality through its role in training future citizens and the work force. In addition, the county's schools form a critical component of public infrastructure.

Continued growth and expansion of schools, mostly in the critical growth portion of the county, is expected during the next 25 years. The national trends in education include a variety of initiatives, including multiple disciplinary studies, block scheduling, year-round school, multiple assessments, higher levels of accountability,

and greater utilization of technology. At the federal level, No Child Left Behind will continue to have a strong influence on local control and decision making.

Kane County will continue to provide opportunities for school district input and advice throughout the development review process on matters pertaining to schools. There are several stages in the county subdivision review process that provide for school district comments (Refer to Figure 81). Kane County also encourages the municipalities to provide increased opportunities for school district input in their development review processes.

To build better neighborhoods and more livable communities, schools should be thought of as an integrated part of the community rather than as an independent entity. The planning and design of more community-centered schools can enhance education opportunities for all ages, improve walkability to schools and after-school events, and provide a central location for community activities. This can be accomplished through a combination of more compact suburban development and a renaissance of cities and towns, so that residential development is balanced with appropriate commercial, industrial, institutional, and open space uses.

Policies

1. Promote balanced growth by planning an appropriate amount of commercial, research, or industrial uses addressing growing school district needs to cover capital and operational costs.
2. Promote land use policies that recognize the capital and operational impacts of residential development on Kane County school districts.
3. Recognize that the planning decisions made by Kane County and the municipalities directly affect applicable school districts and their ability to maintain current levels of educational services.
4. Recommend that sites for new school facilities be carefully selected so that they are easily accessible by walking to the maximum number of students without adversely impacting the transportation network or surrounding land uses.
5. Encourage the use of school facilities for multiple purposes, including parks, recreation centers, and community meeting places.
6. Review the Kane County Land/Cash Ordinance with the Kane County Regional Office of Education on an annual basis.
7. Encourage and promote good communication between Kane County and the school districts through the objectives established for the Planning Partnership Areas.
8. Work with Kane County municipalities, the Regional Office of Education, and school districts to address school funding at the state level.
9. Encourage and support the Kane County Regional Office of Education and local school districts in seeking resources such as grants, foundation contributions, and non-taxed funds for school operations.

Figure 77—School District & Township Boundaries Map

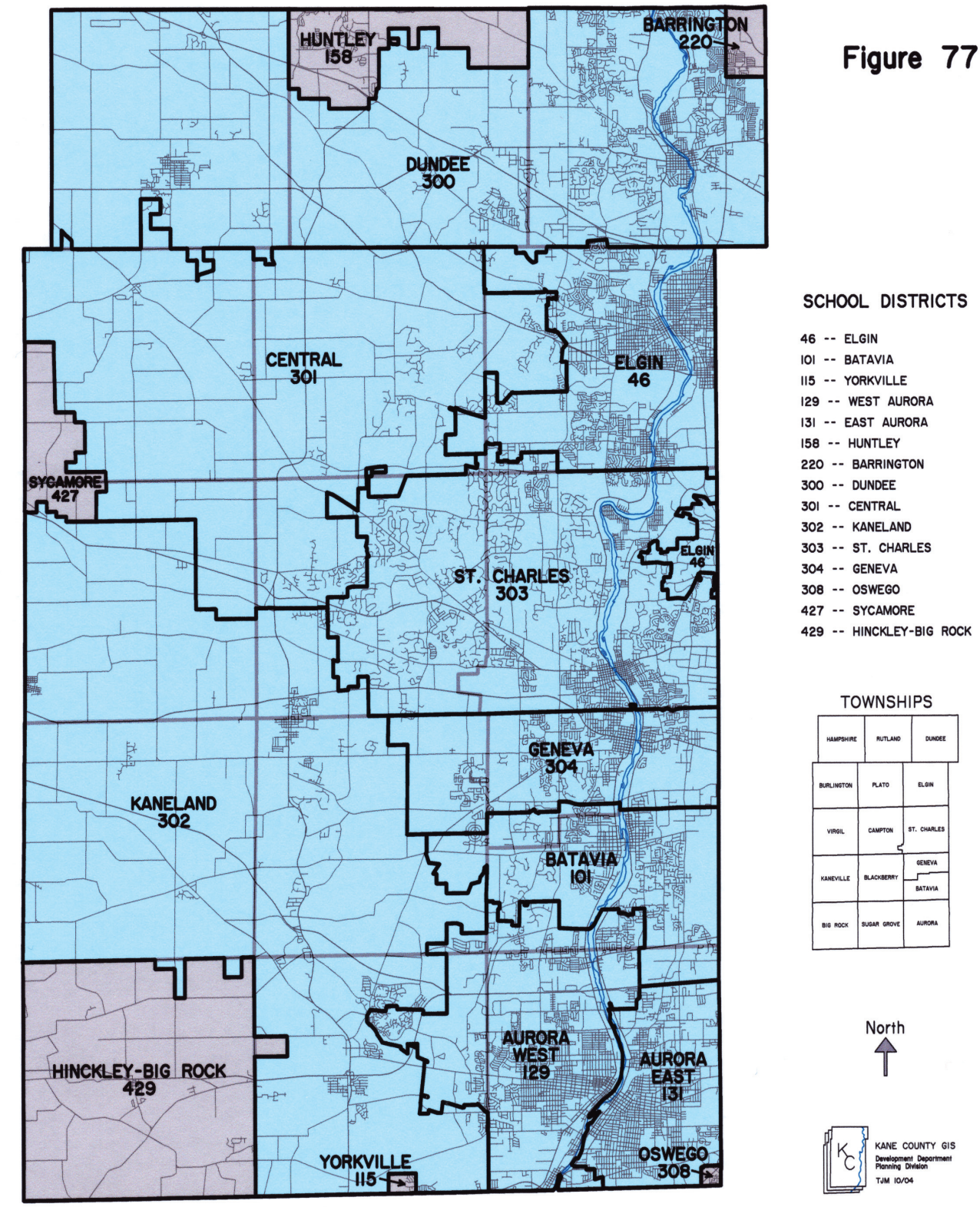


Figure 78

Student Enrollment in School Districts Served by the Kane County Regional Office of Education

	Enrollment as of 1983	Enrollment as of 1993	Enrollment as of 2001	Percent Change (1993 to 2001)
Elgin U-46	25,212	29,377	37,998	29.3
Batavia #101	2,848	4,349	5,776	32.8
Aurora West #129	8,513	8,628	11,110	28.8
Aurora East #131	8,757	9,038	10,888	20.5
Dundee #300	10,451	12,675	17,157	35.4
Central #301	1,143	1,766	2,306	30.6
Kaneland #302	1,951	2,080	2,862	37.6
St. Charles #303	6,568	8,987	11,749	30.7
Geneva #304	1,959	3,136	5,071	61.7
Kane County Total	67,402	80,036	104,917	31.1

1. Source: Kane County Regional Office of Education, Annual Report, July 1, 1983—June 30, 1984.
2. Source: Kane County Regional Office of Education, Annual Report, June 1, 1993—June 30, 1994.
3. Source: Kane County Regional Office of Education, Annual Report, July 1, 2001—June 30, 2002.

Figure 79

School Year Tax and Pupil Costs

	Enrollment as of 11/011	Average Daily Attendance[1]	2001 Equalized Assessed Valuation[2]	2001 Equalized Assessed Valuation/ Average Daily Attendance	Total School Tax Rate2	Operating Expenditures (K-12)2	Operating Expenditures/ Average Daily Attendance
Elgin U-46	37,998	34,581	$2,945,085,654	$85,164	5.23	$269,139,603	$7,782
Batavia #101	5,776	5,330	$571,081,422	$107,144	4.65	$34,839,970	$6,536
Aurora West #129	11,110	9,739	$896,698,603	$92,072	4.24	$61,418,450	$6,306
Aurora East # 131	10,888	9,619	$416,954,853	$43,347	4.65	$60,009,650	$6,238
Dundee #300	17,157	15,375	$1,599,324,524	$104,021	3.88	$102,204,154	$6,647
Central #301	2,306	2,137	$269,142,579	$125,944	4.89	$16,591,579	$7,763
Kaneland #302	2,862	2,541	$311,918,095	$122,754	5.03	$19,130,903	$7,528
St. Charles #303	11,749	10,435	$1,478,472,737	$141,684	4.22	$76,864,828	$7,366
Geneva #304	5,071	4,643	$594,799,913	$128,106	4.48	$33,503,235	$7,215
Kane County Total	104,917	94,400	$9,083,478,380	$96,223		$673,702,372	$7,136

1. Source: Kane County Regional Office of Education, Annual Report, July 1, 2001—June 30, 2002.
2. Source: Illinois State Board of Education, Illinois Local Education Agency Retrieval Network, 2001.

Figure 80

Capital Impact Fees

A capital impact fee is a charge imposed by a local government on new development, as a condition of development approval, for a proportionate share of the cost of public facilities needed to serve new development.

Land/Cash Ordinance

A land/cash ordinance requires that each subdivider or developer be required to dedicate land for school sites to serve the immediate and future needs of the residents of the development, or to make a cash contribution in lieu of actual land dedication, or a combination of both.

Source: Kane County Development Department.

Figure 81

School District Input to the Development Process