Tompkins County

COMPREHENSIVE PLAN

Planning for our

FUTURE

2015

TOMPKINS COUNTY COMPREHENSIVE PLAN
PLANNING FOR OUR FUTURE

Adopted March 3, 2015 by the Tompkins County Legislature

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Cover Photo by Jim Mason, Environmental Photography

foreword

THE TOMPKINS COUNTY COMPREHENSIVE PLAN presents a vision for the future of the community. It is based on a set of principles that reflect the values of the community as expressed by the County Legislature they have elected. The Plan seeks to foster a place where individual rights are protected while recognizing the benefits that can accrue to community members from common actions. It largely focuses on voluntary collaboration between the public and private sectors, but also supports the role that local regulation can play in addressing key issues impacting the entire community and helping people to live together in harmony. Where regulation is required, it should balance the burdens placed on individuals and businesses with the restrictions needed to protect or otherwise benefit the larger community. In most cases the Plan seeks to expand individual choice in terms of where and how people live their lives.

The Plan includes policies that, when considered together, can help create both rural and urban communities with opportunities for people to live meaningful and rewarding lives. The Plan seeks to encourage management and preservation of our resources to the equitable benefit of current and future generations, and to provide opportunities for everyone to participate in community life.

In rural areas the Plan envisions a working landscape of farms and forests providing products and jobs that support a strong rural economy, while providing for management and protection of these resources to maintain their ability to sustain the community into the future. Rural economic activities may include businesses processing agricultural and forest products, and other small businesses appropriate to a rural setting. Opportunities will continue to emerge for a renewable energy economy that takes advantage of wind, sun, geothermal, biomass, and water resources at appropriate sites for production of energy for both on-site use and remote use. This working landscape will continue to be intertwined with a protected, and increasingly connected, network of natural areas that provide multiple benefits including clean water, outdoor recreation, and habitat for wildlife. This network includes State parks, forests, and wildlife management areas. These open lands will also include private land protected by voluntary easement and natural areas protected as privately owned and managed nature preserves. The Plan also advocates local regulations to protect stream corridors, floodplains, and aquifer recharge areas that are critical both to maintaining public and private water supplies and to protecting the public from the increasing threat of major flood events.

Employment choices for those interested in living and working in rural areas will include full- and part-time farming, independent "homestead" lifestyles, entrepreneurship in agricultural and forest product processing, and at-home workers who want to live close to nature. Rural populations will continue to be served by traditional rural centers in villages and hamlets scattered around the county. These centers will provide opportunities to live in small close-knit communities with nearby, walkable schools, commercial, and governmental services, as well as offer transit connections to the urban center of the county.

In the urban area of the county, the Plan sees an increasing population largely resulting from infill and redevelopment projects providing housing choices and locations for businesses to start and grow. New housing will allow people to live closer to employment and serve the preferences of changing demographics including an increased senior population as well as the younger workers needed to fill the jobs

provided by both an expanding economy and the retirement of baby boomers. The urban area will be walkable and well-served by a number of transportation options including transit, bike routes, trails, and car- and bike-share programs. Jobs and housing will be proximate to one another, making transportation less of a financial burden, and energy will increasingly be provided by a combination of local and regional renewable resources.

The urban area will include the lively, active downtown and vibrant waterfront district of Ithaca, neighborhood centers serving nearby residents, and regional commercial centers that serve the needs of both urban and rural populations. Many cultural amenities and entertainment options will continue to make Tompkins County a place to find big city experiences in a place with a small town feel. Job growth will be concentrated in areas with nearby housing and transportation options, and located in areas with adequate energy, water, and sewer infrastructure. Infrastructure investment will be focused in these areas to sustain a strong economy, high quality of life, and fiscally sound government. Centers of entrepreneurship and business support services will be available to spur the creation and growth of new businesses.

Many residents of the county also enjoy living in the space between rural and urban, the suburban neighborhoods that make up much of the land developed over the last 50 years. In these areas opportunities will continue for limited new development through infill and a few new higher density neighborhoods that may emerge in accordance with town plans. It will be important that these new areas develop in locations and at densities that take advantage of and support existing or easily extended infrastructure, as well as transit routes and/or trail corridors that provide transportation options. New park and rides may be instituted to provide better access to existing transit routes that serve these areas and trails may be extended to provide better connections to the urban center. Such areas should incorporate mixed uses to allow the provision of some goods and services within neighborhoods.

Rural, urban, and suburban areas will develop in ways that dramatically reduce greenhouse gas emissions. This will include new and renovated housing, commercial, and industrial buildings that are much more energy efficient and incorporate both on-site and off-site renewable energy production. The transportation system will offer more choices that are less energy intensive, including modes utilizing renewable energy, whether it be human powered, electric, bio-diesel fueled, or other technologies. Renewable energy will be generated in rural, suburban, and urban areas at appropriate sites and scales that can together provide a secure energy supply for community needs.

While doing all we can to mitigate the impacts of climate change, the Plan also calls for the community to prepare for the unavoidable impacts already built in to the increased heat-trapping gases in our atmosphere. It will be increasingly important to address public health and safety, anticipated impacts on our economy and infrastructure, and particularly the potential impacts on the most vulnerable populations.

Altogether, the Plan envisions a community where rural, suburban, and urban areas not only coexist but are mutually supporting. Rural areas will gain economically from urban markets for food, wood products, and energy while having access to the amenities and services that can only be supported by a larger population. Urban areas will have access to the natural beauty, outdoor recreation, and local food and energy provided by our rural landscape. Suburban areas will be enhanced by improved transit access, trail connections, and availability of some neighborhood services while absorbing some residential growth to limit inappropriate development of rural areas. Together urban, rural, and suburban communities will offer a broad range of living and working choices to county residents. ◆

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One of the greatest values of the Plan is that it provides a framework for voluntary partnerships and collaboration.

introduction

THE VALUE OF A COMPREHENSIVE PLAN

When we think of places we have visited or lived, some stand out as models of natural beauty and human comfort, supported by thriving local economies. These communities do not grow by accident or without public debate and agreed-upon guidelines. Collaborative planning processes and comprehensive plans are the building blocks of such great communities.

Planning helps maintain and promote livable, vital communities. Local municipalities play a key role by developing and implementing comprehensive plans to reflect their own goals and support their own land use regulations. The County Comprehensive Plan provides an opportunity to look beyond municipal borders and create a shared community vision.

One of the duties of the Planning Department, according to the County Charter, is to prepare a comprehensive plan for the development of the county, including those topics authorized by New York State Law, which deal with "the protection, enhancement, orderly growth and development of the county."[1] Accordingly, the Plan focuses on the physical and natural environment and not on human-services concerns. The Comprehensive Plan was initiated using a 20-year horizon to determine what issues need to be addressed, and will be monitored annually, updated as necessary, and formally reviewed every five years in accordance with the County Charter.

The content of the Plan was developed from issues citizens identified as critical. It describes existing conditions and identifies issues and opportunities that can inform decision-makers at all levels of government, as well as individuals, businesses, educational institutions, and not-for-profit organizations as they plan for the future of Tompkins County.

The Plan recognizes that in many instances County government has a limited role to play in addressing a particular issue. Regulation of land use in New York State lies with cities, towns and villages. In some cases such local regulation is key to solving county-wide problems and in those instances the County may encourage local action. More often the plan suggests voluntary actions often involving public-private partnerships and collaboration between levels of government. One of the greatest values of the Plan is that it provides a framework for encouraging such partnerships and collaboration.

THE 2004 COMPREHENSIVE PLAN

The Tompkins County Legislature first adopted a comprehensive plan in 2004. Entitled *Tompkins County Comprehensive Plan: Planning for our Future*, that Plan contains principles, policies, and actions to guide the County and other community members as they make decisions that influence regional development, involve inter-governmental cooperation, and affect the quality of life in neighborhoods and communities. It provides a framework to address community goals in a proactive and coordinated manner. On December 16, 2008, the Tompkins County Legislature approved an amendment to the Comprehensive Plan to address the issue of energy and greenhouse gas emissions.

When the Plan was adopted in 2004, it was envisioned to be a dynamic document with review every five years and full updates every ten. This first full update of that Comprehensive Plan adds climate adaptation, a completely new element, restructures the strong communities section by also addressing healthy communities, adds the two overarching principles of fiscal responsibility and sustainability, and updates policy statements to make them more direct. Specific action items to be initiated by County government within two years are identified in each chapter.

TOPIC AREA STRATEGIES

Since 2004, the County has developed five strategies to supplement and expand upon the work in the Plan. Relevant chapters in this Plan incorporate many of the recommendations found in those strategies, as well as the results of projects and programs implemented in response to the strategies. The five strategies are:

HOUSING STRATEGY. The Tompkins County Legislature endorsed the *Housing Strategy for Tompkins County* in 2007. This strategy includes recommendations on how to achieve the housing growth identified in the *Affordable Housing Needs Assessment* (2006). The Needs Assessment analyzed the local housing market and population trends and found a need for 4,000 additional rental and owner-occupied units across all income levels by 2014.

CONSERVATION STRATEGY. The Tompkins County Legislature endorsed the *Tompkins County Conservation Strategy* in 2012. The strategy is based on the recommendations of the *Tompkins County Conservation Plan, Part I: A Strategic Approach to Natural Resource Stewardship* (2007) and of the *Tompkins County Conservation Plan, Part II: A Strategic Approach to Agricultural Resource Stewardship* (2010).

ENERGY STRATEGY. The Tompkins County Legislature endorsed the *Tompkins County 2020 Energy Strategy* in 2010. The Strategy outlines how the community can achieve a 20 percent reduction in greenhouse gas emissions from 2008 levels by 2020, as the first step along the path to achieving the Legislature's adopted a goal of reducing greenhouse gas emissions by at least 80 percent by 2050.

TOURISM STRATEGY. In 2012, the Tompkins County Legislature accepted the *2020 Tompkins County Strategic Tourism Plan: Inspiring Action to Support Tourism Development,* prepared by the Strategic Tourism Planning Board. This strategy advances tourism as a means of promoting economic development and enhancing quality of life.

DEVELOPMENT FOCUS AREAS STRATEGY. The Tompkins County Legislature endorsed *Building Vibrant Communities in Tompkins County … a Development Focus Areas Strategy* in 2012. This strategy identifies an urban center, five established nodes, two emerging nodes, and eight rural centers as the Development Focus Areas. These areas are deemed to be well-suited to be the focal points of new development due to the existence of public services, transit, and existing development. The objective of the strategy is to have at least two-thirds of new development occur in the identified focus areas.

LISTENING TO COMMUNITY VOICES

The Tompkins County Charter calls for the preparation of "a comprehensive plan for the development of the County, which shall include those topics authorized by New York State General Municipal Law and determined to be important to the County." The first step in preparing this update to the Comprehensive Plan was to determine the topics important to the community.

Kickoff Survey

The Tompkins County Planning Advisory Board and the Tompkins County Planning Department early on identified two new elements to include in the 2014 version of the Comprehensive Plan: Community Sustainability, which considers social equity, economic vitality, and ecological stewardship in making decisions; and Climate Change Adaptation to help the community prepare for climate change impacts including increased flooding and droughts, changes to ecosystems, and impacts on agricultural crops.

In order to determine whether additional topics should be considered in the update a community survey was developed. The survey was conducted in September and October of 2013 and asked about a number of potential issues to address in the Plan:

- healthy communities
- food security
- public safety
- education economy
- creative economy
- localization
- affordable living
- community character
- planning for an aging population
- green infrastructure
- air quality
- traditional infrastructure
- recreation
- communications technology

Survey participants were also able to identify additional issues. Detailed survey results and methodologies can be found in Appendix A.

A total of 915 responses were received either on-line or via written survey. A large number of written surveys were received as part of an outreach effort to Participation in Government classes at Ithaca High School, Lansing High School, Newfield High School, and New Roots Charter School.

The Planning Advisory Board identified the issues to include in the Plan using the results of the survey and considering both the County's role in the identified issues as well the economic impacts, number of individuals impacted, and long-range vs. short-range impacts of the issues. Additional considerations included the availability of staff and other resources to address the issues.

As a result of the survey, the topics of affordable living and healthy and safe communities were included in the Plan.

As a result, two additional topic areas were identified for inclusion in the Plan update: affordable living and healthy and safe communities. Affordable living is addressed in several areas of the plan, including housing, transportation, and the economy. Healthy and safe communities have been addressed primarily in the Healthy Communities chapter. The proposed scope for the Plan was presented at a public meeting on November 18, 2013. The meeting provided an opportunity for Planning Department staff to ask participants for additional input on these two topics to better understand community concerns related to them.

Principles and Policies

Another major public outreach effort was made in the spring of 2014 to receive input on the draft principles and policies for the Comprehensive Plan. Six meetings were held throughout the county: two in the City of Ithaca, and one each in the Village of Groton, and the hamlets of Newfield, Jacksonville, and Slaterville. The meetings focused on proposed policies, asking the public to suggest specific actions the community might take to implement those policies. Over 70 individuals attended the public meetings and additional comments were received via mail and email. Over 400 ideas and suggestions were garnered, most during the public discussions at the meetings.

Draft Plan Review

During October 2014, the Planning Department conducted public outreach on the Draft Tompkins County Comprehensive Plan. This outreach effort included conducting six open houses around the County (Enfield, Danby, Dryden, Lansing, and two in the City of Ithaca). In addition, the

Department sent information and requests for input to a wide variety of email addresses, including those of local government officials, advisory board members, and previous commenters on the Comprehensive Plan. Information about the public meetings and the Plan was also posted to the Department's Facebook and Twitter accounts.

In addition, staff attended meetings of various groups soliciting comments and questions. These included:

- **County advisory boards:** the Agriculture and Farmland Protection Board, the Environmental Management Council, the Planning Advisory Board, and the Water Resources Council;
- **Business and economic development groups:** the Chamber of Commerce Board of Directors, the TCAD Planning Committee, and the Economic Development Collaborative;
- **Groups the Department has worked with over the years on specific aspects of the plan:** Housing Strategy partners and Conservation partners;
- **Local government groups**: the Tompkins County Council of Governments and a meeting of municipal planning staffs; and
- The Department was also a featured presenter at one of the County Office for the Aging's public hearings on their annual report and strategy.

In all, the Department received over 300 comments from approximately 40 individuals and several groups. These comments addressed every individual chapter in the draft plan and, while there was some duplication among the comments, there was a great variety of suggestions made.

A copy of all the comments received, indicating the source of the comment, is included in Appendix B. This appendix includes a response to all comments. The responses include approximately 20 substantive changes to the Plan and countless clarifications, grammatical corrections, and other minor changes to the text.

COORDINATING WITH OTHER PLANNING EFFORTS

Developing the Comprehensive Plan included review of plans prepared since 2004 by local municipalities, regional planning agencies, and State agencies.

All local municipalities in Tompkins County have also prepared and adopted comprehensive plans. These plans serve multiple purposes, but among them are to act as the basis for adopting local land use regulations, including zoning, site plan review, and subdivision regulations. The authority for

Tompkins County Municipalities

Source: Tompkins County GIS, NYS Information Technology Services

Local Comprehensive Plans

VILLAGE OF CAYUGA HEIGHTS	2014
VILLAGE OF DRYDEN	2006
VILLAGE OF FREEVILLE	2013
VILLAGE OF GROTON	2005
VILLAGE OF LANSING	2005
VILLAGE OF TRUMANSBURG	2009
TOWN OF CAROLINE	2006
TOWN OF DANBY	2011
TOWN OF DRYDEN	2005
TOWN OF ENFIELD	2001
TOWN OF GROTON	2005
TOWN OF ITHACA	2014
TOWN OF LANSING	2006
TOWN OF NEWFIELD	2013
TOWN OF ULYSSES	2009
CITY OF ITHACA	1971

Source: Tompkins County

such land use regulation in New York State lies at the town, village, and city level, and not at the County level.

Two local plans in particular, the *Tompkins County Economic Development Strategy*, prepared by Tompkins County Area Development, and the Ithaca-Tompkins County Transportation Council's *Long-Range Transportation Plan*, were actively being updated during the drafting of this Plan. Information and goals from these plans were incorporated into this Comprehensive Plan where appropriate. Other planning efforts are also reflected within the topical chapters of the Comprehensive Plan, such as the Tompkins County Workforce Strategy.

Particular attention was also paid to the recently completed *Cleaner Greener Southern Tier Regional Sustainability Plan* (2013) that addresses many of the same topics as this Comprehensive Plan. The primary focus of the *Cleaner Greener Plan* is reducing greenhouse gas emissions. That Plan envisions the Southern Tier Region of the future as a

> *"…place with revitalized cities, villages and hamlets that anchor a reinvigorated urban and rural economy based on good paying jobs. A place where energy needs are increasingly supplied or reduced by conservation, efficiency, renewable technologies and smart development; where new transportation and housing options meet the needs of the region's changing population and contribute to an enhanced quality of life; and where natural systems are protected and greenhouse gas emissions substantially reduced."*

PRINCIPLES OF THE COMPREHENSIVE PLAN

The Comprehensive Plan is organized around twelve basic interlocking principles. These principles are in line with those found in the 2004 Comprehensive Plan, adhere to the values expressed in Tompkins County's mission and vision statements (which can be found inside the back cover), and reflect the wisdom gathered from many community opinions. Policies corresponding to each of these principles are provided in each section of the Plan.

The principles include three that are overarching and reflected throughout the Comprehensive Plan. The remaining nine principles are more topical and are covered in more detail in individual chapters of the Plan. The principles are aspirational and could be considered vision statements.

OVERARCHING PRINCIPLES

Tompkins County should be a place where:

- the needs of current and future generations are met without compromising the ecosystems upon which they depend.
- all levels of government work cooperatively to address regional issues.
- taxpayer dollars are invested in public infrastructure and facilities in the most efficient manner possible.

THE ECONOMY, HOUSING AND TRANSPORTATION

Tompkins County should be a place where:

- economic prosperity is accessible to all.
- housing is affordable, safe, energy efficient, and appealing.
- transportation choices are efficient, affordable, and healthy for people and the environment.

THE ENVIRONMENT

Tompkins County should be a place where:

- natural features and working rural landscapes are preserved and enhanced.
- water resources are clean, safe, and protected.

CLIMATE CHANGE

Tompkins County should be a place where:

- the energy system meets community needs without contributing additional greenhouse gases to the atmosphere.
- the entire community is prepared for the economic, environmental, and social impacts of climate change.

NEIGHBORHOODS AND COMMUNITIES

Tompkins County should be a place where:

- the built environment promotes healthy, safe, and active lifestyles.
- new development is focused in compact, walkable, mixed-use communities.

TOMPKINS COUNTY OVERVIEW

Located in the Finger Lakes Region of Upstate New York, Tompkins County contains an uncommon mixture of spectacular natural features, a vibrant urban center, internationally renowned academic institutions, and a productive and attractive working landscape. With its mixture of urban, suburban, and rural landscapes, Tompkins County offers a diverse living environment.

History of Settlement

While detailed records of the community's history began with the first settlers to arrive in the wake of the American Revolution, the generations of previous residents stretch back to the Stone Age. Archeological evidence suggests the first humans to set foot in Upstate New York were nomadic hunters who thousands of years ago roamed the forests in search of game.

More recently, this area was home to the Cayuga Indians, one of the five – and later six – tribes that made up the Iroquois Confederation. The Cayugas built settlements near the sources of fresh water and cultivated produce and orchards. In 1779, General George Washington, concerned that the Iroquois nations would ally with the British, sent troops to drive the Indians west and out of the conflict raging between the colonies and Britain. Two of Washington's generals took their forces down either side of Cayuga Lake and systematically destroyed the Native American villages. The devastation was complete and, in 1789, the Cayugas were forced to give up their land.[2]

Following the Revolutionary War, Simeon DeWitt, the State Surveyor General and later founder of Ithaca, placed the northern portion of what became Tompkins County in the "New Military Tract," lands to be given to veterans in payment for their military service. The southern portion of what became Tompkins County was owned by a private land development company.

Post-Revolutionary War settlement began around 1792. Some new arrivals were squatters willing to take a chance on finding land; others came seeking their military allotments. By 1810, the village of Ithaca had a few houses, a sprinkling of stores and taverns, and several mills powered by the fast-moving streams. With the opening of the Ithaca-Owego Turnpike, Ithaca became a trans-shipment point for goods flowing south. Tompkins County was officially formed by

City of Ithaca. 1873.
Source: DeWitt Historical Society of Tompkins County

New York State in 1817 and named for Daniel D. Tompkins, a former New York governor and at that time Vice President of the United States.

Early settlers were predominantly American-born farmers seeking new land. Some from the east and south brought slaves with them, although their numbers were small. Slavery was abolished in New York State in 1827. Many, but not all, of the people of the county supported emancipation and some helped fugitive slaves make their way to freedom.

The opening of the Erie and Seneca Canals in the early nineteenth century kept local goods flowing to the eastern markets. Railroad development linked Tompkins County with even more destinations beginning in 1832 with the Ithaca-Owego Railroad. By 1870, the county was served by four railroads.

The establishment of Cornell University in 1865 brought stability to the county's economy. The university attracted students, faculty, and many new residents. The Ithaca Conservatory of Music (now Ithaca College) formed in downtown Ithaca in 1892. The village of Ithaca had a steady increase in population while most of the towns reached a peak population around 1850 and then dipped to half that level in the early years of the twentieth century.

From a collection of farms and mills, Tompkins County grew into an area of pleasant towns and villages connected by roads and turnpikes, ferries, and railroads. In 1900, with a population of nearly 34,000, the county entered the age of the automobile, electrification, industrialization, and world

wars. For six years, beginning in 1914, motion pictures were made in Ithaca. Significant industries established in the next few decades included the Ithaca Gun Company, the Thomas-Morse airplane company, and the Groton Iron Bridge Company. By 1960, the population had doubled to 66,164, and the local economy was booming.[3]

In 1959, the *Ithaca Urban Area Plan* was prepared through a joint undertaking of the City of Ithaca, Towns of Ithaca and Lansing, and the Village of Cayuga Heights. The 1959 Plan expressed deep anxiety over the increasing dispersion of the population into the more rural areas and away from the urban core. Despite raising alarms, the proposed ideas and recommendations in the 1959 Plan were not translated into concrete actions.

The population of Tompkins County grew by 13 percent in the 1960s and by a similar amount the following decade. Much of this growth was concentrated in the northeast of the Town of Ithaca and the adjacent southern border area of the Town of Lansing. State Route 13 was opened in 1963, providing rapid access to southern Lansing. The interchange of Route 13 and Triphammer Road quickly became a magnet for commercial development. Within a year after completion of the highway, three of the four corners of this interchange were occupied, by the county's first large-scale apartment complex, a shopping mall, and a motel/restaurant; other businesses and apartment complexes followed. But not all changes were happening to the northeast. The hospital moved to West Hill in 1958 and Ithaca College moved to South Hill in the mid-60s.

The 1959 *Ithaca Urban Area Plan* expressed deep anxiety over the increasing dispersion of the population into the more rural areas and away from the urban core.

The 1970s saw substantial changes in the location of retail and consumer services. The Ithaca Commons, a pedestrian mall with shops, galleries, and restaurants, was built in 1974. East Hill Plaza and Pyramid Mall were established. In response to plans that would provide sewer service to the southern portion of the Town of Lansing, the Village of Lansing was brought into being in 1974 by public demand for land use regulations. By this time, two additional large malls and apartment complexes had already been built.

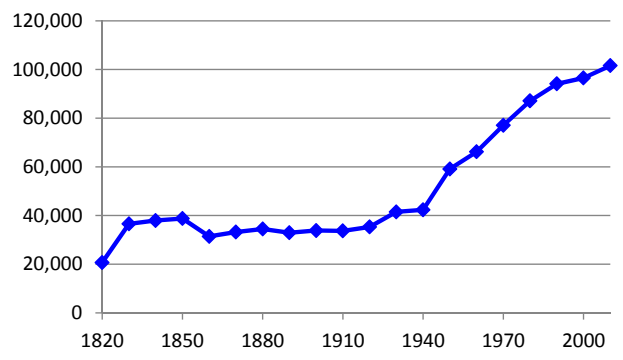
In the 1980s and 1990s, all three campuses made major investments in new buildings, new campus residential halls, and in new programs. Collegetown development increased with more retail stores and rental student housing located close to the Cornell campus. Tops and Wegmans located in Southwest Ithaca. This period of time also saw the location of the new U.S. Post Office on Warren Road and a new airport terminal building, both in the Village of Lansing. The Cornell Business and Technology Park, while established in 1951, has grown significantly since the mid-80s. The groundbreaking EcoVillage at Ithaca on West Hill and new light industrial development on South Hill were other significant developments in these decades.

County Demographic Profile

In 1910, the county had nearly 34,000 residents. Increases were slight through the 1940s, however over the next ten years the overall population jumped by more than 16,000 residents to 59,000, with the major gain occurring in Ithaca, reflecting the growth of Cornell University following World War II. An additional jump by 10,000 residents between 1960 and 1970 brought the population to 77,000. That decade's figures reveal a shift in living patterns with a major increase in the Town of Ithaca, especially in the northeast portion and in the areas adjacent to Cornell. From 1970 to 2010, the population of Tompkins County grew to 101,564 residents.

Nearly 30 percent of the total population is enrolled in college or graduate school, with that number increasing to 60 percent in the City of Ithaca. Approximately one in three residents of the county is under 21 years of age. On the other end of the scale, one in ten residents is at least 65 years old.

Population Change Over Time



Source: U.S. Census Bureau

About half the adults have at least a bachelor's degree. The census also shows that residents of Tompkins County move their households frequently. In 2012, only one-third of households lived in the same residence they inhabited in 1999. This reflects, in part, the nature of a transient university community as well as national trends.

Nearly 30 percent of the population is enrolled in college or graduate school.

In the past few decades, the population of Tompkins County has grown at a modest rate of between five and ten percent, in contrast to most other Upstate New York counties, many of which have seen declining population.

Tompkins County Population Characteristics, 2010

ALL RESIDENTS	101,564
GENDER:	
MALE	50,065 (49%)
FEMALE	51,533 (51%)
AGE:	
0-19	25,881 (25%)
20 - 64	64,754 (64%)
65 OR OLDER	10,929 (11%)
RACE:	
ONE RACE	
WHITE	83,941 (83%)
ASIAN	8,737 (9%)
BLACK/AFRICAN AMERICAN	4,020 (4%)
OTHER	1,680 (2%)
TWO OR MORE RACES	3,286 (3%)

Source: U.S. Census, Decennial Census, 2010

Geology and Natural Surroundings

Tompkins County is made up of approximately 305,000 acres of land. The southern area is dominated by rugged hills with the highest, Connecticut Hill, reaching over 2,000 feet. The northern portion has a more gentle terrain and generally more fertile soils. Approximately one-quarter of the land in Tompkins County is covered by high quality agricultural soils, concentrated in Ulysses, northwestern Enfield, northern Lansing, eastern Groton, and northeastern Dryden, although smaller pockets are located throughout the county.

The most dominant natural feature in Tompkins County is Cayuga Lake. Cayuga Lake is the second-largest Finger Lake and the longest, widest, and one of the deepest of the eleven Finger Lakes. Tompkins County has approximately 26 miles of shoreline on Cayuga Lake and is located in a glacial valley with steep slopes along the lakeshore punctuated by many picturesque gorges. Elevations along the gorge walls can reach 400 feet. The higher elevations of the lake's tributaries, combined with the steep gorges, produce numerous waterfalls.

The lake divides the northern portion of the county in two. Nearly four-fifths of the county's land area drains into Cayuga Lake before moving northward, ultimately to Lake Ontario. The southern fifth of the county drains southward into the Upper Susquehanna River and ultimately, Chesapeake Bay.

Cayuga Lake has served an important economic role in Tompkins County. In the nineteenth century, the lake was an important link in the transportation route connecting central and southern New York to Buffalo and points west. Today, it serves as a supply for public drinking water, a major regional recreational and tourism resource, and an important link in the waterfowl flyway of the Atlantic Coast. Two major energy facilities utilize the lake for cooling, the Cayuga Power Plant and the Cornell Lake Source Cooling heat exchange facility.

The topography of the watershed was formed as the land began uplifting approximately 200 million years ago. At that time, drainage flowed to the south, through the Susquehanna River system. During the Ice Age, two glacial events produced the deep gorges that became the Finger Lakes. The retreat of the second glacial ice sheet resulted in the reversal of drainage in the watershed from the south to the north. This glacial action resulted in the creation of the relatively flat lands in the northern portion of the county (in Ulysses, Lansing, and Groton) and the steep hills and valleys of the south (in Newfield, Danby, and Caroline).

With its varied topography and landforms, the county contains a number of interesting ecological communities, including streams, lakes, ponds, marshes, meadows, fens, forests, swamps, and cliffs. Many important natural areas have been identified with the help of Cornell University's strong natural resource programs, and a local community of outdoor enthusiasts and environmental activists. Nearly 200 such areas have been identified by the County's Envi-

Cayuga Lake Waterfront, Town of Ulysses

ronmental Management Council in the *Unique Natural Areas Inventory of Tompkins County*. Tompkins County is also home to a National Natural Landmark, McLean Bog, located in the Town of Dryden.

In addition, the county has one Recreational River (a portion of Fall Creek), one Critical Environmental Area (Coy Glen), four State Parks, all or part of eight State Forests, several Audubon-designated Important Bird Areas, and a variety of lands protected by the local Finger Lakes Land Trust, Cornell University, and The Nature Conservancy.

The Quintessential College Town

Tompkins County is home to three institutions of higher education: Cornell University, Ithaca College, and Tompkins Cortland Community College. Total enrollment at all three colleges is nearly 30,000 students. Students account for 30 percent of the county's total population and 60 percent of the City of Ithaca's population.

While Tompkins County is not unique, it is dominated by higher education more than most of the country. Of the more than 3,000 counties in the U.S., only 19 have populations where college enrollees are more than one-fourth of residents. Of these 19, Tompkins is one of only six with a population greater than 100,000. The other five are:

- Clarke County, Georgia, home of The University of Georgia,
- Monroe County, Indiana, home of Indiana University,
- Douglas County, Kansas, home of the University of Kansas,
- Centre County, Pennsylvania, home of Pennsylvania State University, and
- Brazos County, Texas, home of Texas A&M University.

The colleges are a major economic sector in Tompkins County. According to the Department of Labor, "Higher education accounts for more than 30% of all jobs in Tompkins County. A recent Department of Labor analysis found that Cornell is one of the 10 largest private sector employers

in the state. The university's statutory units are also a significant source of public sector jobs in the Tompkins County.[4]" Colleges and universities in the Southern Tier Region have an average wage of more than 20 percent above that of all industries.

The colleges play a particularly important role in maintaining the economy during hard times. When much of the U.S. and virtually all of Upstate New York were struggling through recessions in the 1980s and 2000s, Tompkins County was somewhat cushioned from these forces due to the continued employment and construction activities at all three campuses.

The colleges provide many other opportunities and benefits to the community. The rhythm and character of the county are highly influenced by their presence. Community festivals and activities are often scheduled around major campus events and breaks. Over half of the racial diversity in the county can be attributed to the student population. Students and faculty account for much of the community's diversity and influence the presence of cultural amenities. For a small county in rural Upstate New York, Tompkins is fortunate to have several art museums and galleries, multiple live theater companies, a variety of movie theaters, and a mix of high-quality restaurants.

The colleges define the community and help to create the dynamic environment many enjoy.

The presence of the educational institutions also provides challenges to the community. For example, Tompkins County has more untaxed property value than most other upstate counties with colleges. Also, much of the student population for each of the three colleges is housed off-campus, greatly influencing the private housing market, particularly in the City and Town of Ithaca.

All in all, the colleges define the community and help to create the dynamic environment many enjoy. The colleges help to set Tompkins County apart from other upstate counties and significantly contribute to a growing and stable economy that retains younger people and keeps new people, new ideas, and new energy coming into the county. ◆

[1] New York State General Municipal Law, Section 239-d(o).

[2] Jane March Dieckmann, *A Short History of Tompkins County*

[3] Highlights, Tompkins County Comprehensive Plan, 1975

[4] NYS Department of Labor. *Labor Statistics for the Southern Tier Region.*

overarching principles

Three overarching principles have guided the preparation of this Comprehensive Plan: Sustainability, Regional Cooperation, and Fiscal Responsibility. This section discusses each of these principles and how it influences the four topical sections of this plan, as well as describes some of the current community efforts that support these principles.

PRINCIPLE

TOMPKINS COUNTY SHOULD BE A PLACE WHERE THE NEEDS OF CURRENT AND FUTURE GENERATIONS ARE MET WITHOUT COMPROMISING THE ECOSYSTEMS UPON WHICH THEY DEPEND.

SUSTAINABILITY

Sustainability means equitably meeting the needs of all community members now and in the future. This includes ensuring that everyone has a wide range of choices that allow them to share in economic prosperity, live in a healthy environment, and participate in community life. It requires preserving biodiversity and natural ecosystems and conserving resources to ensure their ability to sustain future generations. It further entails advancing economic vitality, environmental stewardship, and social equity simultaneously -- by making sure a decision to advance one of these does not come at the expense of another.

How Sustainability is Addressed in the Comprehensive Plan

THE ECONOMY, HOUSING AND TRANSPORTATION. The economy, housing, and transportation play vital roles in meeting the needs of current and future generations. A strong economy is essential to an economic prosperity broad enough to be shared by all. It must include providing education and training and creating entry-level jobs with career paths. Making this an equitable community requires availability of affordable housing near employment. Stable housing impacts families in many ways including the ability of children to do well in school, giving them a better chance of advancing economically. The County cannot reach its greenhouse gas emissions reduction goals without a strong focus on energy efficiency in all sectors, including an efficient transportation system.

A strong economy is essential to an economic prosperity broad enough to be shared by all.

THE ENVIRONMENT. Although the environmental aspects of sustainability are apparent, the health of natural and water resources also factor into social and economic outcomes. Providing equitable access to public open spaces provides opportunities for exercise and improves public health. It promotes equity by ensuring everyone in the community can enjoy these benefits, regardless of where they live or how much money they

make. Preserving biodiversity boosts ecosystem productivity and resiliency. A healthy natural environment provides a number of benefits for everyone: clean water, food and wood products, nutrient storage and recycling, and pollution breakdown and absorption. When these natural functions break down there is oftern a heavy cost incurred to provide these necessities.

CLIMATE CHANGE. Since the 1950s, access to cheap oil, gas, and coal has spurred explosive growth in the consumption of fossil fuels. This growth has been strongly linked to spiking greenhouse gas emissions and, in turn, global climate change that is predicted to result in extreme weather patterns and disrupted ecosystems. All aspects of a sustainable community are threatened by climate change. Those without the financial resources to take the steps that would help most, such as living close to jobs, installing energy efficiency upgrades in their homes, and purchasing more fuel-efficient vehicles, are likely to face increasing energy costs. These same people are also often the most vulnerable to floods, extreme heat events, droughts, and other predicted impacts of climate change. Social equity requires that we devise solutions with particular attention to the needs of the economically disadvantaged. A sustainable, economically prosperous future will be one where agricultural land, water resources, and local forests, as well as our renewable energy sources of wind and sun, are managed to provide multiple benefits for current and future generations.

NEIGHBORHOODS AND COMMUNITIES. Providing opportunities for people, regardless of income, to live in compact high quality communities will help address the issues of environmental quality, social equity, and economic prosperity that underpin the concept of sustainability. Development Focus Areas that are safe, healthy, attractive, accessible, and affordable will provide places where people want to live, work, and raise families. Enabling people to live active lives with access to the places, recreation, and social interactions they desire can sustain a high quality of life for all people regardless of income. Agreeing where the community welcomes development will reduce pressure to develop in areas valued by the community for their important agricultural, recreational, and natural resources and make desired development more economically feasible.

Initiatives

COUNTY GOVERNMENT INITIATIVES. Tompkins County has been working to advance sustainability for many years. In 2006, an employee-based effort began to more systematically focus on developing sustainable practices within Tompkins County government. This led to the Tompkins County Legislature authorizing the County Administrator to appoint a Tompkins County Sustainability Team. The Team has been charged with developing an action plan to promote sustainable practices by Tompkins County government and to report on progress. In 2014, the Sustainability Team prepared a formal *Tompkins County Sustainability Strategy* for the County's government operations, which was accepted by the Legislature.

The County entered into an energy performance contract to realize over $4 million in energy cost avoidance over 15 years.

Tompkins County has made formal sustainability commitments, adopted policies, undertaken energy improvements to its facilities, installed renewable energy systems on all its buildings, taken actions within and between its various departments, and pursued a number of other efforts related to sustainability. Specific policies adopted by the County Legislature are:

- Waste Reduction and Resource Management Policy (2007): to recognize the goals set forth by the *Tompkins County Solid Waste Management Plan* through procedures to reduce the amount of waste produced by County operations and maximize opportunities for reuse and recycling.
- Facilities Management and Workplace Environment Policy (2009): to establish procedures for managing and operating facilities in a manner that provides clean, well-maintained, and energy-efficient workplace environments for staff and visitors. In 2005, the County entered into an Energy Performance Contract with Johnson Controls intended to realize over $4 million in energy cost avoidance during the 15 year term of the contract.
- Green Fleet Policy (2009): to reduce fossil fuel consumption and greenhouse gas emissions from County-owned vehicles and fuel-using mobile equipment.
- Green Building Policy (2013): to use green building standards for all new construction and major renovations of County-owned buildings.

LOCAL GOVERNMENT INITIATIVES. Many local governments in Tompkins County have been leaders in sustainability efforts and many have made significant investments to reduce energy use and green their government operations. The City of Ithaca and Towns of Dryden and Ithaca have each, in recent years, undertaken sustainability planning efforts. These have included preparation of greenhouse gas inventories, establishment of long-term goals to reduce greenhouse gas emissions, and local energy action plans to achieve those goals. The Town of Caroline has also undertaken similar efforts using a collaborative approach among town government, residents, and other interested persons to achieve energy independence from fossil fuels on a municipal and residential level. Nearly all of the local governments in Tompkins County have some efforts underway at the government or citizen level to reduce energy use and make living in their municipalities more sustainable.

OTHER LOCAL INITIATIVES. Through proactive initiatives led by community members, the community is embracing the challenges of creating a sustainable way of living. Local individuals, businesses, government agencies, non-profit organizations, and academic institutions are focusing on critical areas such as energy, transportation, waste, and local food and are addressing the pressing issues with innovative solutions.

All three institutions of higher education, Cornell University, Ithaca College, and Tompkins Cortland Community College, have made a long-term commitment to more sustainable practices on campus as well as incorporating sustainability issues into their research and academic efforts. Cornell University recently announced its agreement to purchase all electricity generated by the proposed Black Oak Wind Farm in Enfield. In addition, more than 63 percent of waste on Cornell's campus is recycled or composted, including 823 tons of food from the dining halls. Ithaca College is one of the first institutions of higher education in the world to have two LEED Platinum-level facilities on its campus. And Tompkins Cortland Community College installed an array of solar panels that will collect enough photovoltaic energy to provide the lighting needs for six classrooms.

New local and regional organizations have also been established to pursue and promote a more sustainable community. A sampling of these includes:

- **Sustainable Tompkins,** a citizen-based organization, leads the sustainability movement in the area, working towards the long-term well-being of our communities by integrating social equity, economic vitality, ecological stewardship, and personal and civic responsibility.
- **The Sustainability Center** provides a place where residents and visitors can learn about the community's collective efforts toward sustainability and serves as a setting for community discussions and programs addressing a broad range of sustainability issues.
- **Green Resource Hub of the Finger Lakes** is a non-profit organization that looks to expand the marketplace for sustainable living in the Finger Lakes region.
- **The SEEN** (Sustainable Enterprise & Entrepreneur Network), a program of the Green Resource Hub, is a group of local and regional businesses, organizations, and individuals who are committed to building a just and sustainable economy.
- **The Tompkins County Climate Protection Initiative** brings together leaders from the business, non-profit, local government, and education organizations that have made significant commitments to climate protection. This coalition seeks to leverage the climate action commitments made by institutions and organizations throughout the county.
- **Finger Lakes ReUse, Inc.** re-directs materials from the waste stream into productive new uses. Tons of building materials, computers, electronics, household goods, appliances, and furniture unnecessarily enter the landfill. Used materials – too often wasted – are assets with overlooked economic value. Finger Lakes ReUse taps this value to strengthen the economy, build community, and protect the environment.
- **Get Your GreenBack Tompkins** is a community-based campaign, managed through Cornell Cooperative Extension of Tompkins County, to inspire all 42,000 households and every business in Tompkins County to take at least one step to save energy and money in the areas of food, waste, transportation, and heating and lighting.
- **Learn@EcoVillageIthaca** shares skills knowledge and experience through a variety of educational opportunities based at Ithaca's renowned cohousing community.

REGIONAL COOPERATION

PRINCIPLE

TOMPKINS COUNTY SHOULD BE A PLACE WHERE ALL LEVELS OF GOVERNMENT WORK COOPERATIVELY TO ADDRESS REGIONAL ISSUES.

Tompkins County is part of a broader geographic area and economic market that influences everything from where we choose to live and shop to what areas we visit to hike and swim. Significant interrelationships exist among the various aspects of our daily lives addressed in the Comprehensive Plan: the economy, housing, transportation, environment, climate change, and neighborhoods and communities. These interrelationships are regional in nature, extending well beyond county lines. It is important the Plan account for, connect with, and support the plans of the surrounding region and the plans of localities within the county.

Regional Setting

Source: NYS Information Technology Services

Tompkins County borders six other counties (Cayuga, Chemung, Cortland, Schuyler, Seneca, and Tioga) and is located within the Southern Tier East regional planning area, centered on Binghamton. Tompkins County also adjoins three other planning regions: Southern Tier Central, Genesee/Finger Lakes, and Central New York. The county has strong ties to each of these regions and to all six surrounding counties:

- Tompkins County is a net importer of commuters, with over 15,000 employees commuting into Tompkins to work. Nearly 90 percent of in-commuters come from the six bordering counties, Broome, or Onondaga Counties. Also, nearly 5,000 residents of Tompkins County out-commute to work.
- Tompkins County is part of the Central New York Region of the State Department of Transportation, main office located in Syracuse; part of the Central New York Region of the State Department of Environmental Conservation, main office located in Syracuse and sub-office in Cortland; and part of the Finger Lakes Region of the State Office of Parks, Recreation and Historic Preservation, main office located in Trumansburg.
- For tourism programs, Tompkins works closely with the Finger Lakes Tourism Alliance, which works to enhance and promote visitor businesses in a 14-county region in New York.
- As one of the three counties bordering Cayuga Lake, with Cayuga and Seneca, Tompkins is also involved in cooperative planning efforts centered on the lake including the Cayuga Lake Scenic Byway and the Cayuga Lake Blueway Trail.

How Regional Cooperation is Addressed in the Comprehensive Plan

THE ECONOMY, HOUSING AND TRANSPORTATION. The economy, transportation network, and housing markets all cross municipal boundaries, and extend into the larger region. Increasingly, workers cross these boundaries as they commute from home to work. Governments with land use regulatory authority can coordinate their efforts to encourage the efficient location and adequate supply of jobs and housing. Coordination across boundaries can also avoid unnecessary competition between local municipalities and enhance public and private efforts to attract the desired quantity and quality of jobs, businesses, and housing. Extending this cooperation throughout the broader region means working not only with local municipalities, but also with adjoining counties, State and Federal agencies, and regional organizations.

THE ENVIRONMENT. Most environmental issues are regional in scope, requiring regional action. For example, what happens in one part of a watershed can have impacts hundreds of miles away. National efforts to restore the Chesapeake Bay impact Tompkins County, as the southern part of the county is part of the Susquehanna River Basin which ultimately drains into Chesapeake Bay. Wildlife corridors also cross municipal boundaries, facilitating the movement of wildlife and providing vital sources of food and shelter for a wide variety of animals. Without regional cooperation to protect these corridors, breaking or fragmenting the connections in one community can affect wildlife movement and health over a substantial region.

CLIMATE CHANGE. The scale of the energy and greenhouse gas challenges warrant intermunicipal and regional collaboration to transform the current energy system. The County led the effort to prepare the *Cleaner Greener Southern Tier Regional Sustainability Plan*. The *Plan* focuses on reducing greenhouse gas emissions throughout the eight-county region and identifies a series of actions that will help the region become a place where energy needs are increasingly supplied by renewable technologies or reduced by conservation and efficiency. Many community initiatives, including those of local governments, institutions of higher education, local coalitions, the business community, and nonprofits, are already underway. By combining efforts to reduce energy demand, transition to alternative energy sources, and prepare for the impacts of climate change, the community will be as prepared as possible to face the evolving climate and energy future.

NEIGHBORHOODS AND COMMUNITIES. Where and how growth occurs is an issue that requires collaboration across municipal boundaries and has enormous impacts on regional environmental quality, economic opportunity, and the cost of government. Achieving a desired pattern of development will depend on the actions and support of every town, village, and city within Tompkins County. Only by adopting local plans, policies, and regulations needed to allow mixed-use development in Development Focus Areas at the densities required for vibrant communities and encouraging land uses that support the maintenance of working landscapes outside of these areas will the regional vision be possible.

Where and how growth occurs has enormous impacts on regional environmental quality, economic opportunity, and the cost of government.

Initiatives

REGIONAL PLANNING INITIATIVES. Planning at a regional level can help counties and their municipalities address issues against the backdrop of broader forces and issues. This Plan identifies ways Tompkins County can work on such a scale to address important issues that transcend county boundaries.

Recently, the County has participated in two major regional planning efforts with other Southern Tier counties: the Southern Tier Regional Economic Development Council's *Economic Development Strategy* and the *Cleaner Greener Southern Tier Regional Sustainability Plan.* In particular the *Cleaner Greener Plan* covers many of the same topics addressed in this Comprehensive Plan, only at a regional level, including energy and greenhouse gas emissions, transportation, land use and livable communities, economic development, working lands and open space, climate change adaptation, and water management.

COORDINATING COUNTY AND LOCAL PLANNING ACTIVITIES. New York State clearly places land use authority in the hands of its towns, villages, and cities. The State also specifically recognizes that intermunicipal planning is needed to cooperatively address regional issues. To this end, the State encourages the development of county comprehensive plans to address development and preservation issues that transcend local political boundaries.

The Tompkins County Council of Governments (TCCOG) is an association of local governments organized to work towards "more efficient and fiscally responsible delivery of government services." Its goals include expanding cooperation among taxing entities and resolving duplication of services, improving communication among local governments, and improving involvement with school districts.

TCCOG has provided leadership on a number of regional issues being addressed by municipalities in Tompkins County. For example, TCCOG's Task Force on Gas Drilling helped manage the large amount of information about high volume hydraulic fracturing and horizontal drilling for natural gas. They also prepared a compendium of Municipal Tools for Addressing Potential Gas Drilling Impacts, providing local municipalities with information on numerous ways they can understand and prepare for gas drilling activities.

This Comprehensive Plan outlines ways the Tompkins County community can continue to address intermunicipal issues cooperatively. Often, local municipalities have a full workload simply addressing the important day-to-day issues of local concern. Planning at the county level can help municipal governments address key issues of concern that cross municipal boundaries, such as sprawl, economic development, housing affordability, and environmental protection. It can also help residents of rural and urban areas to recognize their inter-connectedness and issues of mutual interest.

TCCOG has provided leadership on a number of regional issues addressed by municipalities in Tompkins County.

FISCAL RESPONSIBILITY

PRINCIPLE

TOMPKINS COUNTY SHOULD BE A PLACE WHERE TAXPAYER DOLLARS ARE INVESTED IN PUBLIC INFRASTRUCTURE AND FACILITIES IN THE MOST EFFICIENT MANNER POSSIBLE.

Tompkins County, municipal government, and school district operations are funded through four general sources of funds: local property tax, sales tax, Federal and State aid, and other sources, including fees and grants. Whatever the source, nearly all fiscal resources ultimately come from taxpayers – and Tompkins County takes seriously its role in using these taxpayer dollars judiciously. The County constantly works to maintain a financially sound government for future generations without placing an undue hardship on its taxpayers. As part of this role, the County maintains funding to deal with emergency situations that may arise unexpectedly.

How Fiscal Responsibility is Addressed in the Comprehensive Plan

THE ECONOMY, HOUSING AND TRANSPORTATION. Attracting and retaining jobs that pay living wages reduces the need for public assistance to bridge the gap between individuals' incomes and their basic life needs. A strong economy provides the tax base necessary to support public services. The provision of stable housing, including supportive services for those that need them, yields significant public cost savings, particularly in terms of emergency medical and criminal justice services. A transportation system that relies more heavily on transit, walking, and biking would ultimately result in more manageable infrastructure maintenance costs. Every effort made to promote a healthy economy, adequate supply of housing, and balanced transportation system has potentially positive financial impacts that will affect the resources available to meet the community's needs today and into the future.

THE ENVIRONMENT. Protecting important natural resources makes fiscal sense. The cost of treating water for public consumption is lower when the water entering the system is fairly clean to begin with. Avoiding the adverse impacts associated with stormwater runoff using natural systems, like wetlands, is less expensive than using engineered systems, like detention basins. And exposure to a polluted environment can lead to increased public health costs.

CLIMATE CHANGE. The anticipated impacts of climate change are expected to dramatically increase government expenditures. Post-disaster recovery costs are often paid with local, state, and federal government funds. The increasingly intense storms will also strain local stormwater infrastructure. Anticipating impacts and planning to reduce their severity is fiscally prudent. It is often much cheaper to avoid the problems associated with severe weather than it is to pay for recovery after the fact.

NEIGHBORHOODS AND COMMUNITIES. Compact development lowers costs of government services by utilizing and reinvesting in existing infrastructure and broadening the base that bears the cost of maintaining that infrastructure into the future.

Initiatives

WORKING WITH OTHER LEVELS OF GOVERNMENT. Tompkins County includes nine towns, six villages, and one city, all of which similarly work to provide services, infrastructure, and facilities to serve their citizens. In addition, State and Federal agencies serve the county directly by providing services or indirectly by funding other governments to provide services. All of these organizations strive to work together to provide seamless services to residents.

TCCOG has undertaken a number of activities to reduce the overall cost of government to the residents of the County.

- They created the Greater Tompkins County Municipal Health Insurance Consortium in 2010 (the first in New York State) to provide affordable health insurance, prescription drug coverage, and other ancillary benefits to its members. Overall health insurance spending was reduced due to pooling resources and risks, stabilizing annual premiums, and reducing administrative expenses.
- They sponsored a Countywide Intermunicipal Water and Sewer Infrastructure Study conducted by Tompkins County Area Development to identify areas for strategic investment of infrastructure funds; and
- They comment on pending State, Federal, and County actions concerning their impact on local municipalities.

MAINTAINING INFRASTRUCTURE. Investments in public infrastructure and facilities represent a significant portion of local taxpayer dollars, particularly considering the capital cost of building the facilities, the long-term cost to maintain aging systems and adapt facilities to comply with evolving technical and regulatory requirements, and the day-to-day operating costs. Strategic infrastructure investments support community and economic development and have long term impacts on communities. Infrastructure planning needs to consider land use priorities, the public facilities to support them, and the financial capacity to support both the development and maintenance of the systems.

The communities of Tompkins County have a successful history of delivering water and sewer services to meet the growing demands of residential, commercial, institutional, and industrial customers. Many partnerships and other cooperative efforts exist between municipalities to provide these services efficiently in response to the changing needs of the community.

Inter-governmental cooperation reduces costs by ensuring the infrastructure developed and maintained by the State, County, and local municipalities functions as an interconnected system. Cooperative agreements between governmental units can also reduce costs by allowing for equipment sharing and joint infrastructure investments, and by reducing duplication of effort. ◆

the economy, housing, and transportation

TOMPKINS COUNTY IS A GREAT PLACE TO LIVE. MANY OF THE ASPECTS OF LIFE HERE ARE SUPPORTED BY THE INEXTRICABLY LINKED PILLARS OF THE ECONOMY, HOUSING, AND TRANSPORTATION. MAINTAINING ITS VIBRANT LOCAL ECONOMY IS ESSENTIAL TO PROVIDE JOBS, GOODS AND SERVICES, AND SUPPORT THE MANY AMENITIES CONTRIBUTING TO A HIGH QUALITY OF LIFE. ADEQUATE HOUSING AND AN EFFICIENT TRANSPORTATION SYSTEM ARE NECESSARY TO MAINTAIN A VIBRANT ECONOMY. LIVING HERE IS AFFORDABLE ONLY WHEN JOBS ARE PAYING WAGES THAT MAKE HOUSEHOLD COSTS MANAGEABLE. FOR MOST HOUSEHOLDS, HOUSING AND TRANSPORTATION COSTS ARE THE TWO LARGEST FACTORS AFFECTING HOUSEHOLD BUDGETS. AFFORDABLE HOUSING IN CLOSE PROXIMITY TO JOBS, SERVICES, AMENITIES, AND PUBLIC TRANSIT ALLOWS HOUSEHOLDS TO AVOID THE ADDED COSTS OF LONGER COMMUTES.

the economy

A strong economy is firmly linked with achievement of other community goals, many of which are discussed in this Comprehensive Plan. Many aspects of our quality of life can be traced to a prosperous local economy.

Economic development can strengthen the local economy by leveraging local economic assets, diversifying the makeup of the local economy, and growing the types of jobs and businesses that support a continuation of a high quality of life. Education, workforce development, and job training can provide access to economic opportunities for everyone who considers Tompkins County home and promote broad-based economic prosperity, including the alleviation of local poverty.

PRINCIPLE

Tompkins County should be a place where economic prosperity is accessible to all.

POLICIES

It is the policy of Tompkins County to:

- Support economic development that provides high-quality employment opportunities with living wages and benefits.
- Promote the growth and development of local businesses and encourage the purchase of locally produced goods and services.
- Work with economic development agencies and institutions of higher education to diversify and expand the local economy and enhance community vitality.
- Promote innovation and technology transfer and attract and support people working to start and grow competitive businesses.
- Support quality of life measures that enhance the local business climate and attract employees.
- Promote development of a strong land-based rural economy.
- Provide opportunities to all residents to develop the skills necessary to obtain high-quality employment.
- Ensure the benefits and costs of economic development incentives are distributed equitably and there is an open and transparent process for decision-making.

SNAPSHOT
OF THE COUNTY TODAY

Tompkins County is a regional employment center anchored and stabilized by Cornell University and Ithaca College. Cornell University is the county's largest employer and, along with Ithaca College, forms the foundation for a creative economy that has helped the county bounce back from recent recessions. The county has experienced steady population and business growth over the past decade; total economic activity has grown by 15 percent and available jobs jumped 11.5 percent[1] while the population grew by just five percent[2]. This relatively strong job growth compared to population growth has contributed to an increase in the number of in-commuters. Over one-quarter of jobs[3] are filled by people living outside the county. The county's economy has out-performed surrounding counties and Upstate New York as a whole.

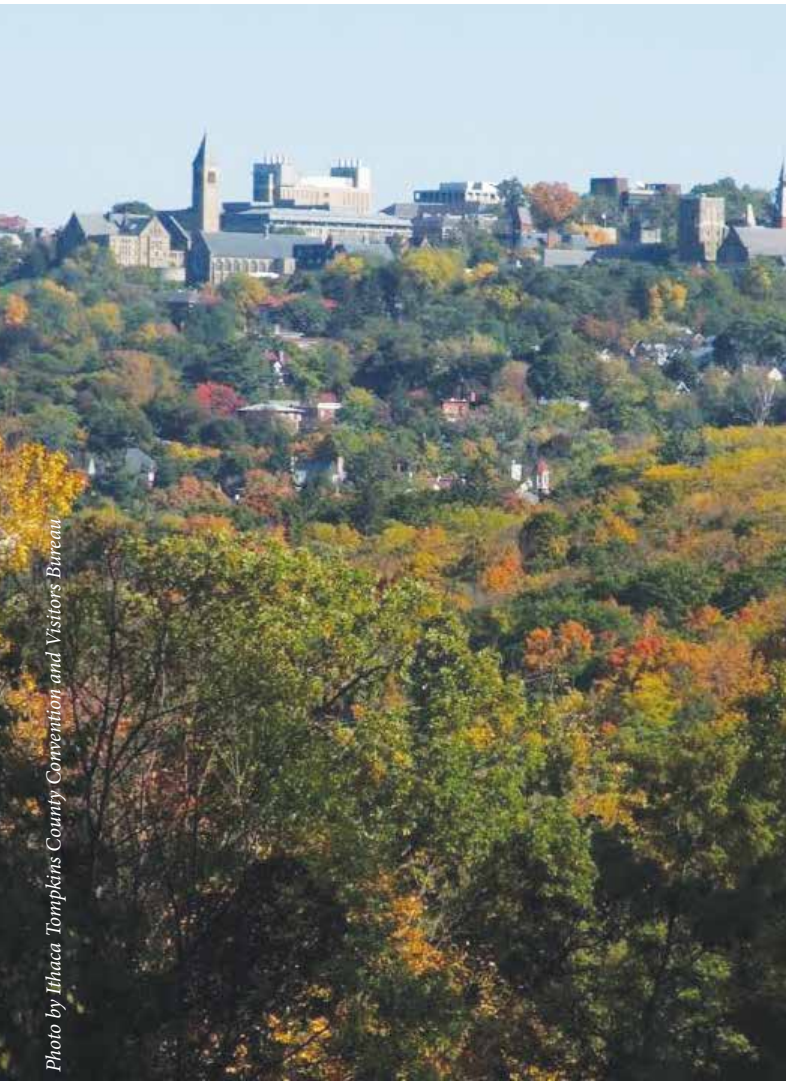


Photo by Ithaca Tompkins County Convention and Visitors Bureau

Cornell University

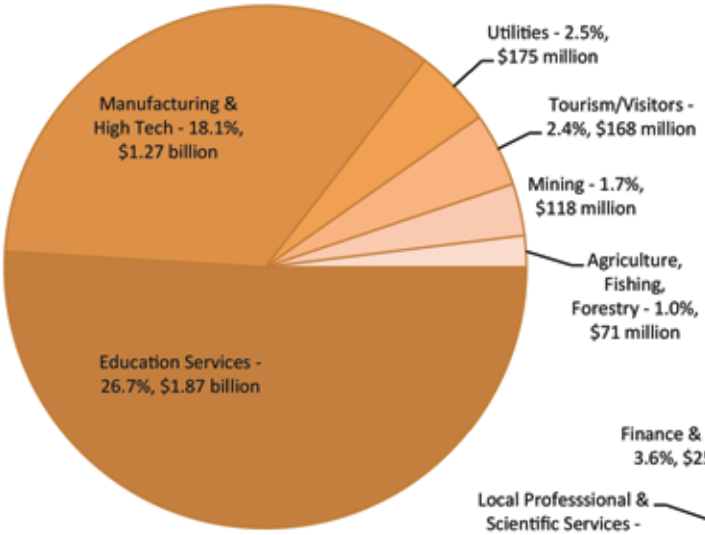
Economic Sectors

Total economic activity in Tompkins County was around $7 billion in 2009[4], with about half in sectors of the economy that sell goods or services to consumers outside of the county, or "traded" sectors, and half in sectors that serve consumers inside the county, or "local" sectors. In addition to education, the traded sectors include manufactured goods; high-tech services which includes portions of the information sector and the professional, scientific and technical services sector; and tourism. Education is the county's largest sector, generating 27 percent of economic activity and 32 percent of employment. But it is not expected to be the fastest growing sector and actually experienced a 12 percent reduction in local jobs between 2006 and 2011. Still, it creates the largest number of job openings due to its large size. Health care is expected to be the fastest growing sector of the economy.

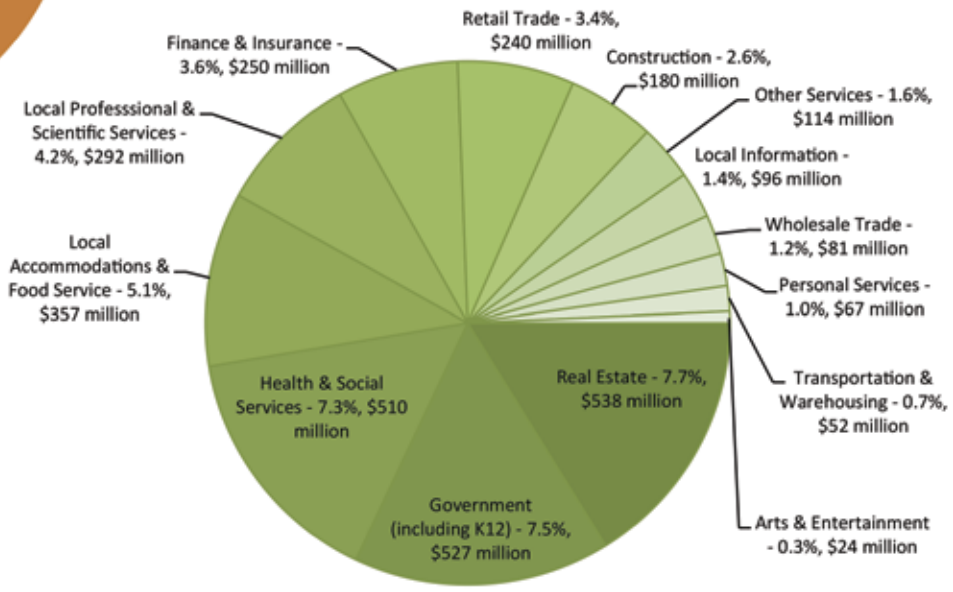
Manufacturing and high-tech together form the second largest sector, accounting for 18 percent of local economic activity and seven percent of employment. Locally manufactured goods include automotive and machine parts, electronics, food and beverages, pharmaceuticals, software, and innovative materials such as high-performance polymers, specialty metals, and plasma micromachining. The high-tech services sector includes scientific and technical research, software design, and analysis and testing of materials for industry. In the midst of a serious loss of manufacturing jobs in the U.S. as a whole in the early 2000s, Tompkins County's loss was much less dramatic. Local manufacturing employment dropped by seven percent between 1999 and 2003, when nationally the drop was 19 percent. Manufacturing then rebounded between 2006 and 2011 in Tompkins County, when it increased by 17 percent, compared to ten percent national growth in manufacturing over the same period. Manufacturing is a key employer and wealth generator and Tompkins County Area Development (TCAD) considers it a sector with moderate job creation potential. Technical and scientific services also experienced notable job growth.

The three local economic sectors of government (including public schools), real estate, and health and social services each make up about eight percent of economic activity. Although agriculture and tourism contribute only one percent and two percent of activity respectively, they contribute in other important ways to quality of life. Local agriculture maintains the distinct Finger Lakes landscape and supports a growing local foods movement, while also contributing over $67 million in sales annually[5]. Tourism helps to support

Tompkins County 2009 Production by Traded Sectors



Tompkins County 2009 Production by Local Sectors



Source: Tompkins County Area Development, 2009 IMPLAN data set

local arts, culture and entertainment venues and contributes over $174 million in annual sales[6]. Visitor spending and local tourism investments help attract and retain businesses and employees since quality of life amenities that attract visitors are also enjoyed by residents. Between 2006 and 2011, health care and accommodations and food services experienced solid job growth.

Jobs and Wages

Unemployment rates in Tompkins County have experienced the same cyclical ups and downs as New York State and the U.S., but have consistently been lower than statewide. Still, unemployment is considered a problem by local residents, especially rural residents, with nearly 60 percent of rural residents calling it "critical" in the 2009 *Compass II-2.0* community needs assessment survey conducted by the United Way and Human Services Coalition of Tomkins County.

The high number of students, about 30 percent of the local population, noticeably shapes the demographic and socio-economic characteristics of the county. In 2012, Tompkins County had about 38,500 households of which about 20,000 were families with two or more related individuals, and about 18,500 were non-family households. Dormitories and other types of group housing are counted separately, but student households still accounted for 20 percent, with around 7,800 student households. In addition, the county has a relatively high rate of non-student, non-family households of around 31 percent. In general, Tompkins County's family income levels are not as concentrated in the higher or lower ranges as are found in New York State and the US as a whole. Family income is highly concentrated in the $50,000 to $150,000 range and the percentage of local families earning below $35,000 is lower than state and national averages.

Selected Income and Employment Characteristics for Tompkins County and Surrounding Counties				
Characteristic	**Tompkins**	**Surrounding Counties**	**NYS**	**USA**
Labor force participation rate	61.0%	61.2%	63.8%	64.7%
Unemployment rate	5.9%	7.5%	8.7%	9.3%
Population with bachelor's degree or higher	49.9%	21.3%*	32.8%	28.5%
Population with health insurance coverage	93.7%	90.2%	88.7%	85.1%
Population in poverty	20.0%	12.2%*	14.9%	14.9%
Families in poverty with children under 18	14.1%	13.8%*	17.5%	17.2%
Families in poverty with children under 5	18.9%	21.5%*	17.1%	18.2%
Median Household income	$50,539	$50,015*	$57,683	$53,046
Median Family income	$76,053	$60,810*	$69,968	$64,585
**Unweighted average*				

Source: U.S. Census, American Community Survey, 5-year estimates, 2008-2012

Individual poverty rates here are quite high, around 20 percent in 2011. While this can be partially explained by the fact that about 30 percent of the local population consists of students, a significant portion of non-student households and families experience poverty. The poverty rate for families with children under 18 is around 14 percent compared to state and national rates of around 19 percent. It is clear that not everyone in the community shares in the region's economic prosperity.

Underemployment is a problem that can be hidden by employment statistics. Nearly 40 percent of *Compass II-2.0* survey respondents indicated a problem finding a job equal to their level of education and experience and nearly 30 percent indicated that they are currently underemployed. According to a 2008 local labor market study, nearly 25 percent of the local workforce is underemployed, compared to about 18 to 19 percent nationally. Residents experience this phenomenon across all levels of education, but medium- and high-skilled workers especially report underemployment. This also impacts those who possess the fewest qualifications and lowest-level work skills, as many of the jobs for which these workers would be qualified are occupied by people who are over-qualified.

A major goal is to promote economic diversity in the makeup of the overall local economy as a means to achieve stability.

ISSUES AND OPPORTUNITIES

Key Sectors

Planning for an economy that can maintain prosperity over the long term requires identifying industries and sectors that are likely to thrive in the future and planning for how best to tap local assets to strengthen and expand local economic sectors. The County's *Economic Development Strategy* identifies specific targeted sectors and economic development approaches and activities to achieve this.

An overarching goal is to support sustainable economic growth opportunities rather than short term boom--bust cycles. A second major goal is to promote economic diversity in the makeup of the overall local economy as a means

to achieve stability. A more diverse economy helps insulate the community from negative repercussions should any significant segment of the economy experience a serious downturn.

Specifically, the draft update to the *Economic Development Strategy* calls for targeting economic development incentives and programs to key traded sectors that hold the strongest potential for growth and wealth-creation. Education, along with manufacturing and high-tech, together employ 40 percent of the county's workforce and are priority sectors. Other key traded industries targeted for growth are technology start-ups, food processing and distribution, agriculture, tourism, and energy. It is also critical to ensure that local sectors have access to good quality infrastructure, workforce, and business services to operate economically-sustainable companies that provide the goods and services needed by local businesses and consumers.

Tompkins County can attract new tech start-ups by leveraging local strengths in knowledge-based industries and innovation.

The county's historic prosperity owes much to the strong higher education sector and the campuses are likely to remain leaders in attracting students, staff, and research investments. However, while the campus experience is likely to continue to be important into the future, the increasing role of online education, decreasing college-aged population, and decreasing Federal research funding suggest caution about predicting large growth in the local higher education industry. These trends also underline the need to diversify the economy to be less reliant on higher education for prosperity. Even if they don't remain the direct sources of growth in the future, the campuses remain key place-based anchors and will be assets around which other significant economic development activity can be based. For example, the recent resurgence in manufacturing and high-tech locally is bolstered by technology transfer between institutions of higher education and businesses. Tompkins County can encourage new tech start-ups and expansions by leveraging local strengths in knowledge-based industries and innovation.

Photo by TCAD

High-tech business in Tompkins County

The community can also develop programs to support entrepreneurs and start-ups; improve linkages among start-ups and entrepreneurs, the colleges, government, and non-governmental organizations; proactively identify local assets for business growth; and collectively market these assets both internally and externally. Businesses should also be supported through all states of development: start-up, research and development, and expansion. Economic development investments should work to keep businesses here as they grow.

State Role in Economic Development

New York State has recently supported two economic development initiatives, in partnership with local institutions of higher education, whose goals are to promote technology transfer, commercialization, and entrepreneurship. START-UP NY (SUNY Tax-free Areas to Revitalize and Transform Upstate NY) provides tax-free status for ten years for businesses locating in pre-designated university zones, including one at Cornell that could be an important means

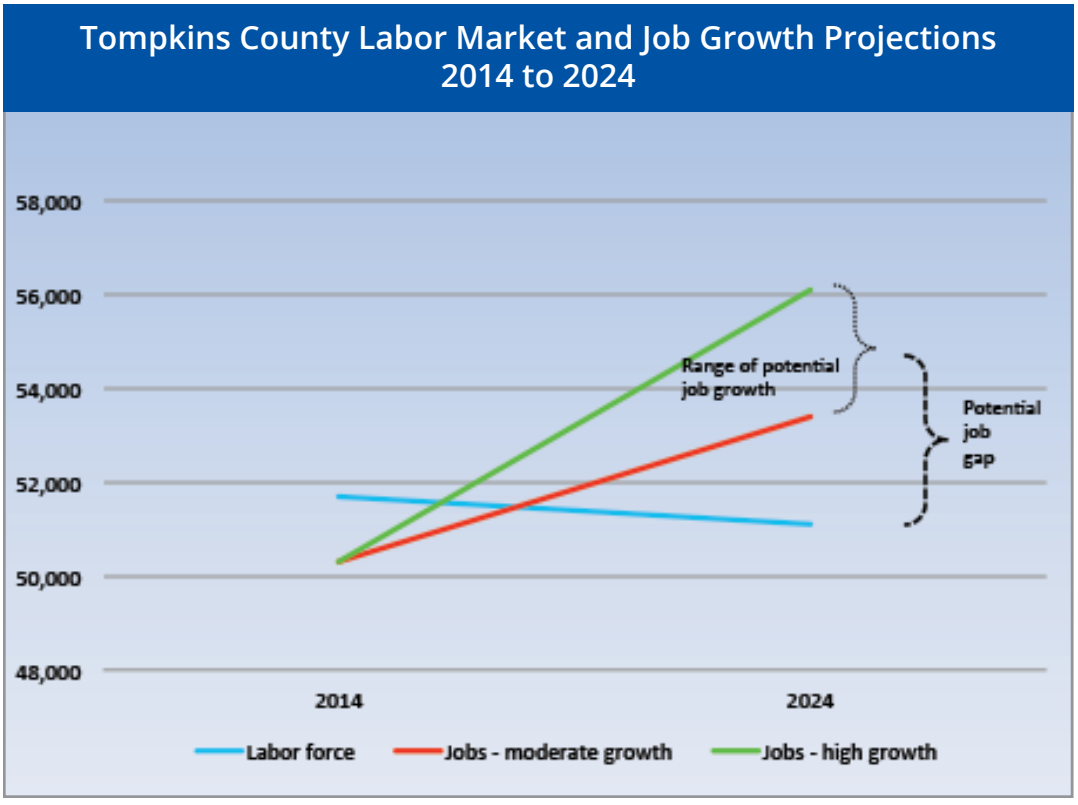
of new technology business growth in Tompkins County. Incodema 3D, located in the Town of Dryden, is the first local business to take advantage of this opportunity. The other initiative is the Southern Tier Innovation Hot Spot, which will catalyze startup formation by helping start-ups grow, raise capital, and succeed. A Hot Spot node is located in downtown Ithaca and is a partnership of Cornell University, Ithaca College, and Tompkins Cortland Community College (TC3).

Job creation and economic development have recently been elevated in importance for a wide variety of state programs. State financial support through many agencies is now vetted against five-year strategic plans adopted by Regional Economic Development Councils (REDCs). This process has also increased the importance of demonstrating regional, not just local, economic significance. Tompkins County is in the Southern Tier REDC region. Several major regional goals have translated into support for projects here. Examples are redevelopment of the Ithaca Commons and TC3's Coltivare Farm-to-Bistro project. Alignment with regional economic development strategies will continue to be important to advance local priority projects and initiatives.

Matching Jobs and Workforce

Half of county residents over age 25 have a bachelor's degree or higher and there is often a problem of job skills not matching the available jobs. An additional problem is that even with slight population growth, the size of the labor force is expected to remain fairly flat or even drop slightly due to retiring baby boomers making up a larger portion of county residents. Meanwhile, available jobs are expected to increase. These factors point to major future challenges in finding people with the right skills to fill all the expected jobs.

The County's *Workforce Strategy*, updated in 2010 by Tompkins Workforce NY and TCAD and approved by the County's Workforce Investment Board, provides direction for workforce development activities, and calls for a coordinated response to rapid economic globalization, integration of technology into all occupations, and dramatic demographic changes. A system where both jobs and workforce programs support the individual's skill and career development, including for people with disabilities, requires a collaborative approach among schools, employers, training entities, and Tompkins Workforce NY.



Source: TCAD analysis of Woods and Poole demographic projections, Cornell PAD labor market participation, Jobs EQ employment projections

Quality of Life and Growth

With vibrant arts, cultural, educational, and culinary offerings; beautiful parks, natural areas, and working rural landscapes; abundant recreational opportunities; good schools; low crime rates; and a strong sense of community engagement, residents in Tompkins County enjoy a very high quality of life. The community regularly makes "top ten" lists for great places to live. This high quality of life plays an important role in attracting and retaining employees and businesses in knowledge industries, while benefiting from those same jobs to supply wealth in the community.

The relationship between quality of life and economic development is at once mutually supportive and divergent, and should be considered carefully and nurtured. Too much development, too quickly, in industries that detract from the community's vision for itself can threaten the quality of life upon which long-term prosperity depends. Growth that supports the community's vision enhances local quality of life. The challenge is to focus on development that enhances and does not degrade the natural landscape, sense of place, and community character, but that does provide competitive job opportunities across a variety of educational and skill levels and brings more living wage jobs to local residents. In certain cases, enhanced incentives might be offered for projects that support key community objectives such as paying a living wage or reducing greenhouse gas emissions.

Bensvue Farm and Cayuga Lake

Strong Working Lands*

Agriculture is a relatively small local sector of the economy, but makes up about 30 percent of the local land base and contributes in important ways to quality of life. Maintaining economically productive rural lands is vital to the rural economy and important to limiting sprawl and maintaining the highly-valued rural character of the community. The agricultural sector is also a source of innovation and new investment, demonstrated in part by the many smaller operations developing new value-added, high-quality agricultural products, and opening up new markets. To support this economic sector, the community can employ a variety of economic development and farmland conservation tools to maintain the vitality of working rural lands. The County's *Agricultural and Farmland Protection Plan* (draft 2014) identifies strategies for supporting agriculture in five areas: economic development, policies, agricultural awareness, the environment, and local foods.

Maintaining economically productive rural lands is vital to the rural economy and important to limiting sprawl.

Compared to most other counties in the region, Tompkins County has historically experienced relative stability in the number of farms and the amount of farmland, and growth in the diversity of farm types. Small farms, up to 100 acres in size, account for most of the growth in farms, farmland, and diversity of farm types. On the other end of the spectrum, the number of very large farms (over 1,000 acres) has started to decline in the last five years after increasing dramatically in the prior decade. Some of the small farm growth can be attributed to innovative farm marketing and operations, including filling niche markets, creating value-added foods, such as craft cheese and vinegar, and producing food geared toward seasonal local consumption through sales at farmer's markets and community supported agriculture shares.

** For more information see the Natural Resources Chapter, "Agricultural Resources" section.*

The limited size and potential income stream from small farms makes it difficult for these farms to support the farmer as his or her sole livelihood. Regardless of size, only 24 percent of farms are primary-occupation farms and only 48 percent of principal operators report their primary occupation as farming. It is clear that a majority of farmers pursue additional activities to sustain themselves, offering different opportunities and constraints than those of full-time farmers.

Another issue facing the agricultural sector is that Tompkins County farmers are aging. This raises serious questions about how the local farmland base will remain active and successful into the future. The *Agricultural and Farmland Protection Plan* identifies specific strategies for transitioning farms and farmland from one generation to the next and expanding the pool of young farmers ready to take on the challenge.

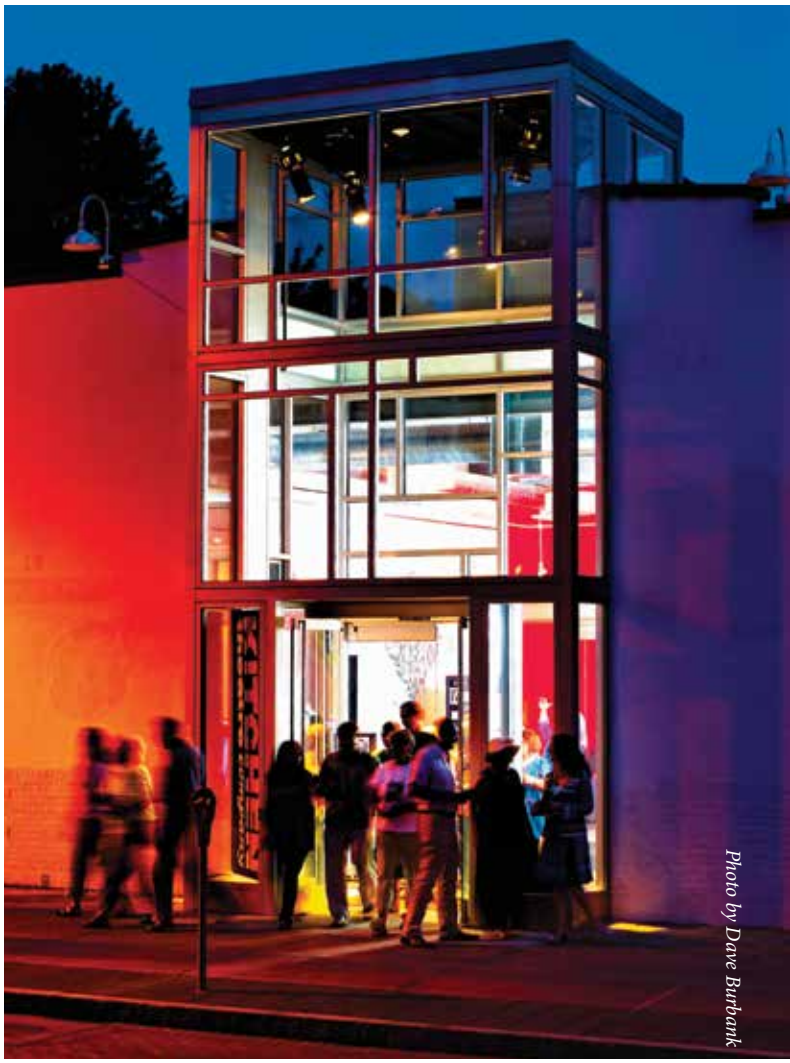
Working rural lands can also contribute to increased economic vitality from producing forest products and renewable energy. Currently over 18,000 acres of State Forests and 10,000 acres of privately managed forest land support the region's forest products industry. Still, many privately owned forest lands are not actively managed and sustainable forest management for hardwood production and biomass are areas of opportunity. Local programs like Cornell Cooperative Extension of Tompkins County's Local Building Materials Initiative promote the use of local lumber and other building materials, along with locally manufactured and sustainably produced materials, to add value and efficiency to local projects. Another project, to promote use of wood pellets for thermal energy, especially in rural areas, offers the potential to stimulate this market. Further, farmers can choose to locate solar and wind energy production facilities on farms that have ample room to site the systems.

Viable economic options for rural landowners are critical not only to supporting the rural economy, but also to providing alternatives to subdivision of rural land for development. To reverse the pattern of sprawl across the rural landscape, attractive options for land management are necessary that provide income to rural landowners and cover the costs of rural land ownership. A vibrant working landscape of farms and forests supplying an increasingly diverse range of products is an essential element of both rural development and smart growth.

Tourism

Tourism plays a small, but important and growing role in the local economy. The County plays a special role in tourism development because of local hotel room occupancy tax funds, which are collected by the County and reinvested in a variety of tourism marketing and product development programs and initiatives. Between 2004 and 2013, room tax revenues grew from $1.24 million to $2.15 million, or 73 percent. The county invests 60 percent of room tax funds in tourism marketing and 40 percent in tourism product development, supporting dozens of local non-profit organizations.

The County's *Strategic Tourism Plan* lays out 15 goals for protecting and continuing to grow existing tourism types, tapping into the community's unique assets to grow new tourism types, and continuing to build a strong tourism foundation. Existing tourism types include agricultural and



Patrons exit the Kitchen Theatre Company, downtown Ithaca's "off-Broadway" theater.

culinary tourism; arts, culture, and heritage tourism; tourism in downtown Ithaca; educational tourism; and outdoor recreation. New tourism types are sports tourism, sustainability tourism, and under-tapped niche markets which are highly focused demographic and interest-based visitor markets for which Tompkins County holds a strategic advantage.

Perhaps even more important than its direct economic impact – four percent of local jobs and $174 million in visitor spending in 2012 – tourism supports a variety of local institutions that contribute greatly to quality of life. By reinvesting room tax dollars in the community to support new and expanding tourism attractions and build on local cultural, historic, natural, and economic assets, it is possible to grow the tourism economy while also enhancing the variety of experiences that make this a great place to live, work, go to school, retire, and grow a business. A successful tourism industry also supports the goal of diversifying the overall Tompkins County economy.

Localization and Wealth Retention

Tompkins County enjoys a strong movement to develop locally-rooted businesses. This localization effort focuses on building internal linkages in the local economy to promote local wealth creation and re-circulate capital in the local economy. Local businesses contribute to the health and vitality of the local economy by purchasing from or providing goods and services to other local businesses, investing in the growth of their business, spending profits within the local economy, and contributing to local organizations.

Locally-rooted businesses promote local wealth creation and re-circulate capital in the local economy.

While it is important to build local businesses, it is also important to promote consumption of locally produced goods and services. Although currently a small part of the economy, recent growth in the production of local food and value-added food products for both local consumption and export are inspiring examples of the benefits of localization.

Methods of promoting local wealth creation and retention include re-directing personal and institutional financial investment resources to local businesses and organizations, encouraging shared-ownership business models, identifying opportunities for investing in communities that have been historically disadvantaged, and encouraging investment in local philanthropy.

Prosperity for All

In 2003, Tompkins County became one of the earliest adopters of a livable wage policy, noting that "any person who works full time should be able to support themselves on their earnings." That policy established that one of the goals of the County's economic development programs is "increasing the percentage of County residents who are able to support themselves on their own earnings." The policy also calls on the County to consider wage levels and benefits when awarding bids or negotiating contracts and to encourage the payment of livable wages whenever practical and reasonable. While there are many different living wage estimates now being calculated at the state and national level, one of the oldest is prepared by Alternatives Federal Credit Union (AFCU). They update their living wage estimate every two years and in 2013 it was calculated to be $12.62 per hour with health care benefits and $13.94 without those benefits. This is the amount needed to support the basic needs of a single person working full time in Tompkins County, including costs for housing, transportation, health care, and other necessities, as well as a modest allowance for recreation and savings. While some living wage estimates place the local living wage higher, others place it lower. The Tompkins County Legislature chose to select AFCU's estimate for its livable wage policy.

Economic development incentives, such as tax abatements, can be used to encourage employers to pay a living wage. As the community works to grow the jobs of the future and to use workforce development investments to provide the necessary skills to local residents to fill these jobs, attention should be focused on the types of industries and businesses that can readily support good jobs with benefits across a variety of levels of skill and education.

Local business groups have expressed concern that paying a living wage puts some business sectors and industries at a competitive disadvantage under current economic conditions. Some businesses provide entry-level jobs that can provide supplemental income to a household or valuable experience in gaining general job skills and some of these businesses may also provide goods and services that are a net benefit to the community. Education and workforce development opportunities can help people move on to living wage or better jobs. Overall, supporting livable wages for workers is a major goal and the moral underpin-

ning of the Tompkins County Legislature's approach to economic development.

Supporting Infrastructure for Economic Development

BROADBAND INTERNET. The lack of availability of broadband internet in some locations in Tompkins County limits certain types of economic development. A project developed by the Tompkins County Broadband Committee, and recently funded by a state grant, will expand broadband access to 96 percent of currently uncovered households in Newfield, Enfield, Danby, Groton, and Lansing and 40 percent of uncovered households in the Town of Caroline. This will be achieved via a fixed wireless broadband system, which uses radio signals rather than cables. Access to broadband internet plays an increasingly critical role in contemporary life, making it important for service to be affordable and easily accessible. In addition, the expansion of broadband internet access countywide can bring important economic development opportunities to rural businesses by enhancing access to marketing, technical, and business support resources. Also, enhanced access can allow for the development and expansion of home-based businesses and work-from-home options.

A living wage is the amount needed to support the basic needs of a single person working full time in Tompkins County.

AIR SERVICE. Maintaining regular and reliable air service through the Ithaca Tompkins Regional Airport is important to the county's ongoing economic health. Beyond its contributions of 400 aviation-related jobs and more than $66 million in economic activity, the airport improves the competiveness and general business climate of Tompkins County by making it more accessible to major hubs of business and academic activity across the US and the globe. Recent decreases in flights and passenger numbers and the anticipated retirement of smaller planes cause concern that carriers may further reduce flights and impact the county's ability to attract and retain businesses. Efforts are underway to maintain and expand service in order to reverse recent trends.

Adequate energy infrastructure is necessary for job-creating projects and investments in efficiency and renewable energy systems can create local jobs.

ENERGY INFRASTRUCTURE.* Energy infrastructure has a dual role with regard to economic development. Adequate energy infrastructure is necessary for certain job-creating projects and investment in efficiency and renewable energy systems can be a major driver in creating local jobs.

Deficiencies in our energy infrastructure have already impacted the cost for businesses to expand locally. There is a need in the community to better understand the sometimes complex energy demands of local businesses, as well as the advances made in new energy technologies that could allow for the development of homes and businesses without the need for expansion of existing fossil fuel infrastructure. This will require energy experts, business leaders, and the community to come together to develop solutions that address energy, economic, housing, and transportation concerns for the betterment of the community as a whole.

State regulatory agencies and utilities play a lead role, but the local community can also be proactive in identifying and communicating energy needs and opportunities to ensure that growth in key sectors can occur. Local efforts to promote a strategic approach to energy infrastructure that considers both supply and demand solutions and is consistent with community energy and development location goals are important to achieving other goals for the local economy. The Tompkins County Energy Roadmap currently being developed will endeavor to chart a course for the transition to a renewable energy economy that supports local job growth while ensuring adequate energy supply to meet current energy needs as well as future growth.

COMMERCIAL CENTERS.** Downtown retail areas are another important local asset to leverage for economic development. Focusing growth in areas with infrastructure and appropriate zoning, such as the Ithaca Commons and village centers, creates an environment where new jobs can

* *For more information see the Energy and Greenhouse Gas Emissions Chapter, "Consider Energy and the Economy Together" and "Explore Infrastructure in Energy Focus Areas" sections.*

** *For more information see the Development Patterns Chapter, "Nodal Development" section.*

be effectively supported with existing infrastructure, the community's overall economic vitality is enhanced, goods and services are accessible, and the natural landscape and community character are protected.

TAKING ACTION

STRATEGIES. The County's *Economic Development Strategy* was last prepared in 2006, and it is currently being updated. The timing of its completion is likely to coincide with the completion of this Comprehensive Plan update, and it is expected that both will include mutually-supporting policies and actions. The *Tompkins County Workforce Strategy*, published in 2010, is the County's overarching strategy for workforce development. The County also completed a *2020 Strategic Tourism Plan* in 2012 to guide the use of county room tax investments and actions related to tourism development. The County's *Agricultural and Farmland Protection Plan* was first prepared by the Tompkins County Agriculture and Farmland Protection Board in 1996, and is currently being updated. The update will propose strategies for supporting agriculture through economic development activities, promotion of local foods, and the important role agriculture plays in the economy. It will also provide an inventory of existing municipal, County, and State policies and identify options for local plans and policies to support agriculture.

Photo by Shannon Williamson

Downtown Ithaca

PARTNERS. A variety of local actors work to implement strategies that combine to promote the community's overall economic prosperity. TCAD is the county's lead economic development agency, provides staff support for the county's Industrial Development Agency, and is currently leading the *Economic Development Strategy* update. TCAD also facilitates the Tompkins County Economic Development Collaborative, which coordinates economic development-related activities among local agencies and fosters inter-agency collaboration to advance mutual interests.

Tompkins County also has several very committed agencies working with specific populations to promote and provide employment. The Tompkins County Workforce Investment Board, together with Tompkins Workforce NY and TCAD, is the primary author of the County's *Workforce Strategy*. Partners include area public schools, TC3, the New York State Department of Labor, the Women's Opportunity Center, the County Office for the Aging, and T-S-T BOCES.

The Tompkins County Chamber of Commerce advocates for sound economic development and promotes business by forging links between and among business, government, community organizations, and institutions. It also hosts the Ithaca Tompkins County Convention and Visitors Bureau, which leads implementation of many tourism-related actions. The Tompkins County Strategic Tourism Planning Board, with staff support from the Planning Department, provides oversight and strategic direction for tourism-related initiatives including through room tax supported grants. Cornell Cooperative Extension of Tompkins County works with the County's Agriculture and Farmland Protection Board to prepare the *Agricultural and Farmland Protection Plan*. As noted above, Cornell University is leading efforts in support of the START-UP New York and Southern Tier Innovation Hot Spot programs.

COUNTY ROLE. County government plays many roles in economic development. Members of the County Legislature and County officials serve on the boards of the Industrial Development Agency, which provides tax incentives to local businesses, and TCAD which receives a significant portion of its operating funding from the County. The County

commonly serves as the primary applicant for Community Development Block Grant funded projects outside of the City of Ithaca. The Workforce Investment Board is a County program, and the airport is a County facility. The County approves tax-exempt bonds for area businesses, and collects and directs the use of local hotel room occupancy tax funds to support tourism and economic development activities. And the County Planning Department provides leadership on planning studies and analyses in support of economic development, for example the feasibility study for relocating the New York State DOT facility on the Cayuga Inlet Waterfront.

County Actions to be Initiated within Two Years

- Create implementation plans for agri-culinary tourism and heritage tourism, two of the focus areas in the *2020 Strategic Tourism Plan.*
- Develop an Energy Focus Areas Strategy to provide for the energy needs of growing businesses while prioritizing renewable energy solutions and addressing energy concerns in key geographical areas of the county.
- Seek increased funding to reimburse employers for on-the-job training that enhances employees' skills and increases their wages.

[1] 2000-2010 Tompkins County non-farm labor growth. Source: CES Current Employment Statistics, Bureau of Labor Statistics

[2] 2010 Census

[3] 2006-2010 American Community Survey, analysis by ITCTC

[4] 2009 IMPLAN data, analysis by TCAD

[5] 2012 USDA Census of Agriculture

[6] 2012 Tourism Economics report for New York State, Finger Lakes Focus

housing

Housing is not only an essential human need, but a source of physical, psychological, social, and economic health and stability. Tompkins County is in need of additional housing units, as well as improvements to existing housing. The goal is to have more people living in affordable, safe, appealing housing that is energy efficient, enables workers to live near their jobs, and meets any physical accessibility or supportive service needs residents may have.

Creating an adequate supply and variety of housing options can free household wealth to meet other needs and enable individuals and families to build savings to ensure their financial stability. This in turn helps reduce resident turnover, recruit and retain employees for local businesses, improve the physical and mental health of families, enhance the educational attainment of their children, and free funds for use in other sectors of the local economy.

PRINCIPLE

Tompkins County should be a place where housing is affordable, safe, energy efficient, and appealing.

POLICIES

It is the policy of Tompkins County to:

- Encourage a variety of housing options in development focus areas.
- Support new development of housing whose total costs, including utility and transportation expenses, are affordable to households with a range of incomes.
- Promote energy efficient housing.
- Provide housing options for an aging population.
- Maintain an adequate supply of housing for people requiring supportive services.
- Improve the existing housing stock.

SNAPSHOT OF THE COUNTY TODAY

Existing Supply

Tompkins County's existing housing supply consists largely of older buildings, with a high proportion oriented towards renters and students. Of the county's 41,662 housing units, 17,114 are renter-occupied and 21,431 are owner-occupied. Approximately 70 percent of all units are located in structures with one to four units. According to the Tompkins County Department of Assessment, 36 percent of the residential housing stock was built before 1940, another 14 percent was built between 1940 and 1959, and approximately seven percent of the housing stock shows definite signs of deferred maintenance. The large percentage of renters and students pursuing higher education, combined with relatively strong employment and higher wages, differentiates Tompkins County's housing market from that of its neighbors. The results are lower vacancy rates and higher costs for housing than are typically found in this region.

Although the county is within a few hundred units of meeting the goals of the *Tompkins County Housing Strategy (2006)*, which called for the construction of 4,000 new housing units between 2005 and 2014, only 40 percent of the target for units affordable for moderate-income households has been built. Also, recent construction has focused on student housing while the county continues to face a shortage of units suitable for moderate or lower income families, seniors, and individuals in need of supportive services.

> The county faces a shortage of units for moderate or lower income families, seniors, and individuals in need of supportive services.

Landlords manage a significant portion of the community's housing stock. Within the City of Ithaca, 73 percent of households are renters, and countywide 44 percent of households rent their homes.

Affordable Living

Housing costs in Tompkins County are high for both renters and homeowners. Low vacancy rates for rental units create strong competition for available units and help inflate prices. Despite the recent national recession and mortgage crisis, Tompkins County median home purchase prices soared from $100,000 in 2000 to $190,500 in 2013. Median rents increased from $529 in 2000 to $823 in 2012. Yet the price to purchase a home or to rent an apartment does not capture the full cost of living in a specific location. To understand that, it is important to analyze the cost of transportation to and from the home, as well as the cost of home heating and utilities.

Housing prices and rents for housing farther from jobs, amenities, and transit are often less expensive, but result in higher transportation expenses. These transportation costs are typically the second largest budget items for households and have

Housing Statistics for Tompkins County and Surrounding Counties

	OWNER			RENTAL		
County	*Home-ownership rate*	*Median Home Purchase Price*	*Households with monthly owner costs exceeding 30% of income*	*Rental vacancy rate*	*Median Gross Rent*	*Monthly gross rent exeeding 30% of household income*
Tompkins	55.6%	$190,500*	28.9%	2.3%	$925	57.0%
Cayuga	71.8%	$110,000*	27.4%	6.6%	$649	43.0%
Chemung	67.9%	$110,000*	22.0%	3.7%	$686	50.5%
Cortland	66.3%	$115,500*	27.0%	7.0%	$684	46.0%
Schuyler	81.1%	$131,000*	28.4%	7.7%	$587	35.9%
Seneca	75.0%	$117,000*	29.7%	5.6%	$657	44.4%
Tioga	79.9%	$123,000*	25.8%	3.0%	$607	40.4%

*Sources: U.S. Census, American Community Survey, 5-year estimates, 2008-2012; * 2013 Annual New York Association of Realtors Data*

Photo by Tompkins Community Action

Sealing threshold of an older home, Tompkins County

reached a point where they frequently equal or exceed the mortgage or rental costs for working families. With more than two-thirds of workers relying on private automobiles to commute to work, substantial costs are incurred to purchase, insure, maintain, and operate vehicles. The American Automobile Association estimates owning and operating a vehicle driven 15,000 miles annually costs $760 per month for an average sedan and $967 per month for an average sports utility vehicle. Clearly, automobile expenses remain a large budget item for most households, and one that is especially burdensome the further the distance between work and home.

Utility bills are another significant cost for residents. Although energy sources experience fluctuations in cost over the short term, overall global demand is anticipated to drive up prices at the same time extreme heat and cold weather events become more frequent and costly in terms of utility bills. Sharp increases in home heating prices during the 2013-2014 winter left many county residents struggling to pay their utility bills. Rural residents who rely on propane or fuel oil are particularly vulnerable to these high costs, as are people living in housing with poor insulation and leaky air sealing. According to the U.S. Energy Information Agency, from 2008 to 2014, propane prices in this region rose 34 percent, and heating oil prices rose 25 percent. Interestingly, during that same time period natural gas prices dropped 46 percent, however between January and June of 2014, natural gas prices rose 63 percent. Price fluctuations such as these make it extremely difficult for individuals and families to budget for energy costs from year to year, and sometimes from month to month. With over a third of households already cost-burdened by their housing, any additional increases to utility bills or transportation costs threaten the ability of many residents to continue living in their current homes.

In-Commuters

Tompkins County is a regional job center that attracts employees from throughout the region. People commuting into Tompkins County for work increased by 11 percent between 2000 and 2010. As of 2010, a total of 15,000 workers commuted in to Tompkins County, with the largest numbers coming from Cortland County with 3,200, Tioga County with 2,800, and Cayuga County with 2,000.

Although many in-commuters certainly prefer to live in other counties due to family ties or lifestyle choices, a survey of in-commuters found Tompkins County's high housing prices to be the primary reason for living outside of the county. Declining job opportunities in surrounding counties may also be contributing to the increase in the number of in-commuters. In addition to the costs commuters themselves incur, in-commuting impacts the wider community through added traffic congestion, greater wear and tear on roads and bridges, increased vehicle emissions, and increased costs to maintain the road network.

ISSUES AND OPPORTUNITIES

Housing Supply

A number of factors, including an inadequate supply of housing, desirability of the community, large college student population, and low vacancy rates, all contribute to high housing costs in Tompkins County. The limited supply of housing relative to demand has resulted in extremely low vacancy rates for renter occupied units, at 2.3 percent countywide and around one percent in the City of Ithaca. New housing construction is generally not affordable to the average household. As a result, households face an increasingly competitive housing market. The competitive market also has implications for fair and equitable access to housing, since illegal discrimination is more easily masked when many households compete for housing.

The 15,000 students living off campus in Tompkins County strongly impact the rental market, particularly near the campuses. Non-student households face difficulty competing with students for rental housing since a group of four

students, for example, can pool their resources for more purchasing power than a typical family household. A significant number of off-campus student housing units recently proposed or built hold the potential to positively affect the market by freeing some of the existing student-occupied units for other households. However, this transition may not be a smooth process since the housing currently occupied by students is not always suitable, or affordable, for other types of households.

Housing Quality

Although often associated with student, rental, and lower income-housing, poor quality is a widespread issue affecting the supply, affordability, and safety of housing. Older housing units typically require more maintenance and repairs than newer housing, and deferring this work jeopardizes the safety of residents and reduces the lifespan of units. High housing costs leave many residents with inadequate financial resources to undertake maintenance and repair, while the growing number of single person and older adult households mean that many are physically unable to undertake home improvements themselves.

Low vacancy rates result in poor quality units remaining competitive, as indicated by a 2011 analysis of local apartments which found high rents do not reflect higher quality housing units, and the median quality rating of apartments in Tompkins County would represent "affordable housing" at the bottom of the market in most conventional markets. If units continue to deteriorate to the point that it is infeasible to restore them to occupiable conditions, housing supply and affordability will worsen and more residents may have to choose between ignoring safety issues or re-entering a highly competitive housing market.

Housing Affordability

Housing is generally defined as affordable if it costs a household no more than 30 percent of its income. Nearly one in every three homeowners pay more than 30 percent of its income on housing, and nearly two in three renters do so. In total, 38 percent of Tompkins County households who rent or own homes have housing affordability problems. While certainly aware of the problem, many in the community were astounded by the New York Times article in April 2014, which determined Tompkins County had the

Holly Creek Townhomes, Town of Ithaca

11th highest housing costs relative to income in the nation, and the second highest in the state, after New York City.

The growing number of in-commuters from surrounding counties also indicates that more people are being priced out of the local market, and more pressure is being placed on housing assistance providers and social service programs that assist lower-income households.

Affordability challenges both renters and owners. Owning a home is widely recognized as one of the most effective ways for Americans to build wealth. However, homeownership remains out of reach for many households as purchase prices outpace wage growth and families struggle with high costs for utilities, transportation, taxes, and personal expenses such as child and health care. Renting has traditionally provided the lower costs and flexibility many households need when educational pursuits or unstable employment make a longer-term housing commitment infeasible. However with rents also outpacing wage growth, renting has become a financial strain that prevents households from saving towards a future home purchase or devoting income to other needs. An increase in the supply of both for-sale and rental units is needed that is affordable to a wide range of incomes.

In total, 38 percent of Tompkins County households who rent or own homes have housing affordability problems.

Affordable housing needs vary across income groups. Extremely low-income households, typically those earning up to 30 percent of area median income, primarily rely on rental assistance through public housing, Housing Choice Vouchers, and privately owned but federally assisted housing. However, funding is inadequate and nationally an estimated three-quarters of eligible households go unassisted. This results in households

having to "double up" with family or friends, use emergency shelters, or go homeless.

Slightly further up the income ladder, those earning between 30 and 80 percent of area median income may qualify for first-time homebuyer assistance through Better Housing for Tompkins County, Ithaca Neighborhood Housing Services, and the Tompkins County Homeownership Program. However, the supply of homes affordable even with this assistance is extremely limited, and often not well maintained and located in areas that incur longer and more costly commutes.

Middle-income households earning over 80 percent of area median income are increasingly over-burdened by housing costs, and they largely struggle with affordability on their own since State and Federal housing assistance is targeted to those below their income levels. As a result, middle-income households seeking to purchase or rent housing are increasingly faced with the choice of overextending themselves financially, moving into housing that in the past would have been occupied by lower-income households, or commuting longer distances to find reasonably priced housing. The high costs of new housing development mean that new construction tends to target either upper income-households or those with lower incomes that qualify for subsidies and tax incentives, leaving middle income-households with limited housing options.

Despite this clear need, there is currently little incentive to develop lower cost housing due to the lower return on investment such units bring, the high costs and lengthy development processes often associated with new construction, and opposition by some local residents who perceive affordable housing as a threat to their safety and property values. There often appears to be consensus that affordable housing is needed, but little agreement on where those units should be located and few "ideal" locations available to developers that meet all the criteria expressed by the community for such development. Additionally, although most affordable housing construction is financially infeasible without State of Federal financial assistance, this funding has become more unstable at the same time competition for it has increased as communities throughout New York State and the nation struggle to meet affordable housing needs.

Amidst these housing affordability issues is the opportunity to increase community support for the construction of more housing units. With over one-third of households cost burdened by their housing expenses, nearly everyone in Tompkins County is either in need of affordable housing themselves or knows someone in need. As community members are able to put a face to those with such needs, gain more awareness about the issue, and influence designs to address concerns, there is an opportunity to ease some of the fears surrounding affordable housing and discuss ways to reduce costs so that local workers of various income levels are able to live within the county. Concerns about over-concentrating lower-income residents in particular areas and isolating particular groups from the broader community also indicate a need to pursue development of more housing that mixes incomes and household types to better blend new units into existing neighborhoods.

Locally, the Tompkins County Housing Fund has provided financial assistance to incentivize the development of housing units that remain permanently affordable for low- to moderate-income households. However, this partnership, with contributions from Tompkins County, the City of Ithaca, and Cornell University, is set to expire in 2015 and it remains uncertain if adequate funds can be found to continue the program.

Energy Efficient Housing*

Residential energy efficiency is critical both to the affordability of housing units and efforts to reduce fossil fuel consumption and greenhouse gas emissions. The residential sector is the second highest energy consumer and greenhouse gas emitter in Tompkins County, after transportation. High energy costs impact the ability of households to afford their homes and reduce the amount of money available for

Older home with solar panels, City of Ithaca

** For more information see the Energy and Greenhouse Gas Emissions Chapter, "Reduce Energy Demand" section.*

other needs such as health care, food, and transportation. The County Industrial Development Agency currently provides for up to 10 years of property tax abatement for construction achieving LEED, Leadership in Energy and Environmental Design, certification as a green building. However, with over half of the housing supply over 50 years old, there are opportunities to upgrade existing homes with energy efficiency improvements as well as promote additional energy efficiency in new construction.

Residential energy efficiency is critical both to the affordability of housing units and efforts to reduce greenhouse gas emissions.

to reduce energy use in the future. Often overlooked are such things as a building's orientation to the sun, inclusion of solar panels or geothermal systems in new construction, roof design for optimal interior cooling and warming, and landscaping to enhance energy efficiency. Extremely energy-efficient homes are a reality today and several examples may be found of such construction in Tompkins County, where homeowners have actually paid $1 for a month of heating in a frigid February because their homes were so well-built.

Energy efficiency improvements are particularly challenging for the large proportion of rental units within the county due to the low vacancy rate and lack of incentives for landlords to make the upgrades. Units are likely to rent regardless of their efficiency, so landlords have little incentive to make improvements, especially since they often do not see the energy savings themselves, as tenants typically pay the energy bills in the units. Tenants also have little incentive to make improvements since they have no long-term guarantee to the energy savings and often live in buildings with multiple units where individual tenants cannot make necessary upgrades. Energy efficiency improvements to rental housing will require programs that help share incentives between landlords and tenants, as well as targeted outreach to both groups that builds interest, educates them about the potential energy savings, and reduces the time and complexity required to participate in incentive programs.

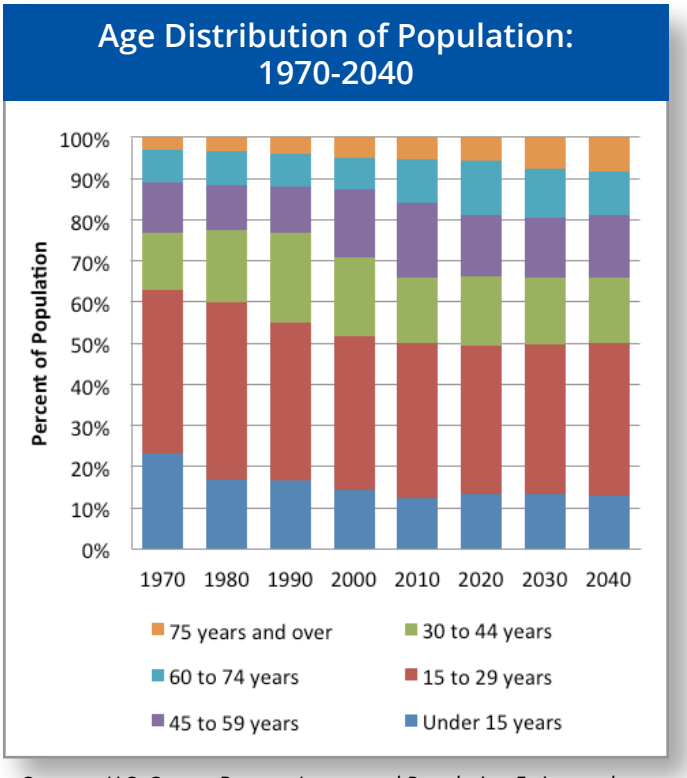
IMPROVING OLDER HOUSING. The U.S. Energy Information Administration has found that residential buildings built before 1950 are generally 30 to 40 percent less energy-efficient than those built after 2000. Maintaining existing energy-efficient features, addressing repair issues, replacing worn-out appliances with energy-efficient models, converting to more efficient and sustainable methods of heating and cooling, and implementing energy upgrades such as insulation and air sealing, can greatly improve the overall energy efficiency of the existing housing stock while saving residents money and reducing the community's greenhouse gas emissions.

BUILDING NEW HOUSING. The New York State Energy Conservation Construction Code that will be in effect in 2015 will be approximately 15 percent more energy efficient than the previous version for new construction and major remodels. However, there is still much that can be done to ensure that housing built today will not need to be retrofitted

The location of housing is another critical component of energy efficiency. New construction that not only incorporates energy-efficient design but also is located within development focus areas can reduce the fossil fuels used, emissions generated, and financial costs incurred by residents as they travel to jobs, schools, services, and other amenities.

Changing Demographics

Shifts in Tompkins County's demographics require changes to the local housing supply in order to meet the community's existing and projected needs.



Sources: U.S. Census Bureau, Intercensal Population Estimates by Age, Sex, and Race; U.S. Census Bureau Decennial Census; Cornell Program on Applied Demographics

HOUSEHOLD SIZE. The median household size in Tompkins County continues to decrease, resulting in the growth of households outpacing overall population growth. Single-person households currently make up a third of all households. With housing units already in short supply and the large number of older homes designed for larger households, these trends of more and smaller households are likely to exacerbate the county's low vacancy rates and high housing costs. Paying for more housing than a small household needs increases both housing expenses and energy use.

Given the need for additional housing construction, there is an opportunity to promote construction of smaller units more suitable to shrinking household sizes. Smaller units can be less expensive and organized to promote more compact, walkable neighborhoods with access to transit and other amenities. There is also an opportunity to collaborate among municipalities to investigate options such as increases in allowed density, micro-housing, single room occupancy housing, and accessory units like backyard cottages.

AGING POPULATION. Tompkins County's senior population is growing and facing mounting housing challenges. Between 2000 and 2010, the overall number of residents over age 65 increased by 18 percent, or 1,679 people, to make up 11 percent of the total population. During this same period, the population between ages 60 and 64 nearly doubled. Better health care, increasing longevity, and the entry of the baby boom generation into this group are adding to senior housing needs. Tompkins County is also increasingly becoming a retirement destination among retiring Cornell and Ithaca College alumni.

There is an opportunity to promote repairs and retrofitting of housing units to improve their safety and accessibility.

Most seniors want to "age in community" and live as independently as possible as fully integrated members of their chosen communities. Some wish to stay in their homes and "age in place," while others seek to relocate within the community to homes that are more easily maintained and accessible. The *2014 Tompkins County Senior Housing Preferences Survey* found the top three factors seniors seek in their future homes are affordable cost, single floor design, and easy access to public transportation. Many seniors also expressed a desire for more affordable housing in downtown Ithaca, proximity to services, condominiums, and a concern over the lack of housing options for the middle class. Unfortunately, many elderly people currently live in multi-story, older homes with substantial maintenance needs in rural and suburban locations that are not close to public transit.

New housing construction has not focused on the senior population and provided the variety of housing types and price points needed by seniors. For example, there has been very little new condominium development since the 1980s, and there is virtually no inventory of single-floor condominiums in the local market. As a result, recent construction of single-floor apartments in buildings with elevator access in downtown Ithaca have attracted a substantial number of older renters despite no effort to specifically build for or market to the senior population. The Senior Housing Preferences Survey also indicates seniors are expecting their housing costs (rents or purchase prices) to fall at or below the current median levels, leading to even greater competition for affordable units.

As people age, their incomes tend to decline, making the affordability of housing and services a major issue. The Tompkins County Office for the Aging's *Senior Housing Occupancy Rate Survey* (2011) found an average occupancy rate of 99 percent for the 836 federally assisted senior apartments in the county and an average wait time of six months to one year for the units. Despite an 11.3 percent increase in units between 1999 and 2010, the occupancy rate grew by one percent, indicating the increase in seniors needing these apartments is outpacing development of new units.

Older adults who cannot live entirely independently are continuing to show a strong preference for receiving personal care services in a residential environment rather than a health care setting. Unfortunately, there is a severe shortage of home care workers providing services that support seniors who need help to remain in their homes. Currently, only one assisted living facility provides a limited number of units on a sliding fee schedule for low-income seniors, and there are no Medicaid-funded assisted living units within the county. Those seniors relying on Medicaid must either find assisted living units outside of the county or move to skilled nursing facilities, which provide a higher level of care at higher operating costs while affording less independence than those seeking assisted living units typically desire.

New housing units are needed that incorporate universal design principles, both for owners and renters and that are

Breckenridge Place Apartments, City of Ithaca

affordable to a wide range of incomes. Universal design features enable people to live independently in their homes as long as possible and to visit others and maintain social connections. These units should be built in Development Focus Areas to ensure that seniors have opportunities for better transportation options and to more fully engage in their community.

Given the large number of older homes in the county, there is a significant opportunity to promote repairs and retrofitting of existing housing units to improve their safety and accessibility for people of all ages and abilities. Developing a larger local workforce of home care workers and providing financial assistance will be critical to enabling people who wish to live independently to do so. However, additional assisted living units for those with lower to moderate incomes, as well as the addition of units for those relying on Medicaid, are also needed to meet the housing needs of older adults.

SUPPORTIVE HOUSING. The population needing supportive services continues to grow and has outpaced the supply of housing that can meet these individuals' needs. Despite a dedicated group of individuals and organizations within Tompkins County providing supportive services and housing to populations with special needs, decreasing and uncertain funding has affected their ability to provide adequate supportive housing for those who need it. State subsidies for supportive housing and services, particularly for those with mental health and developmental disabilities, typically fail to differentiate the county's housing prices and vacancy rates from those of the surrounding regional housing market, and therefore provide inadequate funding assistance. Supportive services help individuals maintain stable housing and maximize their ability to live independently. These services include health care, mental health care, alcohol and substance abuse prevention, independent living skills, parenting skills, vocational assistance, and reintegration of convicted criminals into communities. An adequate supply of supportive housing is critical to reducing homelessness and promoting the health of those in need of assistance while integrating them into the community. Supportive housing can also reduce costs associated with emergency medical services and emergency room visits, reduce crime and recidivism, and help maintain the quality of life throughout the community.

An adequate supply of supportive housing is critical to reducing homelessness and promoting the health of those in need of assistance.

Recent years have seen a decline in funding for various supportive services. The 2014 *Tompkins County Homeless Point-in-Time Count* found an increase in the number of homeless persons in shelters who suffer from severe mental health problems, as well as an increase in the number of chronically homeless people who are unsheltered. Drug related hospitalizations have increased steadily since 2004. In developing the *Tompkins County Community Health Assessment 2013-2017,* the Tompkins County Health Department conducted a community survey and consulted with the Tompkins Health Planning Council and Tompkins Health Network, concluding that mental health and substance abuse are the top health priorities in the county. Safe havens that provide tools to overcome the root causes of a person's homelessness, halfway houses that allow individuals to recover from substance abuse and convicted criminals to reintegrate into society, and shelter for those struggling with mental health challenges or threatened by domestic abuse are among the supportive options needed by housing-insecure individuals.

A survey of youth living independently cited help finding housing as their primary need, while consistently voicing a need for support and guidance as they learn to live on their own and navigate in the adult world. Of these youth, 19 percent reported having a child or being pregnant, indicating a need for additional support. Minimum age restrictions at many shelters, concerns for personal safety, and limited supportive housing options for young people lead many youth to "couch surf" rather than seek formal housing assistance, meaning the numbers of homeless and housing-insecure youth are typically underreported. Housing that provides the support young people need to learn how to live, and parent, is critical in providing the stability needed to pursue education and employment.

TAKING ACTION

STRATEGIES. The Tompkins County Legislature endorsed the *Housing Strategy for Tompkins County* in 2007. This strategy grew out of the *Affordable Housing Needs Assessment* (2006) that analyzed the local housing market and population trends and found a need for 4,000 additional rental and owner-occupied units across all income levels by 2014. Four specific strategies were identified:

- Use inclusionary and incentive zoning to achieve affordable housing goals.
- Establish a community housing trust with support from major employers, financial institutions, education institutions, and private donors to acquire and own land on which housing can be built.
- Encourage major employers to provide assistance to employees who purchase homes in targeted areas.
- Establish a community housing affordability fund to fill funding gaps needed to keep units affordable and assist not-for-profit housing developers with pre-development expenses.

PARTNERS. From concerned citizens, experts from higher education institutions, and organizations such as the Finger Lakes Independence Center, a number of partners are present within the community to provide insight into housing-related efforts.

Municipal boards, planning boards, and departments are critical partners with the ability to modify land use regulations to better support development of the types, quantity, and location of housing needed in the community. The Landlords Association of Tompkins County is an important partner in improving the quality and energy efficiency of the county's housing stock. Housing agencies, organizations, and developers help to promote affordable housing and provide aid for low-income families struggling with housing expenses, through programs such as the Tompkins County Housing Fund and Federal and State grant funds. These partner agencies and non-profits include the Ithaca Urban Renewal Agency, Ithaca Housing Authority, Better Housing for Tompkins County, Ithaca Neighborhood Housing Services, and Tompkins Community Action.

The Human Services Coalition of Tompkins County (HSC), its Homeless and Housing Task Force, and various agency and non-profit members work with the County in the collection of data, establishment of targets, and recommendation of actions pertaining to supportive housing for the young, the homeless, and others with special needs. Given declining and often uncertain funding for supportive housing, this partnership is important to pursuing additional funding and adjusting programs as needed based on changes to populations needing assistance.

COUNTY ROLE. County Government does not build or permit housing; however, it does fill a number of roles in regards to housing. The Tompkins County Planning Department spearheads efforts related to the assessment of countywide housing trends and needs, affordable housing funding, homeownership assistance, and related efforts to improve the condition and energy efficiency of housing. This includes administering the Tompkins County Housing Fund and the Tompkins County Homeownership Program, and convening the Housing Strategy Partners, a group of representatives from many of the partner organizations mentioned that assess progress in implementing the Tompkins County Housing Strategy. The Tompkins County Office for the Aging assesses the housing needs and preferences of seniors, administers the Weatherization Referral and Packaging Program, and works to assist seniors with housing concerns such as repairs and accessibility modifications. The Tompkins County Departments of Youth Services, Health, Mental Health, and Social Services help to collect data and establish targets and recommended actions pertaining to supportive housing for young people and populations with special needs. The Tompkins County Office of Human Rights educates community members about their rights and responsibilities with regards to fair housing, and addresses reported instances of housing discrimination.

County Actions to be Initiated within Two Years

- Update the Tompkins County Affordable Housing Needs Assessment and engage the broader housing community in revising the *Tompkins County Housing Strategy.*
- Better define the housing needs of client populations served by County human services agencies.
- Assist municipalities in developing strategies to help homebuyers compare and evaluate the energy efficiency of existing housing.

transportation

Transportation touches nearly all of people's daily activities. Increasingly, people are seeking more choices for how to travel, including biking on paths, walking on sidewalks, hopping on buses, connecting for shared rides, driving electric or hybrid cars, or just driving on well-maintained roads. In order to make the best solution for how to get somewhere not always "drive there alone," alternative ways to move from place to place need to be convenient, affordable, and fun.

Besides expanding choice, broadening transportation alternatives can result in a healthier population, less traffic congestion, fewer accidents, and fewer emissions and other environmental impacts. A sustainable transportation system seeks to minimize negative impacts while providing a good level of service. Enhancing the transportation system to serve all residents equitably will require insight into the social structure as well as the infrastructure of the community.

Although there is no single fix to the challenge of increasing choice and convenience for consumers while simultaneously reducing energy use and emissions from transportation, there is growing interest in the community in having good options available. From record Tompkins Consolidated Area Transit (TCAT) ridership to thriving Ithaca Carshare and the well-used Cayuga Waterfront Trail, demand is growing from throughout Tompkins County for a variety of ways to get around. This is a system-wide challenge that will require multi-faceted solutions to create the transportation infrastructure the community is ready to embrace.

PRINCIPLE

Tompkins County should be a place where transportation choices are efficient, affordable, and healthy for people and the environment.

POLICIES

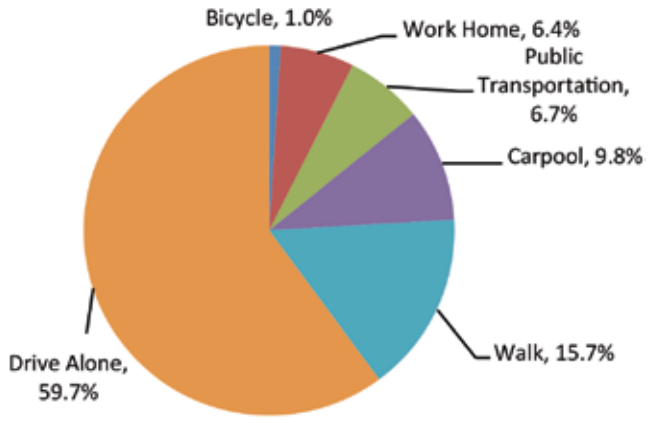
It is the policy of Tompkins County to:

- Maintain and improve critical elements of the existing transportation network to support the safe movement of people and goods.
- Reduce the use of fossil fuels in transportation.
- Shift travel away from driving-alone to biking, walking, carpooling/ridesharing, and using public transit.
- Support a pattern of land use that allows people to move efficiently and affordably.
- Provide for the safe and effective movement of freight to, from, and within the county.
- Continue to provide airport services that support community and business needs.
- Consider the needs of populations that are particularly challenged by transportation when developing systems and alternatives.

SNAPSHOT
OF THE COUNTY TODAY

Studying the commute to work is a good starting point to assess transportation in the community. In 2013, 60 percent of commuters drove alone to work. Additionally, of the roughly 25 percent of people who work in the county but live elsewhere, fully 82 percent drove alone to work. Tompkins County has higher percentages of residents bicycling, carpooling, walking, and working at home than in New York State as a whole. Not surprisingly, these figures are impacted strongly by factors such as community density, individual wealth, and age. Non-automobile use was higher in the City of Ithaca and other areas where development is compact and, not coincidentally, most of the student population is concentrated; countywide, 65 percent of wealthier people drove alone versus only 38 percent of people below the poverty level; and 78 percent of people over 60 years old drove alone versus only 35 percent of 20-24 year olds.

Commute to Work (2013)



Source: U.S. Census, American Community Survey, 5-year estimates, 2009-2013

While commute trips are important, they only represent a portion of the total daily trips taken. For all trips, privately owned vehicle trips still represent the most common method of getting around, with walking and carpooling showing strong numbers in trips having to do with family, personal, social, and recreational outings.

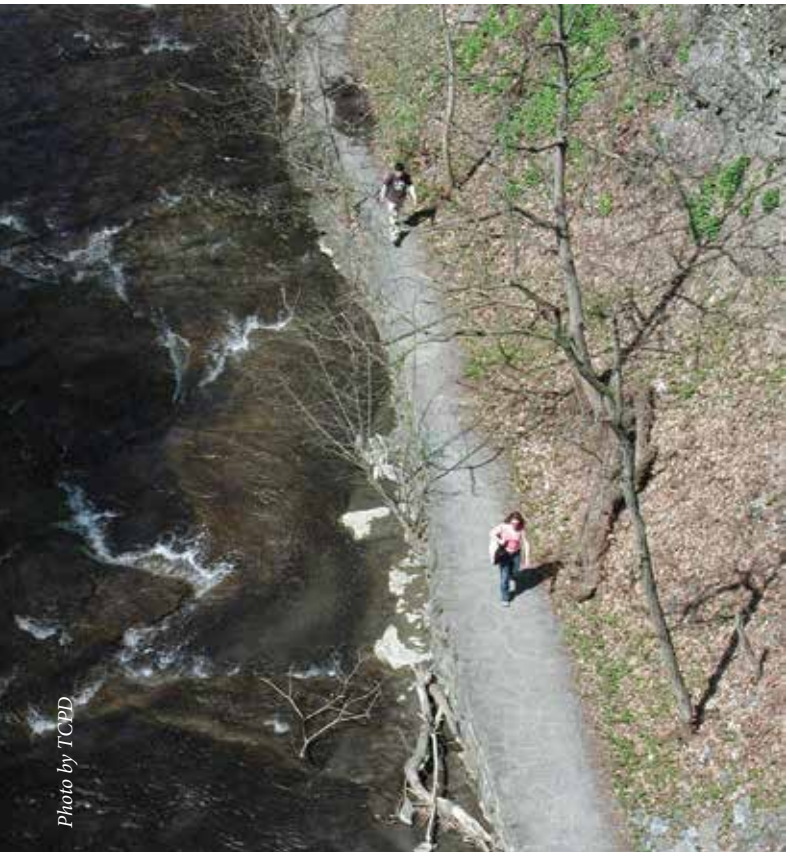
Winding Road, Tompkins County

Drive

There are approximately 1,400 miles of roads and 200 bridges in the county. The State highways that run through the county are critical to its economy and are the routes used by in-commuters and by virtually all freight service bringing goods into and out of the county. According to the Ithaca-Tompkins County Transportation Council (ITCTC), the total number of vehicle miles traveled in 2013 on roads in Tompkins County was 673 million miles. U.S. Census data indicates approximately 15,000 workers commute each day into Tompkins County from adjacent counties. The geography of Tompkins County results in much county and regional traffic being funneled through the City of Ithaca, where bottlenecks can occur.

Walk and Bike

As of 2014, there were 14 miles of designated multi-use trails, 25 miles of designated bike routes, and four miles of marked bike lanes in the county. Forty-six percent of all village and city streets had sidewalks. These figures do not clearly indicate the amount of walking and biking that occurs in the community, as many pedestrians and cyclists use the existing street network to get around and can be seen commuting in all types of weather. The *Tompkins Priority Trails Strat-*



Commuting on Cascadilla Gorge Trail

egy completed in 2014, found targeted trail development in the next two to five years could create a cohesive network to form the basis of an impressive destination-quality trail system and local recreation and transportation resource.

Bus

Bus service within Tompkins County includes fixed route bus service by TCAT and Gadabout paratransit service for older and disabled residents. Residents are fortunate to have access to such a high-quality bus service, as was acknowledged in the award given by the American Public Transportation Association to TCAT in 2011, when it was named Outstanding Public Transportation System in North America in the category of transit operators providing fewer than four million annual trips. In 2013, TCAT's ridership was 4.5 million, up 1.1 million rides from 2009. TCAT is essentially operating at full capacity. Any significant expansion in service will require major investments in facilities to store and maintain buses, as well as development of new strategies to fund the capital and operational costs of running an expanded transit system. Such investment is dependent on TCAT's public and private partners, as well as State and Federal funding.

Bus service to and from Tompkins County is provided by Shortline and Greyhound buses, as well as regional transit partners from the surrounding counties. Cornell University also operates its Campus to Campus bus, providing express, business-class bus service between Ithaca and New York City. Megabus, operating out of Binghamton, is an example of a low-cost bus option from the area, but it requires travel to get there, pointing out the need for enhanced intercity transportation options in the region. Ithaca Airline Limousine provides local transportation options, as well as eight scheduled daily trips between Syracuse Airport or Amtrak station and Ithaca allowing Tompkins County residents to easily access bigger airline markets and rail services. Several private taxi services also operate in the Ithaca area.

Rail

Historically, seven distinct railroad routes served the county, but now there is only one active rail line. Norfolk Southern carries coal to the Cayuga Power Plant and rock salt from Cargill's underground mine near Myers Point in Lansing. Although the rail line is currently geared toward moving commodities, there may be opportunities in the future to utilize the corridor for other transportation purposes, including rail transport to support industrial or tourism development, or trail use for recreation or commuting.

Air

The Ithaca Tompkins Regional Airport has until recently been financially self-sustaining with all expenses being paid from revenues generated. By one accounting, it contributes more than $66 million annually to the local economy, and supports almost 400 aviation-related jobs, with a combined payroll of more than $5.3 million. The airport is currently served by Delta, US Airways, and United with nine flights to Philadelphia, Newark, and Detroit each day. Over 102,000 passengers flew out of the Ithaca Tompkins Regional Airport in 2013.

In 2012, the airport created the first FAA-funded airport sustainable master plan in the United States, which was the recipient of multiple awards. The vision for the master plan focuses on both the future aviation needs of the community and also how the airport can be more sustainable in the future.

ISSUES AND OPPORTUNITIES

The High Costs of the Current System*

Transportation infrastructure, including highways and public transit, represents a huge and ongoing public investment. New York State, Tompkins County, and local municipalities struggle to maintain the existing network of roads, bridges, and public transit, even though annual transportation expenditures (including engineering, equipment, staff, construction projects, operations, etc.) by all levels of government within Tompkins County total about $65 million, with the bulk of that coming from the County and local municipalities. Increasingly, funding is not sufficient to meet all the transportation infrastructure needs and competition for federal and state transportation dollars is increasing significantly throughout the region while those funds are shrinking. In order to maintain the functional capacity of the highway infrastructure, as well as the levels of TCAT and Gadabout service upon which people depend, funding entities need to make selective investments in maintenance, technology, and design to increase the efficiency of the existing network.

Funding entities need to make selective investments in maintenance, technology, and design to increase the efficiency of the existing network.

Shifting People from Driving Alone**

Beyond working to save money on transportation maintenance, future transportation decisions also need to consider shifting demographics. As the population ages, there will be increasing demand for expanded, often costly, transportation services for the elderly, particularly those in more remote rural areas. Meanwhile, the national trend with younger residents is a shifting preference toward compact, walkable communities that do not require car ownership for daily trips. These two groups together provide interesting opportunities for providing transportation options that can reduce individual car use. Improving transportation alternatives will also help to improve mobility for all, including youth, elderly, low-income, and physically challenged, who do not have the option of relying on a personal automobile for transportation or simply prefer not to travel this way. Making this shift a reality will require a three-pronged focus on development patterns, alternatives to drive-alone, and increased working from home.

PATTERNS OF DEVELOPMENT. One way to reduce automobile traffic and support alternative modes of transportation is by encouraging compact development in locations near employment centers and served by transit and trails. By supporting housing development in these areas and providing adequate sidewalks, bike facilities, and bus service, a robust transportation network can be created. Doing so will not only promote livable communities, but will also keep overall transportation maintenance costs down and reduce the wear and tear on infrastructure. If, instead, development patterns continue as they have, the functional quality of the major highways will deteriorate. This will lead to more traffic congestion, longer commutes, and, in general, more time spent in traffic.

ALTERNATIVES TO DRIVING ALONE. Automobile ownership and use is a significant household expense and using different methods of travel can result in substantial savings. Bicycling and walking offer healthy options to move around, particularly in urbanized areas where distances between destinations are shorter. While the public transit system currently faces constraints in its ability to expand, it is clear community demand is exceeding capacity. A way to

Tompkins Consolidated Area Transit in Operation

* *For more information see the Development Patterns Chapter, "The Cost of Sprawl" section.*
** *For more information see the Healthy Communities Chapter, "Streets and Roads" section.*

expand operations in the future needs to be identified. Ridesharing is also growing and actively being nurtured in the community with opportunities for expansion. Applying communication technologies to make alternatives more convenient for people is another area to pursue. Creating easy payment methods, real-time bus tracking, online carpooling services, and other information technology based services can help give people the confidence to try different methods of transportation.

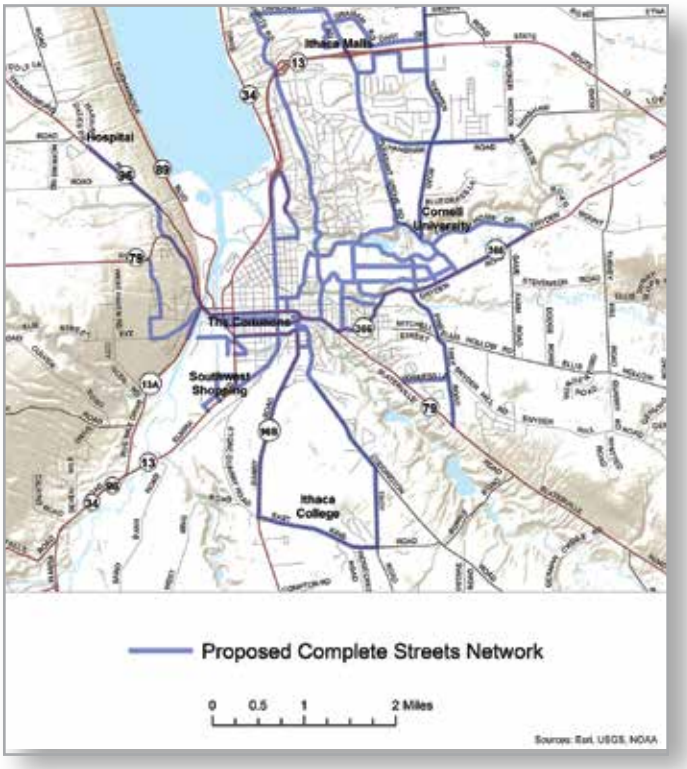
WORK FROM HOME. Accounting for six percent of workers, the trend to work from home has seen a steady increase since 2000. Building on this uptick in interest should be a priority, as even working from home one day each week would greatly reduce the impacts from drive-alone trips.

A complete street is designed to enable safe access for all pedestrians, bicyclists, motorists, and bus users to move safely along and across the street.

Complete Streets

The Ithaca-Tompkins County Transportation Council has identified a network of roads to form a Complete Streets Network for the urbanized area of Tompkins County. A complete street is designed and operated to enable safe access for all users, so pedestrians, bicyclists, motorists, and bus users of all ages and abilities are able to move safely along and across the street. Complete Streets are an important component to a high-functioning transportation network that includes bike lanes, sidewalks, and bike boulevards. The roadways selected have been inventoried to determine what complete street design components currently exist, with the hope that over time, as maintenance and construction takes place on these roads, additional complete street components will be added. The vision of the map is of a network that ties together numerous residential, employment, and activity centers to allow travelers multiple transportation options to reach their destinations.

Proposed Complete Streets Network



Source: Ithaca-Tompkins County Transportation Council

Transportation-Insecure

People who do not drive can include youths, older persons, persons with disabilities, and low-income citizens who cannot afford a vehicle. Viable transportation alternatives for these persons include riding buses, biking, walking, carpooling and the like. Another category of the transportation-insecure are low-income residents who own a car but can face major disruptions to their lives when their vehicle breaks down or is otherwise unavailable. They may not be

Accessing the Park, Titus Flats

able to get to work, to medical appointments, or transport their children between home and childcare providers.

These transportation-insecure citizens could directly benefit from increasing the availability of viable transportation options. These citizens can often remain isolated in their homes with few options for getting around, particularly in the rural areas of the county. The ability to travel within and between communities is essential to maintaining independence, health, and social connections. Efforts to promote mobility options, such as walking, obtaining rides with family, friends, volunteers, or neighbors; public transportation; and transportation provided in connection with services from community agencies and the healthcare system can help reduce transportation insecurity.

Rural Transit

For decades, rural public transit systems have relied on funding received for non-emergency Medicaid transportation. In 2013, New York State changed how it manages and funds Medicaid transportation, resulting in drastic decreases in revenue for many nearby counties. Ride Tioga First Transit ceased operation in December 2014 and Schuyler and Cortland Counties' bus service to Tompkins County is threatened by this loss of revenue as well, impacting commuters who come to Tompkins County for employment. In addition, the community of West Danby, which is served by buses coming from Tioga County, will be affected by the discontinued service from Tioga County. As a result, the Tompkins County Legislature included funding in its 2015 budget to implement a West Danby Van Pool. While local TCAT service is not impacted directly by the Medicaid funding changes due to its unique public-private funding mechanism, the county is affected by reductions in service, particularly to commuters in surrounding counties, and continues to struggle with the high cost of rural service and constrained fiscal resources.

Sustaining High-Quality Air Service

The past few years have seen a trend in declining numbers of passengers flying out of the Ithaca Tompkins Regional Airport. In 2011, the figure was at an all-time high of 121,733 passengers. The figure dropped slightly in 2012, to nearly 119,000, and dropped again in 2013 to 102,000. Confidence in the Airport was undermined during early 2013 when there was a threat of elimination of federal funding for the control tower. That issue has since been resolved but the trend has continued. In the period of January through May 2014, the number of departing passengers was down nearly 18 percent from the same period in 2013. With the important role of the airport in the community and its benefits of business stimulation, emergency medical evacuation services, and time and cost savings to residents accessing a home-town airport, it will be critical to stem the tide of lost passengers and once again attract passengers at the higher levels enjoyed previously.

Transportation's Role in Greenhouse Gas Emissions*

Surface transportation is by far the largest single sector energy user in the community. Transportation accounted for 42 percent of the energy consumed in Tompkins County in 2008, and contributes roughly a third of all community emissions.[1]

In addition to reducing the number of drive-alone trips and developing land so that more people can easily get from their homes to jobs and services, other important steps to reduce energy use in transportation include increasing the adoption of more efficient and alternative fuel vehicles, building the necessary supporting infrastructure for those vehicles, and addressing inefficiencies in current operations, such as improving traffic light timing and adopting anti-idling ordinances.

> Vehicle fleet efficiency and fuel mix are key components of any successful strategy to reduce fossil fuel energy consumption and emissions.

VEHICLE EFFICIENCY AND ALTERNATIVE FUELS VEHICLES. Vehicle fleet efficiency and fuel mix are key components of any successful strategy to reduce fossil fuel energy consumption and emissions, as cars and trucks will continue to be important components of all future transportation scenarios. Use of hybrid and electric vehicles in Tompkins County is higher than in surrounding areas, but is still only considered "Fair" by the National Renewable Energy Laboratory and there is significant room for increased adoption. For example, there are currently only 54 electric vehicles in operation in the county, and just five public electric vehicle charging stations. Tompkins County can take steps to position itself as a for-

** For more information see the Energy and Greenhouse Gas Emissions Chapter, "Transportation" section.*

ward-thinking community State or Federal agencies turn to when piloting programs to roll-out these technologies by planning for the infrastructure necessary for deployment.

INEFFICIENCIES IN CURRENT OPERATIONS. Another way to reduce transportation emissions and improve the transportation experience overall is to improve the efficiency of the traffic flow, such as installing smooth-flowing roundabouts and reducing the wait time at intersections by improving traffic light timing and turn signals. Of course, these and all improvements need to be made with all users of the streets in mind, including bikes and pedestrians. Municipal adoption of anti-idling ordinances for municipal fleets, at truck stops or other areas where idling is excessive can also play a role in greenhouse gas emissions reductions and improvement in air quality.

TAKING ACTION

STRATEGIES. Specific actions that support this chapter are included in the action steps identified in the ITCTC's *2035 Long Range Transportation Plan (2014),* the *Tompkins Priority Trails Strategy (2014),* the *Tompkins County 2020 Energy Strategy (2010),* and the *Cleaner Greener Southern Tier Regional Sustainability Plan (2013).*

The *Long Range Transportation Plan* identified select transportation initiatives and projects for implementation. One example is to promote active and shared transportation options to local government staff and officials and within the community as a whole.

The *Priority Trails Strategy* identified priority actions to develop five key trails to create an outstanding trail-based recreation and transportation network. One of those five trails is the Black Diamond Trail, connecting the four State Parks in the county.

The *Energy Strategy* identified ten new local measures that should be taken to put the community on the path to achieving a 20 percent reduction in greenhouse gas emissions by 2020 and 80 percent by 2050. One of those measures is to reduce the number of miles driven by private vehicles in the community by helping them switch from single-occupancy vehicles to walking, biking, taking transit, carpooling, and telecommuting.

The *Cleaner Greener Regional Sustainability* Plan looked at the issues of energy, greenhouse gas emissions, and sustainability at the regional level and identified 22 top actions to implement to achieve emissions goals. These included creating a region-wide electric vehicle and alternative fuel infrastructure deployment plan and improving connectivity of pedestrian, bike, and transit routes, especially around downtowns, transit stops, and schools.

PARTNERS. The ITCTC is the primary agency charged with transportation planning activities, so many of the planning-related actions will be spearheaded by the ITCTC. Other key partners are TCAT, NYSDOT, Tompkins County Planning and Highway departments, local municipal planning and public works departments, Cornell University and Ithaca College, Ithaca Carshare, Way2Go, and Cornell Cooperative Extension of Tompkins County.

COUNTY ROLE. County Government plays a critical role in the planning and maintenance of County-designated roads and bridges and operation of the Ithaca Tompkins Regional Airport. In addition, as one of the three main funding partners of TCAT and the designated recipient of Federal Transit Administration funds, the County plays a role in transit planning and operation.

County Actions to be Initiated within Two Years

- Identify the most critical elements of the County-owned highway infrastructure network for use in prioritizing investment of County funds.
- Conduct a study to identify electric vehicle charging station development needs and opportunities.
- Investigate additional park and ride and other ways to provide better, safer access to existing transit routes in suburban and rural areas.

[1] Air flight emissions are tracked, but not counted in these emissions since the data are incomplete, as private air flights are not included. Both incoming and outgoing commercial flights were estimated to have released 916 tons eCO2.

the environment

HUMAN SURVIVAL AND WELL-BEING DEPENDS, EITHER DIRECTLY OR INDIRECTLY, ON THE NATURAL ENVIRONMENT. TOMPKINS COUNTY CURRENTLY ENJOYS CLEAN AIR; ABUNDANT CLEAN WATER; AND EXTENSIVE AGRICULTURAL LANDS, FORESTS, AND NATURAL AREAS. PROTECTING THESE RESOURCES FOR FUTURE GENERATIONS IS BOTH A CHALLENGE AND AN OPPORTUNITY.

WATER AND OTHER NATURAL RESOURCES ARE INEXTRICABLY INTERRELATED. THE QUALITY OF THE WATER IN OUR STREAMS, LAKES, AND GROUNDWATER DEPENDS UPON THE QUALITY OF THE WATER THAT ENTERS VIA STORMWATER RUNOFF OR PERCOLATES THROUGH THE SOIL. FOR CONFINED AQUIFERS, THE CONDITIONS ON THE LAND OVERLYING SPECIFIC AQUIFER RECHARGE AREAS DIRECTLY IMPACT THE QUALITY OF THE GROUNDWATER. WATER QUANTITY AND QUALITY, IN TURN, IMPACT THE SURVIVAL OF BOTH TERRESTRIAL AND AQUATIC ORGANISMS. TO MAINTAIN THE QUALITY OF WATER AND HABITATS, LAND USE THROUGHOUT A WATERSHED NEEDS TO BE ADDRESSED. OF PARTICULAR IMPORTANCE ARE WETLANDS, RIPARIAN BUFFERS ALONG STREAMS, AND AQUIFER RECHARGE AREAS.

natural resources

Tompkins County is known for its resplendent landscapes and natural havens. Residents and visitors alike enjoy and appreciate Cayuga Lake; the many gorges, streams, and waterfalls; and rolling farmland, fields, and wooded hillsides. In fact, the landscape has become more diverse with the expansion of forests in the southern parts of the county since widespread deforestation in the nineteenth and early twentieth centuries, and the preservation of significant tracts of the most valued natural areas as State parks, forests, and preserves.

PRINCIPLE

Tompkins County should be a place where natural features and working rural landscapes are preserved and enhanced.

POLICIES

It is the policy of Tompkins County to:

- Preserve natural features and ecosystems, especially within the Natural Features Focus Areas.
- Protect farmland within the Agricultural Resource Focus Areas for agricultural use.
- Reduce the adverse impacts to native species and ecosystems caused by invasive organisms and climate change.
- Promote best management practices that protect natural resources and productive working lands.
- Improve public access to outdoor recreation resources and opportunities.

SNAPSHOT OF THE COUNTY TODAY

Natural Features

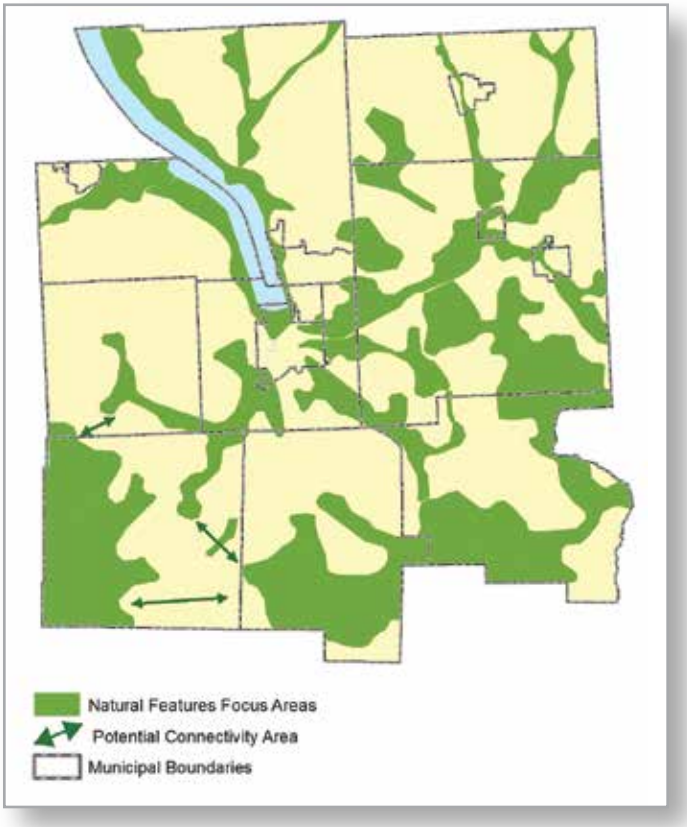
Tompkins County is known for its many natural features including Cayuga Lake; many small and large streams, gorges, and waterfalls; rolling wooded hills; and flat and fertile agricultural lands. There are over 10,000 acres of wetlands, 26,000 acres of State Forests and Wildlife Management Areas, and nearly 3,000 acres of State Parks. The County has identified and mapped its key regional natural resources in the 14 distinct Natural Features Focus Areas (NFFAs) which total over 20,000 acres. The NFFAs are based on the location and concentration of significant resources, such as public parks and forests, wetlands, stream corridors, public drinking water resources, Important Bird Areas, greenways, and hiking and multi-use trail corridors.

Many of these areas include high-quality natural areas called Unique Natural Areas (UNAs), which are identified and designated by the Tompkins County Environmental Management Council. These 194 UNAs cover over 41,000 acres and include areas with special natural communities, plants, animals, or geology that are rare or scarce elsewhere in the county or region. UNA boundaries are established by analyzing aerial imagery and field visits as appropriate. The UNA Inventory is intended to provide non-regulatory guidance to conservation and development in and around these areas.

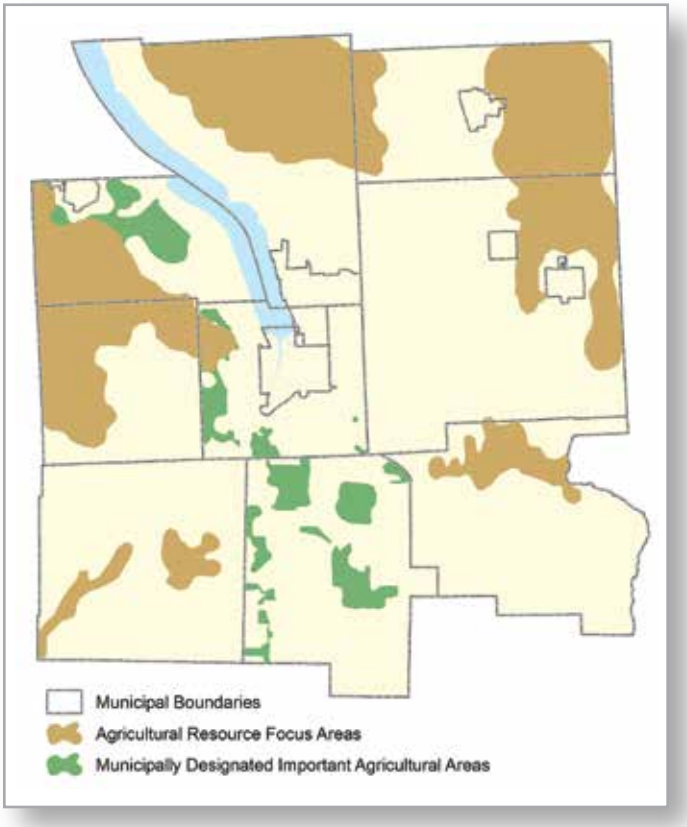
NFFAs also capture broader geographic areas that include State Parks, Forests, and Wildlife Management Areas. Neither UNAs nor NFFAs are regulatory designations, but help to inform local and regional planning decisions. Recommendations for protection efforts in the NFFAs are detailed in the *Tompkins County Conservation Plan – Part I: A Strategic Approach to Natural Resource Stewardship* that is the basis for natural resource protection efforts.

Cayuga Lake, the County's preeminent natural feature, is specifically addressed in the Water Resources chapter.

Natural Features Focus Areas



Important Agricultural Areas



Sources: Tompkins County Planning Department

Agricultural Resources*

Agricultural working landscapes are an important land resource in the county. Approximately 100,000 acres of land, or 30 percent of all land in the county, is considered agricultural, with about 80,000 acres of that actively farmed. Much of this land contains high quality soils. Soil types vary based on slope, erodibility, and drainage, among other factors. Prime Soils, which make up 41,453 acres, are those soils considered most desirable for agriculture.

Since 1982, Tompkins County has lost at least 20 percent of its farmland to both development and abandonment. The amount of land being farmed has recently increased, but the long-term trend is a significant loss in agricultural land over time. This is consistent with the statewide trend in agricultural land conversions to non-agricultural uses.

As of 2012, there are 558 farms throughout the county with an average farm size of 163 acres. Agriculture in Tompkins County is quite diverse, though dairy farming remains the largest economic driver and land user in the agricultural sector. Although these operations are located throughout the county, several areas are strategic in maintaining a thriving agricultural economy. In the 2004 Comprehensive Plan, six Agricultural Resource Focus Areas (ARFAs) were identified. Those areas have the best soils and high concentrations of contiguous, actively farmed parcels of land. In addition to the ARFAs, the Towns of Danby, Ithaca and Ulysses have identified locally important agricultural lands they consider key to local agricultural activity.

The ARFAs, along with locally designated important agricultural areas, form the basis of a countywide approach to foster a long-term commitment to the preservation of agricultural land. These areas provide the best opportunity to create a critical mass of protected agricultural land to ensure the long-term viability of agriculture. Nearly all of the land in the ARFAs is within an Agricultural District, state-certified areas that receive certain "right-to-farm" protections. This land may further receive agricultural assessments, where eligible land utilized for agricultural purposes is assessed for taxes based on its agricultural value.

Recreational Landscapes

Natural areas provide diverse outdoor recreation opportunities, including hunting, fishing, camping, hiking, biking, running, and skiing. These activities continue to grow in popularity, with recognition of these recreational amenities in several national publications. There is also a designated and maintained snowmobile trail network in the county. Multi-generation interest in recreational knowledge-gathering opportunities like geo-caching, birding, and plant identification is also growing.

Studies continue to show Tompkins County residents and visitors rank beautiful scenery, waterfalls, and outdoor activities among the features they like the most. The county has four State Parks and over 45,000 acres of protected natural areas that include over 200 miles of hiking and multi-use trails.

Conservation Progress

Dedicated open space includes those natural areas protected as State lands, land trust preserves, conservation easements[1] on agricultural or forest lands, and County-held forestry lands, as well as municipal parks, Cornell and Ithaca College Natural Areas, and cemeteries. While many of these dedicated open spaces offer formal protections, the range of uses allowed on them vary by specific owner or protection mechanism. Several of these spaces, though not all, are open to the public and provide important recreational opportunities. Dedicated open space lands also provide an important framework for future conservation efforts. Creating a critical mass of interconnected open space will promote habitat connections, sustain agriculture, protect water quality, and ensure the health of wildlife populations for generations to come.

Buttermilk Falls State Park

** For more information see The Economy Chapter, "Strong Working Lands" section.*

Dedicated Open Space in Tompkins County, 2004-2013					
	2004 (Acres)	*2013 (Acres)*	*Total % Change*	*% Change Land in ARFA*	*% Change Land in NFFA*
New York State	28133	28461	1.15%	0.00%	0.88%
Cornell University	7238	7258	0.27%	7.80%	0.00%
Finger Lakes Land Trust	2620	4770	45.08%	43.50%	44.69%
City of Ithaca	1158	1158	0.00%	0.00%	0.00%
Tompkins County	660	660	0.00%	0.00%	0.00%
Private/Other	506	553	8.47%	100.00%	4.42%
Other Municipal Land	502	752	33.30%	0.00%	43.45%
The Nature Conservancy	394	394	0.00%	0.00%	0.00%
Ithaca College	284	284	0.00%	0.00%	0.00%
Agricultural Easement	0	2221	100.00%	100.00%	100.00%
TOTAL	**41495**	**46511**	**10.78%**	**66.73%**	**5.45%**

Source: Tompkins County Planning Department

Since 2004, dedicated open space lands have increased by over 5,000 acres with most of the protection coming in the form of conservation easements, bringing the total amount of dedicated open space in Tompkins County to 15 percent of all land. This 5,000 acre increase was almost evenly divided between protecting farmland and natural features. From 2004 to 2013, the amount of dedicated open space in ARFAs tripled, increasing by more than 2,300 acres. Almost all of that increase was a result of tapping the NYS-funded purchase of agricultural conservation easements program. The amount of dedicated open space in NFFAs increased by 2,200 acres and occurred in 13 of the 14 NFFAs.

NATURAL LANDS. Since 2004, the Finger Lakes Land Trust (FLLT) has protected more than 2,100 acres of land bringing their total protection within Tompkins County to 4,770 acres. Approximately, 70 percent of that land was protected with conservation easements; the remaining 30 percent was acquired as preserves. New York State Parks has also increased local protected land by over 200 acres. These acquisitions were almost solely to buffer three State Parks as well as the Black Diamond Trail.

AGRICULTURE. In terms of agricultural protection over the past 30 years, Tompkins County government has taken a non-regulatory, incentive-based approach to farmland protection, based on voluntary participation by landowners. In 2004, Tompkins County was, for the first time, awarded State funds to purchase an agricultural conservation easement for the long-term protection of a 433-acre farm in the Town of Lansing in one of the ARFAs. Since then, the County has worked with the Towns of Lansing and Dryden to protect an additional three farms for a total of 2,221acres of farmland.

Two Agricultural Districts have been established in Tompkins County since 1973, and currently include over 340 farms and 169,000 acres of farmland. This encompasses the majority of the farmland and approximately 57 percent of the county's total land area. Participation in the Agricultural Districts program provides farmers with a number of benefits and protections, including enhanced protection from nuisance lawsuits, limitations on local regulation of farming structures and practices, tax incentives to keep land in production, and special considerations in local planning and land-use decision-making.

ISSUES AND OPPORTUNITIES

Fragmentation

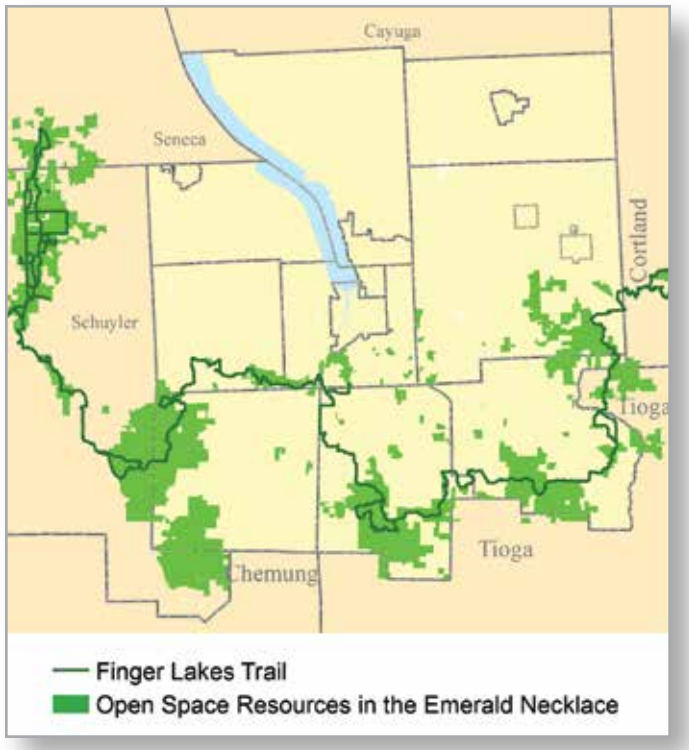
Despite the successes of local conservation partners, increasing rates of land development, especially along the rural road frontage, continue to fragment rural landscapes as well as the habitats and wildlife corridors many species rely upon. This trend can be seen throughout the county, as trails are rerouted on roads when access across natural lands is lost and rural landscapes are marred by roadside frontage

development that obscures scenic views, reduces acreage of prime soils available for agricultural use, and obstructs wildlife movement.

Maintaining undeveloped sections of land, particularly within and between key swaths of ARFAs and NFFAs, is valuable to flora, fauna, and to the rural character of a community. As is depicted on the Natural Features Focus Area map in the snapshot section, particularly important connectivity areas lay between the Danby State Forest, Connecticut Hill Wildlife Management Area/Newfield State Forest and Treman and Buttermilk Falls State Parks. While formal protection through acquisition and easements are important tools in protecting these landscapes, land uses that maintain landscape character should be encouraged, including sustainable forestry, diverse agricultural operations, and appropriate outdoor recreational land uses. The Finger Lakes Land Trust has built conservation campaigns around the notion of an "Emerald Necklace" envisioned as an arc of linked open space around the Ithaca urban area. The Emerald Necklace has further been identified as a priority project in the *New York State Open Space Conservation Plan* (2009).

Improving access to the region's many natural areas will allow more individuals to enjoy the recreational opportunities these resources provide.

Emerald Necklace



Source: Tompkins County Planning Department

Access*

Improving access to the region's many natural areas for all people, including those with disabilities, will allow more individuals to enjoy the recreational opportunities these resources provide. Improving access points is particularly beneficial when tied to greenways and blueways. Greenways are corridors of undeveloped land used for recreation and/or conservation. These areas often follow natural land features, such as ridges or streams, or parts of the human landscape, such as abandoned railways or canals that can be used for multi-use trails, pedestrian trails, and/or biological corridors. In some cases, such as greenways along stream corridors, they can also serve to protect wildlife habitat, trees and forests, and water quality, while also reducing impacts on downstream properties from excessive erosion and flooding.

Blueways are water-based trails and related lake shore lands also used for recreation or conservation. These areas serve to protect undeveloped waterfront lands in order to conserve those high-value properties for public access while also allowing for active use of the lake by non-motorized boats, such as canoes and kayaks, and enhancing tourism in the region.

Boardwalk at the Roy H. Park Preserve of the Finger Lakes Land Trust

** For more information see the Healthy Communities Chapter, "Parks, Trails and Recreational Facilities" section.*

Loss of Active Agricultural Land

Although the amount of land being farmed has increased in recent years, the overall trend is for farmland to transition to residential, commercial, and sometimes industrial uses. Scattered development is common, primarily in the form of single-family homes along rural roads, or as commercial strip development along highways. These development trends threaten the economic viability of farming by fragmenting the land base and intensifying conflicts between farmers and non-farm neighbors over such issues as noise, dust, odors, and trespassing.

Historic farmland loss is not solely the result of encroaching development. Since the 1950s, over 30,000 acres of farmland has reverted to forest. Much of this loss is the result of abandonment of the more marginal farmland. While the amount of actively farmed land has decreased over the past several decades, much of this land continues to contribute to the rural economy by providing opportunities for forestry and timber harvesting operations.

Between 2007 and 2012, over 4,000 acres of previously inactive agricultural land has become active. Much of this conversion is occurring on rented land. In addition, organic farmers are working previously inactive agricultural lands, as these areas are easier to certify as organic. It is too early to tell whether a recent uptick in agricultural land use will permanently reverse the long-term trend of farmland loss.

Another factor increasing the risk of farmland conversion to non-agricultural uses is that farmers are aging and there is not a clear path for younger farmers to take over the work. Currently, the average age of principal farm operators is over 58 years old. Additionally the number of younger farmers continues to shrink.

Unwelcome Visitors

Another threat to natural resources comes in the form of invasive species. Invasive species are plants or animals not native to Tompkins County which cause damage to the environment, economy, and/or community health. Invasive plants, such as the aquatic Hydrilla and terrestrial Japanese Knotweed, have significant negative ecological and economic impacts. These plants shade out native plants and change habitats, which impacts wildlife. Over $1 million has been spent recently to treat and manage Hydrilla in Tompkins County.

Mass of Hydrilla Pulled from Cayuga Inlet

> Historic farmland loss is not solely the result of encroaching development.

Invasive insect populations add another risk to both urban and rural forests. The Hemlock Wooly Adelgid and the anticipated Emerald Ash Borer are together causing an estimated $3.5 billion in tree damages throughout the United States annually and threaten Tompkins County. The region will have to continue to plan for the economic and ecological impacts of these and other unwelcome plants, animals, and insects. The benefits of using pesticides and herbicides in curtailing adverse impacts of invasives will need to consider any risks to public health and environment.

The Cost of Conservation

The protection of priority conservation areas in Tompkins County is largely limited to the direct approach of either purchasing land outright or entering into voluntary restrictions on land use through easements. Both approaches have substantial costs associated with them, particularly as projects are concentrated in areas with the highest agricultural or natural feature value. For some of the most sought-after land in ARFAs, like North Lansing and West Groton, land is sold for in excess of $4,000/acre. Large tracts of high quality natural resource land are typically sold for between $1,000 and $3,000/acre, though in the case of some lakefront areas this can exceed $10,000/acre. In acquiring conservation easements expenses include a land survey, appraisal, base-

Photo by TCPD

Southeastern Tompkins County vista from Level Green Road

For local conservation partners to be prepared to acquire and protect those lands of highest conservation value adequate funding is needed.

line study, attorney/staff time, and long-term stewardship fees. The total of such expenses for a moderate-sized project can be more than $30,000. While the County's *Capital Reserve Fund for Natural, Scenic, and Recreational Protection* has played a meaningful role in acquiring easements and direct purchases of priority land in Agricultural Resource and Natural Features Focus Areas, its reach is limited as the balance of funds available is typically under $20,000. For local conservation partners to be prepared to acquire, protect, and manage those lands of highest conservation value adequate funding is needed.

TAKING ACTION

STRATEGIES. Preserving the high quality natural and agricultural resources in Tompkins County requires a number of different types of actions, the core of which are identified in the *Tompkins County Conservation Strategy* (2012). This strategy presented a ten-year strategy of 11 key actions:

- Prepare a long-range Purchase of Development Rights Implementation Plan to actively market the program to farmers in the Agricultural Resource Focus Areas and identify farms suitable for the program.
- Conduct a feasibility study for a Transfer of Development Rights Program with interested municipalities.
- Promote specific land use tools that protect important lands.
- Develop an agricultural planning referral program to help farmers and municipal planning boards conduct agricultural land planning.
- Create a pilot program to connect farmers with landowners of agricultural property for lease or sale.
- Proactively engage owners of land located in priority protection areas to participate in long-term conservation programs.
- Develop a recreational trail network to support and enhance natural areas.
- Promote stream corridor protection efforts.
- Develop a program to protect wetlands and aquifer recharge areas in the county.

- Develop a program to improve public access to Cayuga Lake and protect scenic views of the Lake and from the Lake.
- Create a long-range conservation funding strategy to support land acquisition, purchase conservation easements, and manage and monitor conserved land resources.

Further recommendations for protection efforts in the NFFAs are detailed in the *Tompkins County Conservation Plan – Part I: A Strategic Approach to Natural Resource Stewardship* that is the basis for natural resource protection efforts. The range of economic and physical threats posed by a variety of invasive species to natural areas is identified in the *Tompkins County Hazard Mitigation Plan*. As an example, in response to the threats posed by wood-boring pests the plan identified the need to clarify where the highest concentrations of vulnerable trees are located to assist in reducing risk. The plan further prioritizes the establishment of a debris management plan to assist in coordinating safe disposal and reuse of infested trees as they begin to decay and fall on roads and streams.

Conservation synergies specifically supporting access improvements to natural resources are noted in the *Cayuga Lake Blueway Trail Plan*, the *Tompkins Priority Trails Strategy*, and *The Finger Lakes Trail Plan in the Emerald Necklace: A Plan for Corridor Protection and Enhancement*. These initiatives emphasize the establishment of public access points which help residents and visitors to equitably enjoy these important public resources.

Further recommendations for protection efforts in the ARFAs are detailed in the *Tompkins County Conservation Plan – Part II: A Strategic Approach to Agricultural Resource Stewardship*. In terms of agriculture, the Conservation Strategy specifically recognizes the need to better facilitate farm transfers as well as support the conversion of inactive farmland to actively farmed land, and recommends the use of a pilot web-based program, Finger Lakes Landlink, which provides connections between farmers in the region who need land and landowners who wish to have their unused acreage farmed. Efforts should be made to expand participation in this program. Furthermore, the *Tompkins County Agriculture and Farmland Protection Plan* emphasizes strategies to keep farms profitable as the most effective means of maintaining and protecting farm operations. Originally prepared in 1998, the plan is currently being updated.

PARTNERS. To assist with the implementation of the *Tompkins County Conservation Strategy* the County relies on the various local, regional, and state agencies that are active participants in the ad hoc Tompkins County Conservation Partners group including Cornell University, Cornell University Plantations, the Finger Lakes Land Trust, the Finger Lakes Trail Conference, the New York State Department of Environmental Conservation (Region 7), and the New York State Office of Parks, Recreation, and Historic Preservation (Finger Lakes Region). Other key County advisory boards that assist in advancing conservation measures are the Environmental Management Council and the Agriculture and Farmland Protection Board.

COUNTY ROLE. The Tompkins County Planning Department plays an important coordinating role in advancing conservation measures and serves as County representative on the Region 7 State Open Space Advisory Committee. The County Agriculture and Farmland Protection Board supports the conservation of important agricultural lands through activities like the updating of the County Agriculture and Farmland Protection Plan. The Tompkins County Environmental Management Council helps to support the conservation of county natural features through regular update of their Unique Natural Areas (UNA) Inventory.

County Actions to be Initiated within Two Years

- Monitor development activity within the Natural Features Focus Areas and Agricultural Resource Focus Areas and share that information with municipalities.
- Identify Purchase of Development Rights priority projects for implementation in the Agricultural Resource Focus Areas.
- Develop a conservation funding strategy that accurately captures need for key conservation acquisitions.
- Build on the recommendations in the Finger Lakes Trail Corridor Protection Plan to identify specific areas and tools to improve connectivity between Natural Features Focus Areas.

[1] A conservation easement is a voluntary agreement to protect land in perpetuity. Although filed with the deed, it does not transfer land ownership, but rather spells out a landowner's commitments to protect the existing character of the property. It is written to protect land in accordance with the landowner's wishes and the easement holder's mission.

home to state parks and forests

State lands account for nearly ten percent of Tompkins County's land area. Chief among these are four State Parks (2,765 acres in Tompkins County), seven State Forests (19,511 acres), and one Wildlife Management Area.

STATE PARKS

Allan H. Treman State Marine Park (70 acres) located in the City of Ithaca is one of the largest inland marinas in New York State; it has over 400 boat slips as well as picnic areas and playing fields. The marina is a port-of-call on the Barge Canal system and within walking distance of downtown Ithaca. There is a dog park within this park.

Robert H. Treman State Park (1,100 acres) located in the Town of Enfield features the rugged Enfield Glen gorge, with 12 waterfalls, including the 115-foot Lucifer Falls. The park is popular among swimmers who can dive under a waterfall and cool-off in the natural pool. Camping, playgrounds, and picnic areas round out the park.

Buttermilk Falls State Park (870 acres) located in the Town of Ithaca, and including Jennings Pond in Danby, takes its name from the foaming cascade formed by Buttermilk Creek as it flows down the steep valley side toward Cayuga Lake. The upper park has a small lake, hiking trails through woodlands and along the gorge and rim, picnic areas and playing fields. The lower park has a campground, pool and playing fields.

Taughannock Falls State Park (725 acres) in the Town of Ulysses has one of the highest waterfalls east of the Rocky Mountains. Taughannock Falls plunges 215 feet past rocky cliffs that tower nearly 400 feet above the gorge and trails that offer spectacular views from above and below the breathtaking falls. A multi-use trail winds past sledding slopes and natural skating ponds. The park also includes a swimming beach, boat launch and picnic area on Cayuga Lake.

WILDLIFE MANAGEMENT AREA

The Connecticut Hill Wildlife Management Area is the largest of its kind in New York State, totaling 11,645 acres. It is located 16 miles southwest of Ithaca, astride the Tompkins-Schuyler County line. As part of the Appalachian Highlands, Connecticut Hill lies within a belt of high, rugged land and is home to diverse wildlife including wild turkey, mink, and eastern coyote, and is considered an Important Bird Area by the Audubon Society.

STATE FORESTS

The State Forests have become destinations for many recreational activities. The Finger Lakes Trail snakes its way through the largest three. The NYSDEC has done extensive trail work in these largest State Forests for mountain biking, hiking, horseback riding and cross country skiing.

Danby State Forest: 7,337 acres in the Town of Danby and in Tioga County. The largest of the state forests in Tompkins County contains the Abbott Loop, a spur of the Finger Lakes Trail, a favorite hiking destination.

Shindagin Hollow State Forest: 5,266 acres in the Town of Caroline and in Tioga County. Mountain Bikers flock to Shindagin Hollow's extensive mountain bike trail network.

Hammond Hill State Forest: 3,618 acres in the Towns of Caroline and Dryden. This forest attracts hikers, mountain bikers, horseback riders and cross country skiers.

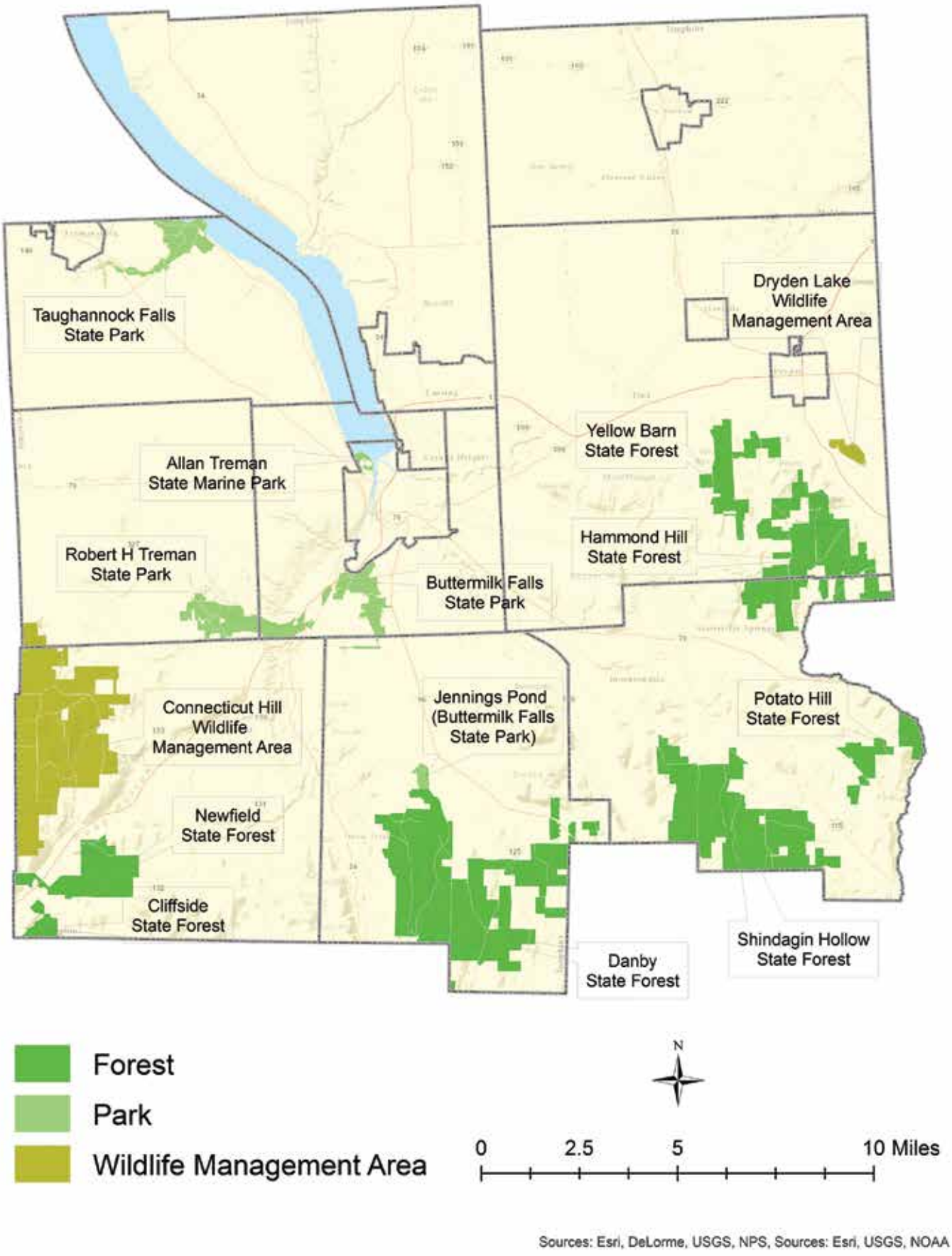
Newfield State Forest: 1,552 acres in the Town of Newfield. With no formal trail network, this primitive and undeveloped forest is a great place to enjoy a relatively undisturbed forest setting.

Yellow Barn State Forest: 1,289 acres in the Town of Dryden. Features eight miles of trail for hiking, biking and skiing

Cliffside State Forest: 977 acres mostly in Schuyler County and partially within the Town of Newfield in Tompkins County. Offers a relatively undisturbed forest setting.

Potato Hill State Forest: 915 acres in the Town of Caroline. Features over 53 species of mammals.

New York State Parks, Forests and Wildlife Management Areas



Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

water resources

Tompkins County is fortunate to have an abundant supply of water. Water is essential for all human, plant, and animal life and helps to maintain a variety of ecosystems. Water in streams and in aquifers supplies drinking water to residents. Water is used by industry directly as an input to industrial processes and indirectly as a vehicle for disposing of waste heat. Water is used for a variety of recreational purposes, including boating, swimming, and fishing.

PRINCIPLE

Tompkins County should be a place where water resources are clean, safe, and protected.

POLICIES

It is the policy of Tompkins County to:

- Protect the ecological, economic, and recreational functions of Cayuga Lake.
- Protect aquifers from contamination by limiting development within groundwater recharge areas.
- Protect streams and their watersheds to maintain water quality, manage stormwater and flooding, and enhance ecological diversity.
- Preserve existing wetlands and restore wetland functions.
- Support water-dependent or -enhanced development of the City's urban waterfront while conserving important natural resources and providing public enjoyment of the waterfront.

SNAPSHOT
OF THE COUNTY TODAY

Tompkins County accounts for about half of Cayuga Lake's watershed. Fully 80 percent of the county's water drains into Cayuga Lake and, eventually, north into Lake Ontario. The remainder drains south to the Susquehanna River and eventually into the Chesapeake Bay.

The three major categories of water resources are surface water, groundwater, and wetlands. Surface water consists of streams, creeks, lakes, and ponds.

CAYUGA LAKE. Cayuga Lake is the most prominent water feature in Tompkins County. One of the eleven Finger Lakes, Cayuga Lake is the longest and widest, and it takes approximately ten years for water to cycle through the lake. Over 300 species of birds make seasonal use of Cayuga Lake. Although water quality is generally high, a number of specific concerns have been identified. Chief among these is sedimentation which is a significant impairment to water quality and wildlife habitat.

Photo by TCPD

Cayuga Lake from Ithaca Town Park

Sedimentation is a significant impairment to water quality and wildlife habitat.

Glacial action and centuries of scouring and erosion have created dramatic landforms, including a variety of gorges, waterfalls, and steep escarpments that provide great scenic value around the lake. From many locations along the steep hillsides and roads bordering the lake, views of the water, the Ithaca urban area, and the opposite shore are spectacular. Regional efforts are underway to create and promote the Cayuga Lake Scenic Byway and Blueway Trail, encircling the lake, to enhance this tourism resource. While sail and motorboat operators are served by public and private marinas, boat launches, and public parks, and there are some public access points around the lake, there is an ongoing call for more places to fish, launch a canoe or kayak, dock a boat, swim, and enjoy waterfront activities.

Due to its role as a major transportation route, Cayuga Lake was a center of commerce throughout much of the nineteenth century. Today you can still see evidence of the area's role as a passenger transportation center and trans-shipment point for goods in Ithaca's west end. The natural beauty of Cayuga Lake has also long attracted the development of cottages and year-round homes along its shores. Its abundant cool waters have attracted industries dependent on its chilling capacity: Cayuga Power Plant and Cornell's Lake Source Cooling heat exchange facility are both located on the east shore.

The lake is also one of the major sources of drinking water for the central part of the county. The Bolton Point Water System, located on the east shore, provides water to residents

Water Resources

Source: Tompkins County GIS

in the Towns of Dryden, Ithaca, Lansing, and Ulysses, and in the Villages of Cayuga Heights and Lansing. This water supply supported much of the residential growth in Tompkins County in the latter decades of the twentieth century.

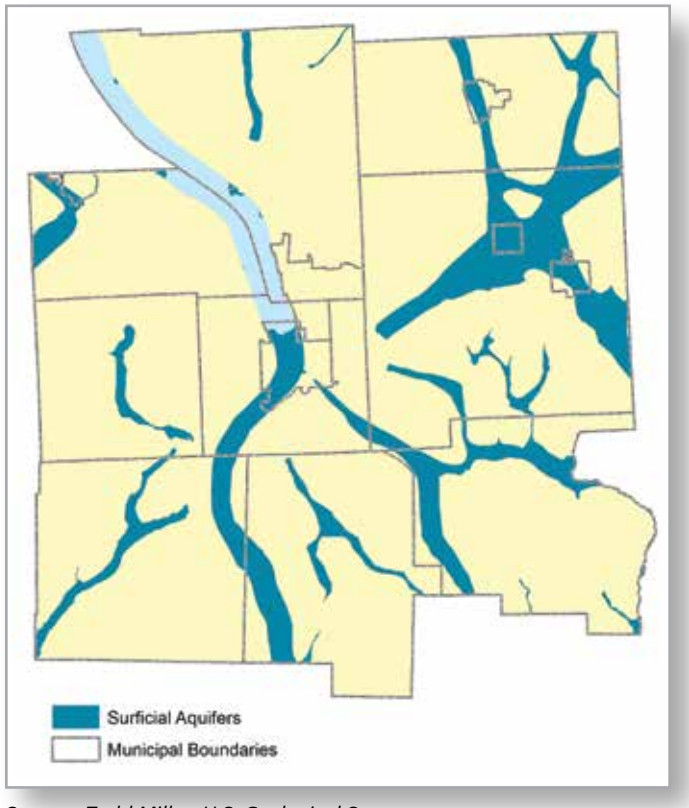
STREAMS. There are over 300 miles of perennial streams in the county that contain flowing water year round, countless intermittent, seasonal streams, and 11 lakes and ponds greater than ten acres in size. Major streams running through the county, include Salmon Creek, Fall Creek, Cascadilla Creek, Sixmile Creek, Cayuga Inlet, Enfield Creek, Trumansburg Creek, and Taughannock Creek. Over time, streams can shift location as they seek equilibrium within the existing geology.

GROUNDWATER. Groundwater is stored in the underground pores between grains of sand, gravel, and silt and in the cracks in bedrock. Groundwater deposits that can be expected to yield significant quantities of water to wells are called aquifers. Areas where surface water infiltrates into these aquifers are called recharge areas and are particularly important to the protection of groundwater quantity and quality. Surficial aquifers that have the potential for significant yields cover a total area of nearly 70 square miles, or approximately 15 percent of the county's land area. These aquifers largely consist of sand and gravel and are present mostly in large creek valleys.

WETLANDS. Wetlands are land areas either inundated with water year-round or dry for part of the year but collect water seasonally. They are identified by the presence of hydric soils and specific wetland vegetation types. Wetlands are a critical component of natural ecosystems and provide a variety of benefits such as: (1) filtering harmful toxins, nutrients, and sediment from surface water and stormwater runoff; (2) temporarily storing floodwaters and reducing the magnitude of flood events; (3) providing valuable habitat for a diverse array of flora and fauna, including many rare, threatened, or endangered species; and (4) maintaining surface water flow during dry periods. The recreational uses associated with wetlands are also diverse and include bird watching, hunting, and botanical tourism, all of which provide indirect economic benefits to local communities. Tompkins County contains about 20,000 acres of identified wetlands, or more than six percent of the landscape.

The Tompkins County Water Resources Council's Wetlands Committee has completed a pilot study of wetland resources in the Town of Dryden. That study, funded by the Cayuga Lake Watershed Network and the Tompkins County Soil and Water Conservation District, used more accurate and detailed data and imaging than was available when the National Wetlands Inventory (NWI) was conducted. It identified approximately 60 percent more acres of wetlands in Dryden than identified in the NWI. The study is currently being expanded to cover the entire land area of the County.

Surficial Aquifers



Source: Todd Miller, U.S. Geological Survey

Wetlands, by Municipality

Municipality	*Acres*
Town of Caroline	1,021
Town of Danby	1,187
Town of Dryden	3,763
Town of Enfield	695
Town of Groton	1,549
Town of Ithaca	447
Town of Lansing	1,160
Town of Newfield	527
Town of Ulysses	606
City of Ithaca	127

Source: National Wetlands Inventory

AN INTERCONNECTED WATER SYSTEM. These three major classifications of water resources are distinct parts of a larger interconnected water resources system and benefit from management as a complete system. Highlighting this interconnectedness, the United States Geological Survey (USGS) has determined that approximately 60 percent of the flow in surface water streams in central New York originates from groundwater resources.

WATERFRONT. Tompkins County has approximately 26 miles of shoreline along Cayuga Lake, much of which is developed with parks, trails, retail, restaurants, utilities, housing, and a wide variety of other uses. The waterfront is home to many businesses that are water-dependent. Facilities such as marinas, boat rental services, boathouses, and the like, are absolutely dependent on a waterfront location. Many utilities take advantage of a location on or near a water body. Examples in Tompkins County include wastewater treatment facilities in the City of Ithaca and the Village of Cayuga Heights, Bolton Point Water Treatment Plant, Cayuga Power Plant, and the Cornell Lake Source Cooling heat exchange facility.

These same waterfront lands also serve important environmental and recreational functions. The Lakeshore Natural Features Focus Area was identified for the benefits this area provides for outdoor recreation, scenic views, fishing, critical habitat and biodiversity, and water quality. From boating and swimming, to biking and hiking, to picnicking at lakeside parks, the lake is a recreational draw for residents and visitors. Scenic views from the various parks are part of what makes Cayuga Lake and Tompkins County special.

ISSUES AND OPPORTUNITIES

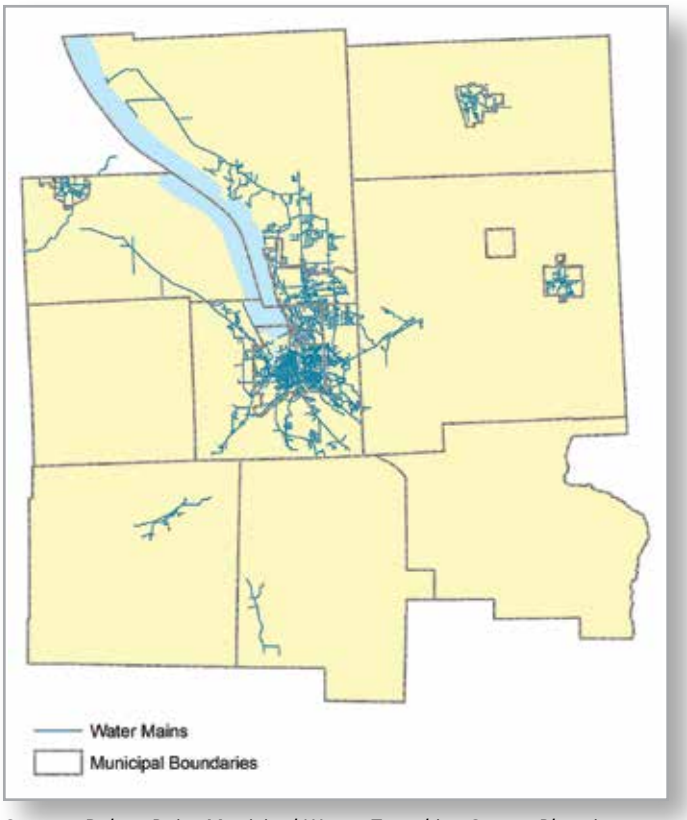
Drinking Water Supplies

Eight municipal water supply and treatment facilities serve at least portions of twelve municipalities in Tompkins County. Seven of these facilities are owned and operated by individual municipalities. Of these, three supply water to users outside of their municipal boundaries. The eighth municipal water supply and treatment facility is the Southern Cayuga Lake Intermunicipal Water Commission, also known as Bolton Point, which is owned and operated by five member-municipalities (the Towns of Dryden, Ithaca, and Lansing and the Villages of Cayuga Heights and Lansing). In addition, Cornell University owns and maintains its own water system, serving its main campus and portions of the surrounding community. Throughout the nation, aging water infrastructure is an issue and addressing it requires assessing existing conditions; rehabilitating the system where necessary; and combining innovative infrastructure designs, management procedures, and operations for maintaining this infrastructure for future generations.

Drinking water for approximately 55 percent of Tompkins County residents comes from three water treatment facilities that rely on surface water: Bolton Point, which draws its water from Cayuga Lake; the Cornell Water Filtration Plant, which draws from Fall Creek; and the City of Ithaca Water Treatment Plant, which uses water from Sixmile Creek. Many homes also withdraw their drinking water directly from Cayuga Lake for their personal use.

Sodium is a concern in the three major public water systems as they all rely on surface water. The NYS Department of Health recommends that people who are on severely restricted sodium diets should not drink water containing more than 20 mg/l of sodium. Since the 2013 level of sodium in Bolton Point was 27 mg/l, Cornell water was 18 mg/l, and the City of Ithaca's average level was 21 mg/l, customers on

Municipal Water Service



Source: Bolton Point Municipal Water; Tompkins County Planning Department

severely restricted sodium diets are recommended to consult their health care providers. People who are on moderately restricted sodium diets should not drink water containing more than 270 mg/l of sodium. The sodium levels of the water from all three systems are well below this level at this time, and monitoring continues to assess salinity levels in these water systems in the future.

Groundwater is the source of drinking water for approximately 45 percent of residents. Five municipal water systems, namely the Villages of Dryden, Groton, and Trumansburg, and the hamlets of Newfield and West Danby, use ground water resources to supply drinking water. Nearly 150 other groundwater-reliant public water systems are monitored by the County Department of Health, including those that serve mobile home parks, apartments, restaurants, hotels, schools, and factories. In addition, there are thousands of private well systems that serve individual homes and businesses scattered throughout the county.

The amount of available drinking water is primarily an issue in rural areas that obtain drinking water from groundwater. As more homes and businesses are built in these areas, they are supported by new wells withdrawing more water from groundwater supplies. In some parts of the county it has been observed that new wells noticeably decrease the supply of water in nearby wells.

Recently, naturally-occurring arsenic levels that exceeded the U.S. Environmental Protection Agency's drinking water maximum contaminant level of 10 micrograms per liter have been identified in wells in Tompkins County. These are found primarily in confined sand and gravel aquifers such as those found in the Virgil Creek, lower Sixmile Creek, and Fall Creek valleys. Of particular concern is the elevated levels found in the Jay Street well that serves the Village of Dryden. The Village is working to identify an alternative source of water or treatment methods in order to comply with an order of the County Board of Health.

In 2003 the County established a 20-year capital project to conduct aquifer studies with the USGS and municipalities.

Drinking water quality is an issue countywide. Some water supplies are threatened by the potential contamination of an entire aquifer or surface water body that can result from a single accidental chemical spill or leaking fuel storage tank. Another potential threat to drinking water supplies is aging, inadequately sized, or improperly maintained onsite wastewater treatment systems, often called septic systems.

Land uses and facilities that pose the greatest threats to groundwater should be located away from areas that contribute to drinking water supplies. In 2003 the County established a 20-year capital project to conduct aquifer studies to determine the extent of the major surficial aquifers and define their recharge areas. These studies have been undertaken through the joint efforts of the County, the USGS, and local municipalities.

While conducting aquifer studies will help to determine recharge areas for confined aquifers, most aquifers in the county are unconfined and thus are recharged by waters percolating directly through the soil above the aquifer making the entire surficial extent of the aquifer the effective recharge area. This may be extensive and in unconfined aquifers protection zones are often established based on the time it would take a contaminant to reach a well that is a public water supply. Any kind of liquid material spill above these aquifers has the potential to contaminate groundwater resources.

Wastewater Disposal

Seven municipal wastewater treatment facilities serve at least portions of eleven municipalities. Six of these facilities are owned and operated by individual municipalities. Of these six, three treat wastewater from users outside of their municipal boundaries. The seventh wastewater treatment facility is the Ithaca Area Wastewater Treatment Facility (IAWWTF) which is owned and operated by the City of Ithaca, Town of Ithaca, and Town of Dryden.

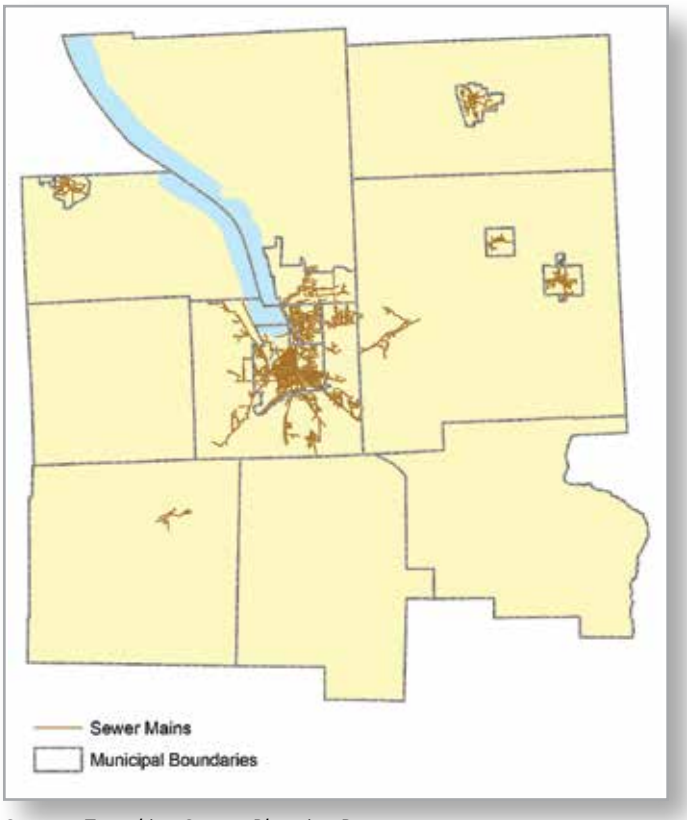
Treated wastewater from these various facilities is discharged into:

- Cayuga Lake, by Cayuga Heights and the IAWWTF,
- Fall Creek, by the Villages of Dryden and Freeville,
- Trumansburg Creek, by the Village of Trumansburg, and
- Owasco Inlet, by the Village of Groton.

The Town of Newfield utilizes absorption fields discharging into groundwater to treat its wastewater.

As with water infrastructure, aging wastewater collection and treatment systems are a national issue. Pipes, both nationally and locally, are the largest capital need and improvements can address sanitary sewer overflows. Locally, treatment

Municipal Sewer Service



Source: Tompkins County Planning Department

plants are periodically upgraded to comply with new regulatory requirements.

While many residences and businesses in Tompkins County are connected to sewer systems and large centralized wastewater treatment plants, a significant number are served by onsite wastewater treatment systems. Currently, these privately owned systems, including septic systems, serve approximately 40 percent of all households. When properly designed, these systems can be effective at reducing phosphorus and pathogens to levels that protect public health and the environment. However, poor routine maintenance, excessive density of systems, and undersized and overused systems can all lead to onsite system failure and water quality impacts.

The Tompkins County Health Department manages onsite wastewater systems through permitting, design, and inspection. On average, the Health Department permits about 150 new systems annually and an equal number of replacement systems.

Water quality impacts can result from improperly maintained, undersized, or overused onsite wastewater treatment systems.

State Pollutant Discharge Elimination System

New York State regulates pollution discharge into waters through its State Pollutant Discharge Elimination System (SPDES) permit program, including the control of all point source discharges to surface waters. The program is designed to maintain water quality consistent with public health, public enjoyment of water bodies, protection and propagation of fish and wildlife, and industrial development in the state.

The SPDES permit program applies to both public and private facilities. In Tompkins County, there are 21 SPDES permits. Of these permits, 11 are for publicly owned facilities, two are for Cornell University, three are for mobile home parks, and the remaining five are for industrial facilities. The industrial facilities with SPDES permits are the Cayuga Power Plant (two permits), the Cargill Salt Mine, the Emerson Plant, and the Therm plant.

Discharges from these systems are monitored and, if problems are identified, the owners of the systems are required to bring their systems into compliance. For example, the Trumansburg Wastewater Treatment Plant is undertaking upgrades in order to comply with its SPDES permit requirements. Construction activities are expected to begin in the spring of 2015.

One of the permits for the Cayuga Power Plant is for its coal ash disposal facility. Coal ash disposal has been identified as a national issue and in December 2014 the EPA established a new set of requirements for the disposal of coal ash, focusing on addressing the structural integrity of surface impoundments.

Water Quality in Cayuga Lake

In Tompkins County, the impacts of land use on water resources culminate primarily in Cayuga Lake. The shallow southern end of Cayuga Lake is inherently more vulnerable to pollution than other, deeper portions of the lake. Fall Creek, Cayuga Inlet, and Sixmile Creek play a significant role in determining the quality of water in the southern basin of Cayuga Lake as they contribute approximately 40 percent of all the surface water entering the southern end of the lake.

The Federal Clean Water Act requires states to periodically assess and report on the quality of their waters, and to identify impaired waters where designated uses, such as public drinking water, are not fully supported. For waters that are determined to be impaired, states must consider the development of a Total Maximum Daily Load (TMDL) or other strategies to reduce the input of the specific pollutants. Impaired water bodies and their related pollutants, are published by the New York State Department of Environmental Conservation (NYSDEC) on the *New York State Section 303(d) List of Impaired/TMDL Waters*. The most recent list published in 2012 identified the southern end of Cayuga Lake as impaired by three pollutants: phosphorus, silt/sediment, and pathogens.

Most of the phosphorus that enters the southern end of Cayuga Lake is bound up with the sediment carried by Fall Creek, Cayuga Inlet, and Sixmile Creek. This sediment is largely the result of stormwater runoff and erosion of stream banks. The loss of natural wetlands in the valley at the south end of the lake that would act as sediment traps has contributed to sedimentation in the southern end of Cayuga Lake. A TMDL or other strategy to address phosphorus will likely need to address methods to reduce the amount of phosphorus found in these tributaries. In addition to sediment-bound phosphorus, phosphorus also enters the southern end of the lake from point sources, including wastewater treatment plants and the Cornell Lake Source Cooling heat exchange facility. In recent years, tertiary phosphorus treatment systems have been installed at the Ithaca Area Wastewater Treatment Facility and at the Cayuga Heights Wastewater Treatment Plant, significantly reducing their contributions of phosphorus.

As a condition of continuing the SPDES permit for the Lake Source Cooling facility, NYSDEC and Cornell University have agreed to conduct a detailed study of the sources and ultimate use of phosphorus in Cayuga Lake. The study will build a mathematical water quality model of Cayuga Lake and its watershed and a detailed analysis of the shallow southern end of the lake in order to provide a better understanding of where phosphorus comes from and how it affects the lake ecosystem. Once completed, the model will help NYSDEC determine whether a TMDL or other strategy is necessary to address the amount and concentration of phosphorus in the southern end of Cayuga Lake. Completion of the model is expected in June 2016.

Erosion and Sedimentation

As discussed above, many of the threats to water quality in Tompkins County come from dispersed non-point sources. The basic geography of the county plus past land development practices have led to increased erosion and sedimentation, loss of wetlands and riparian areas, greater amounts of stormwater runoff and pollutants, and an increase in flooding. Other impacts of increased rates of stormwater runoff include accelerated channel erosion and alteration of streambed composition, which can dramatically degrade aquatic habitats. Another impact is increased water treatment costs for public water supplies utilizing streams as their water source, such as the costs to the City of Ithaca for treatment of water with high sediment loads and dredging of their reservoir. Though sedimentation is often related to changes in land use, construction, and land management practices, it can also result from natural geological processes.

> Sedimentation is related to changes in land use, construction, and land management practices as well as from natural geological processes.

Efforts to address stream bank erosion and flooding impacts on a single property often caused unintended changes to stream behavior both upstream and downstream, increasing erosion and potential flood impacts on other properties. An assessment of the Sixmile Creek watershed revealed that much erosion and sedimentation in that watershed is directly attributed to natural processes as well as previous land use impacts. As a result, the County restructured its Flood Hazard Mitigation Program to incorporate a watershed approach, considering impacts of changes to streams and adjoining land areas both upstream and downstream of proposed activities, when assessing proposed projects.

Similar threats to water quality throughout the United States have prompted the U.S. Environmental Protection Agency (EPA) to issue stormwater regulations. These regulations require all construction projects that disturb more than one acre of land to implement practices to minimize erosion and improve treatment of runoff. The EPA regulations also require certain local governments, including Tompkins County and ten municipalities, to develop regulations and plans to help manage stormwater. These eleven organizations and Cornell University have joined together since 2003 as the Stormwater Coalition of Tompkins County in order to share information and foster cooperation to comply with the EPA regulations.

Stormwater Runoff and Flooding*

Increased stormwater runoff has a significant impact on floodplain management. As land area is converted to more urbanized uses, the amount of impervious surface associated with that land use generally increases, causing water to flow into streams more quickly and allowing less water to replenish the groundwater. This increases both the frequency and magnitude of flood events. Flooding and stormwater runoff concerns are exacerbated in many parts of Tompkins County because the steep slopes and glacially dominated soils do a poor job of absorbing runoff during heavy rains or snowmelt. Major storm events occur relatively frequently and the capacity of many streams can be quickly overwhelmed. Climate change is expected to increase the number and intensity of extreme weather events, particularly heavy rainfall, increasing the frequency and intensity of floods.

Green infrastructure can help control stormwater at its source, removing pollutants and reducing the amount of runoff.

Green infrastructure practices can help control stormwater at its source – removing pollutants and reducing the amount of runoff that ends up in sewer systems and local water bodies. Green infrastructure encompasses a variety of strategies including preserving and restoring natural landscape features such as forests, floodplains, and wetlands; installing check dams in stormwater channels; and installing on-site features such as green roofs, pervious pavement, rain gardens, catchment systems, such as rain barrels, and vegetated swales. New development is currently required to address stormwater runoff on-site and not rely on existing wetlands to serve that purpose.

Given the county's topography, historic settlements were located in valleys and along the shores of creeks. Unfortunately, but predictably, these areas are particularly vulnerable to repetitive flooding. Over the last 19 years, 24 flash flood events have been documented in Tompkins County. Additionally, lake flood events caused by rising lake levels happen approximately once per decade. A slight shift in the winds from Hurricane Lee and Tropical Storm Irene could have caused those devastating weather events to center over Tompkins County instead of neighboring communities to the south.

Roadside Ditches

Roadside ditches serve an important function of collecting and conveying stormwater away from roadways and therefore serve as important components of state, county, and municipal stormwater management facilities. Roadside ditches also provide drainage for stormwater runoff originating from properties adjacent to the road right-of-way. It has been estimated that in a typical watershed about 20 percent of all runoff is captured within roadside ditches. Ditches, however, are also a source, and a conduit, of sediment and associated contaminants to downstream waters.

Maintaining vegetative cover within and along roadside ditches both slows the speed that stormwater leaves an area and reduces the amount of pollutants that enter the water. Other strategies to achieve the goal of slowing down and removing sediment from stormwater are to install check dams and to connect roadside ditches to infiltration basins, bioswales, or constructed wetlands prior to discharging runoff into natural streams and lakes. By controlling these upstream impacts, flooding and water quality concerns are reduced in area streams and lakes.

Ditch Grading in Tompkins County

** For more information see the Adaptation Chapter, "Protecting Natural and Physical Infrastructure" section.*

Wetland Protection

In 2001, the U.S. Supreme Court issued a decision limiting federal regulation of isolated wetlands not adjacent to or connected to a navigable body of water. Since that decision, and other similar court decisions, the EPA and the U.S. Army Corps of Engineers have been asked to develop a rule to clarify which streams and wetlands are subject to federal jurisdiction. A new rule was proposed in April 2014 and is still in the public comment stage.[1] The Tompkins County Water Resources Council is studying the issue to determine potential impact on regulated wetlands in the county. Until a new rule is adopted and implemented the impact on regulated wetlands in Tompkins County will be difficult to estimate.

At the state level, NYSDEC regulates wetlands of at least 12.4 acres in size and smaller wetlands of unusual local importance. Taken together, these regulations have the effect of leaving responsibility for regulation of isolated wetlands of less than 12.4 acres to local governments. Identification and protection of these otherwise newly unregulated wetlands is a priority.

Wetland on Ellis Hollow Road

Riparian Corridors

Riparian corridors are the lands bordering streams and represent a transition zone from aquatic to terrestrial ecosystems. Maintaining lands adjacent to streams in their undeveloped state helps to support the natural functions associated with stream buffers, including protecting water quality, stabilizing stream banks and preventing erosion, trapping sediment and nutrients, improving floodwater retention and groundwater recharge, and shading stream channels in summer.

Riparian stream buffers in headwaters have proportionally greater impact on watershed health than buffers in downstream waters. Clean and healthy headwater streams are critical for protecting the water quality, stream stability, and wildlife habitat of an entire watershed. The downstream effects of even minimal disturbances in small upstream creeks may be compounded as waters join to feed into larger and larger streams.

Providing vegetated buffers of at least 100 feet either side of stream banks, or 50 feet from intermittent streams, is critical in achieving water quality benefits. Communities are beginning to recognize the benefits of stream buffer protection and are institutionalizing standards through land use regulations and development requirements.

Dredging

The south end of Cayuga Lake and the Cayuga Inlet has numerous marinas, transient docking facilities, tour boats, and boat repair facilities dependent on maintaining a navigable channel. Dredging at the south end of Cayuga Lake last occurred in 1982 and dredge spoils were deposited in the Alan Treman State Marine Park, northwest of the marina. In 1999, the U.S. Army Corps of Engineers coordinated the dredging of the flood control channel between the fish ladder to the south and the northern tip of Inlet Island. Marina operators and boat owners have identified dredging of the Inlet as a critical and immediate need.

In 2011, the Corps of Engineers prepared a hydraulic analysis[2] of Cayuga Inlet, finding that sediment deposition has severely reduced the capacity of the Cayuga Inlet to convey floodwaters. The Corps recommended removal of roughly 663,000 cubic yards of sediments which have shoaled in the channel to re-establish the original channel capacity.

Thus, dredging is important not only for navigation, but also critical to the proper functioning of the Corps of Engineers' flood control system in Ithaca. While not the sole contributor to flooding issues in the City of Ithaca, the need for dredging is one that needs to be addressed.

Identification of a site or sites to handle dredged material has been the major impediment preventing periodic dredging to maintain channel capacity and navigational use of Cayuga Inlet and adjacent waterways such as lower Cascadilla Creek. Finding a site that is both close enough (within one mile) and large enough (20 acres) limits the options available for consideration. Other issues to be addressed include tech-

nological constraints, environmental impacts, consistency with other public strategies, and public acceptance.

Waterfront Development

The City of Ithaca's waterfront, along Cayuga Inlet, offers a tremendous opportunity to develop an urban waterfront experience for residents and tourists alike. Recent and ongoing efforts to enhance this waterfront include the Inlet Island Promenade, the Cayuga Waterfront Trail which will eventually connect the Visitors Center to Cass Park, and relocation of the New York State Department of Transportation's Maintenance Facility.

Allan H. Treman State Marine Park on City's Waterfront

The amount of undeveloped land along the lake, and along Cayuga Inlet in the City of Ithaca, is a limited resource that would best be used for water-dependent and water-enhanced uses. Water-dependent uses include facilities like marinas and boathouses that cannot be located anywhere except directly on the water. Some other land uses, while not dependent on a waterfront location, are considered water-enhanced, in other words, uses whose location on the waterfront adds to the public use and enjoyment of the water's edge, even though they do not require a location adjacent to the water. Water-enhanced uses are primarily recreational, cultural, retail, or entertainment uses but may include mixed-use facilities with residential or lodging components. These uses are also important to the economy, character, and public enjoyment of a community's waterfront and can help draw tourists to the waterfront.

> The City's waterfront offers a tremendous opportunity to develop an urban waterfront experience for residents and tourists.

Much of the land along the shoreline in the City of Ithaca is located within the 500-year floodplain and some significant areas are in the 100-year floodplain. With the trend toward increased amounts of rainfall occurring in short durations in recent years, some areas currently determined to be in a 500-year floodplain may actually now be at greater risk for flooding. This may be reflected in future revised flood maps. Development of these higher-risk areas should address the impact of the development on potential flooding not only on the site, but also upstream and downstream of the site. In addition, natural vegetative buffers should be maintained along streams to protect water quality and reduce severity of flooding.

Development along the waterfront, both along Cayuga Inlet and Cayuga Lake, should also recognize and conserve that which makes the waterfront unique. Cayuga Lake has a diversity of fish species and high quality fishing experiences. Birds also take advantage of these waters and the surrounding landscape, as evidenced by the area's designation by National Audubon Society and New York State as an Important Bird Area. The majestic cliffs, wooded hillsides and abundant wetlands along the Lakeshore provide critical habitat for a variety of rare and scarce plants. The Lake is also a major source of drinking water for thousands of residents of Tompkins County. Any development along the Cayuga Lake waterfront should protect these important environmental benefits.

TAKING ACTION

STRATEGIES. *The Tompkins County Water Quality Strategy* (2012) was prepared by the Water Resources Council and serves to guide policy and activities. The Strategy laid out broad goals for surface water, groundwater, riparian corridors, and wetlands and emphasized the need to coordinate activities and educate and inform municipal officials, the public, and others about water quality concerns, policies, and practices. The *Tompkins County Conservation Strategy* (2012) also addressed water quality issues. The *Cayuga Lake Waterfront Plan* (2004) was a joint project of the municipalities along the lake and addressed issues related to protection and development along the entire Cayuga Lake and Cayuga

Inlet waterfront and envisioned increasing public access to the waterfront, improving boating facilities, and encouraging appropriate economic development.

Protecting water quality can best be accomplished by protecting the quality of the water that enters streams, lakes, and aquifers. Certain places are key, stream corridors, wetlands, and aquifer recharge areas. Along the edges of streams, maintaining naturally vegetated buffers can help remove many of the pollutants carried via runoff. Protecting wetlands, and in some cases replacing lost ones, can also help keep waters clean. Water flow slows in wetlands allowing suspended sediments to settle to the wetland floor and nutrients dissolved in the water can be absorbed by plants and other organisms. Preserving existing wetlands and stream buffers within watersheds would significantly protect water quality in those watersheds. Re-establishing those wetlands and stream buffers that have been lost over time would improve water quality.

Certain places are key to protecting water quality: stream corridors, wetlands, and aquifer recharge areas.

Aquifer recharge areas are places where water infiltrates into the ground and replenishes aquifers. Contaminants from aboveground activities can infiltrate with the water. In most cases, the location of aquifer recharge areas is unknown, requiring detailed scientific study to identify. The County in conjunction with local governments and the USGS have been funding these studies for local aquifers. The next step is to put in place protection mechanisms for these important recharge areas.

PARTNERS. Important players in this work are local municipalities who can help to protect these important resources. To help coordinate and execute this effort, the Tompkins County Water Resources Council brings together the agencies that manage and protect the county's water resources, including representatives from Cornell Cooperative Extension, the Soil and Water Conservation District, and the County Division of Environmental Health and Planning Department. The Council also includes representatives representing diverse water interests, including municipalities, agriculture, business and industry, recreation, watershed organizations, and water purveyors. Other important watershed organizations include the Cayuga Lake Watershed Intermunicipal Organization, the Upper Susquehanna Coalition, and the Stormwater Coalition of Tompkins County.

COUNTY ROLE. County Government plays several important roles with respect to water resources. The Department of Health, through the Environmental Health Division, is active in protecting drinking water and in regulating sewage systems. The Highway Division is responsible for stormwater management facilities maintained by the County. The Planning Department is charged with maintaining data, undertaking studies and plans, and implementing programs related to protecting water resources. Three specific programs funded, in part, by the County are the Stream Corridor Restoration and Flood Hazard Mitigation Program, the Aquifer Study Program, and a community water quality monitoring program managed by the Community Science Institute. Two advisory boards play an active role in monitoring and protecting water quality: the Water Resources Council and the Environmental Management Council.

County Actions to be Initiated within Two Years

- Contribute to NYSDECs work assessing and improving water quality in the southern end of Cayuga Lake.
- Develop an integrated green infrastructure program that combines existing efforts to identify and protect the quality of stream corridors, wetlands, and aquifers.
- Complete the NYSDOT Relocation and Site Redevelopment Feasibility Study.
- Support the Water Resources Council in its work to update delineation of wetland resources in the County.

[1] Under the proposed rule, most seasonal and rain-dependent streams would be protected; wetlands near rivers and streams would be protected; and other types of waters would be evaluated on a case-by-case basis.

[2] *Hydraulic Analysis and Impacts of Long Term Shoaling for Flood Risk Management Project, Cayuga Inlet, Ithaca, New York.* May 2011. US Army Corps of Engineers.

climate change

WHILE GLOBAL ENERGY AND CLIMATE PROBLEMS CANNOT BE SOLVED EXCLUSIVELY AT THE LOCAL LEVEL, AND LEADERSHIP IS NEEDED FROM GLOBAL, FEDERAL, AND STATE ORGANIZATIONS, LOCALLY WE CAN IDENTIFY, PLAN FOR, AND TAKE STEPS TO ADDRESS THESE ISSUES. AND ULTIMATELY IT IS ONLY RECOGNITION AND ACTION AT LOCAL LEVELS EVERYWHERE THAT CAN ACCOMPLISH THE NEEDED CHANGES. ACTING NOW WILL PREPARE THE COMMUNITY TO BETTER ADAPT TO A RAPIDLY CHANGING CLIMATE AND TO RESPOND NIMBLY TO CHANGING ENERGY AND CLIMATE POLICY AND PROGRAM DECISIONS. COMMUNITIES THAT HAVE PREPARED FOR AN ENERGY FUTURE THAT IS CLIMATE NEUTRAL WILL BE ATTRACTIVE PLACES TO LIVE AND INVEST IN. THIS SECTION DISCUSSES TWO INTER-RELATED ASPECTS OF CLIMATE CHANGE. THE FIRST IS TO REDUCE THE MAGNITUDE OF CLIMATE CHANGE BY REDUCING THE COMMUNITY'S CONTRIBUTIONS TO GREENHOUSE GAS EMISSIONS. THE SECOND IS TO LIMIT THE COMMUNITY'S VULNERABILITY TO THE CURRENT AND FUTURE IMPACTS OF CLIMATE CHANGE.

energy and greenhouse gas emissions

The past decade has seen a dramatic change in the types of available energy sources. The expansion of new exploration techniques used to tap previously hard-to-reach fossil fuel resources, including shale gas, tar sands, and deep ocean deposits, as well as the decreasing costs of some of the traditional renewable resources, including solar and wind, have changed the way these sources are viewed. Other sources of energy are also getting a fresh look, including geothermal, hydro, tide, and wave energy. Re-localization initiatives around local food and products and reusing materials are also being embraced across the country not only as a way to enhance the resilience of a community in the face of climate change, but as a way to reduce the energy costs and associated greenhouse gas[1] emissions of transporting and manufacturing goods.

In addition to the changing global energy picture, several well-respected studies have identified how New York State could run on 100 percent renewable energy by 2050. This interest in transitioning to renewables is driven by many factors, including fear of the environmental and social costs of high-intensity fossil fuel extraction; deep concern about the future impacts of climate change; desire for energy independence from foreign powers; and New York's experience with recent disasters, such as Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee.

In response to these concerns, the community is interested in moving toward climate neutrality, or achieving net zero greenhouse gas emissions by dramatically reducing the amount of fossil fuel energy used and offsetting the remaining emissions with sequestration of greenhouse gases by natural vegetation and soils. Purchasing Renewable Energy Credits[2] to make up the difference may be employed as an interim measure while the community works towards long-term solutions.

Changing energy-use patterns is not simple, but addressing this energy challenge can provide numerous local benefits. Tompkins County can position itself as a regional leader in building a strong, local economy with the development of green jobs, local production facilities for new technologies, and sustainable agriculture and forestry. The economy can be further enhanced by investing in local energy sources that support local jobs and keep dollars circulating in the community.

Photos by TCPD

PRINCIPLE

Tompkins County should be a place where the energy system meets community needs without contributing additional greenhouse gases to the atmosphere.

POLICIES

It is the policy of Tompkins County to:

- Reduce greenhouse gas emissions to reach a minimum 80 percent reduction from 2008 levels by 2050 and reduce reliance on fossil fuels across all sectors.
- Improve the energy efficiency of all components of the community energy system.
- Increase the use of local and regional renewable energy sources and technologies.
- Increase carbon capture and storage in the county's forests, wetlands, and soils.
- Reduce the amount of material disposed of in landfills.

SNAPSHOT OF THE COUNTY TODAY

Electricity

In 2008, the community consumed approximately 780 million kWh of electricity. The bulk of that usage, 44 percent, was by the commercial sector, which includes educational and institutional users. Annual residential electricity usage averaged 7,800 kWh per household, compared to 7,300 kWh for New York State as a whole and 11,500 kWh for the United States.

Many people assume that Tompkins County's electricity is provided primarily by the Cayuga Power Plant, a 306 megawatt (MW) coal-fired power plant located in Lansing, but the county's electricity is actually generated from a diverse group of sources, most of which are located outside of the local area. According to New York State Electric and Gas (NYSEG), a mix of fuel sources is used to generate electricity for our region, with 47 percent from natural gas, 28 percent from nuclear, 13 percent from hydroelectric, five percent from wind, four percent from coal, and three percent from other sources. In addition to NYSEG, there are two other local energy providers, Cornell University and the Village of Groton Electric Department.

Cornell generates approximately 86 percent of its main campus' annual electricity needs from its 38 MW Central Energy Plants and its 1 MW hydroelectric plant on Fall Creek. In order to provide heat and electricity with the highest efficiency to its campus, in 2009 Cornell began commercial operation of its 30 MW Combined Heat and Power Plant utilizing combustion turbine technology with heat recovery steam generators, adding to the electricity production "cogenerated" from its steam turbine generators built in 1986. Cooling to the campus is provided by Cornell's Lake Source Cooling project, which has been utilizing the deep cold waters of Cayuga Lake to cool facilities at Cornell and Ithaca High School since 2000 with 86 percent less electricity than the refrigeration-based chillers it replaced. Lake Source Cooling is complemented by peaking capacity from the 4.4 million gallon Thermal Storage Tank and three high-efficiency centrifugal chillers. In September 2014, Cornell began receiving remote net metered electricity from a two MW solar photovoltaic electric installation that generates about one percent of annual needs.

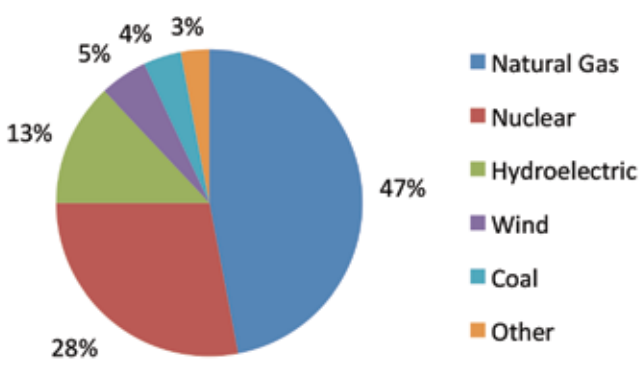
The Village of Groton has a long-term financial agreement to purchase up to 4.5 MW of low-cost power from the New York Power Authority's hydro-electric plant at Niagara Falls, with any excess demand purchased through the New York Municipal Power Agency.

Thermal Energy

In 2008, the community consumed over five million MMBtus[3] of thermal fuel, including nearly 43 million therms of natural gas, two million gallons of heating oil, and six million gallons of propane gas. The top users of thermal energy were the residential sector at 47 percent and the commercial sector at 43 percent, with the industrial sector accounting for ten percent of thermal energy use.

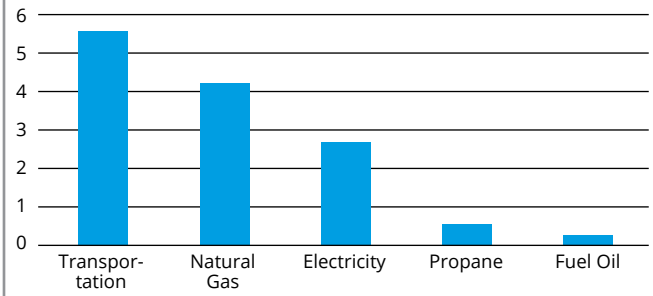
Fuel oil and propane are provided to users in Tompkins County through a series of independent distributors, and natural gas is delivered through a pipeline network. Natural

NYSEG Electricity Grid Fuel Sources (2012)



Source: New York State Electric and Gas

Community Energy Use, MMBtus (2008)



Source: Tompkins County Planning Department

gas transmission assets in Tompkins County are operated by Dominion Transmission, and the distribution system is operated by NYSEG. The two types of transmission pipelines in Tompkins County are natural gas and liquids. The natural gas pipelines transport gas to NYSEG for distribution and to main line users such as the Cornell Central Energy Plants. The liquid pipelines transport petroleum products to distributors.

Transportation*

In 2008, the community consumed nearly six million MMBtus of energy to fuel its transportation needs to drive nearly 687 million miles over the course of the year. Gasoline accounted for roughly 85 percent of fuel used at roughly 37 million gallons, and diesel accounted for 15 percent at seven million gallons.

Community Greenhouse Gas Emissions

According to the most comprehensive recent greenhouse gas emissions inventory, in 2008, the Tompkins County community used over 13 million MMBtus of energy, and emitted nearly 1.2 million metric tons of carbon dioxide equivalent[4] (MTCO2e). A greenhouse gas emissions inventory was also completed using 2010 data as part of the *Cleaner Greener Southern Tier Regional Sustainability Plan*, and emissions for Tompkins County were estimated at 1.1 million MTCO2e. Since that regional methodology was somewhat different than county emissions counting, the Comprehensive Plan will focus on the finding of the Tompkins County inventory that used 2008 data.

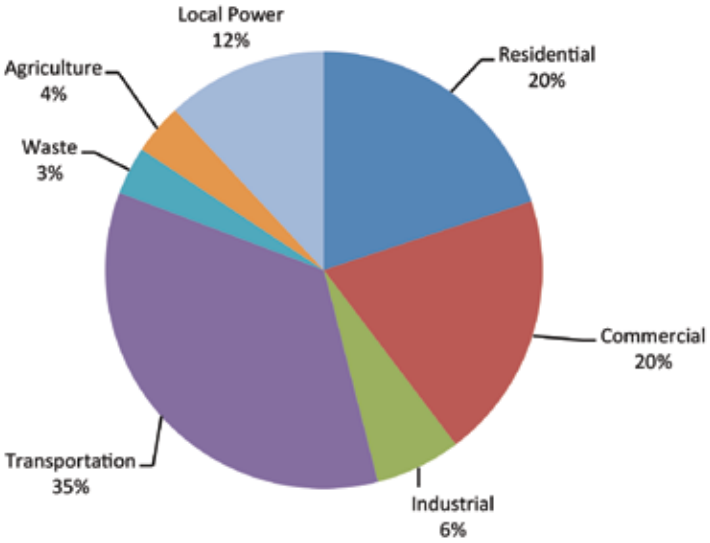
Emissions from residential, commercial, and industrial buildings together accounted for the largest proportion of community emissions and transportation accounted for more than a third of all community emissions. Gasoline used for transportation was the largest single energy source consumed, and electricity was the second most used energy source, followed by natural gas.

It should be noted, however, these emissions are calculated using the Environmental Protection Agency's (EPA) global warming potential figure for methane that was in place when the inventory was performed and follow the 100-year Global Warming Potential (GWP) time horizon that was adopted in the Kyoto Protocol and is now used widely as the default metric. Since 2008, many scientists have focused research on methane emissions and it appears that it would be more accurate to use a much greater GWP for methane to reflect its extreme potency in the shorter duration when reductions will most help in limiting warming that may result in a cascade of uncontrollable negative impacts. Such an analysis of methane will likely be incorporated into future energy plans, and would primarily affect the waste and agriculture sectors, as they are currently the highest emitters of methane.

Community Greenhouse Gas Emissions and Energy Use (2008)

Sector	*GHC Emissions (MTCO2e)*	*Energy Equivalent (MMBtu)*
Residential	233,469	3,396,123
Commercial	232,081	3,377,933
Industrial	74,265	994,576
Transportation*	407,469	5,606,892
Waste	41,792	0
Agriculture	43,996	0
Local Power	139,846	0
Total	**1,172,918**	**13,375,524**

**Air flight emissions are tracked, but not counted in these emissions since the data is incomplete, as it does not include private air flight. Commercial flights were estimated to have released 916 tons eCO2.*



Source: Tompkins County Planning Department

** For more information see the Transportation Chapter, "Transportation's Role in Greenhouse Gas Emissions" section.*

County Government Initiatives

Tompkins County's efforts to play an active role in reducing greenhouse gas emissions and reducing energy costs began in earnest in 2000 with the decision to install a 147 kW solar photovoltaic (PV) system on the roof of the County Library. Since then, the County has set emissions reduction goals and has periodically tracked both County government and community greenhouse gas emissions. Since its initial energy work, the County has adopted many new goals, policies, and programs to reduce energy use in its government facilities and operations, including:

- Entering into energy performance contracts with Johnson Controls and making significant upgrades to the energy efficiency of government facilities.
- Installing solar panels on nearly all County facilities through long-term lease agreements, and thereby helping Tompkins County and its municipalities lead the state in installed solar capacity in government facilities.
- Adopting green fleet, green building, and other green government policies.
- Partnering to create the Municipal Electric and Gas Alliance and piloting a program to provide long-term, price-certain electric energy to its members from renewable sources.
- Becoming a NYS Climate Smart Community.
- Transitioning to bio-diesel for the County Highway fleet.
- Purchasing Renewable Energy Credits to offset 100 percent of electrical energy use.

As part of its adoption of the Energy and Greenhouse Gas Emissions chapter of the Comprehensive Plan in 2008, the County Legislature committed to reduce emissions from 2008 levels by at least two percent a year to achieve a 20 percent reduction by 2020 and at least an 80 percent reduction by 2050. In support of those goals, the Legislature endorsed the *Tompkins County 2020 Energy Strategy*. The Strategy identifies action steps that should be taken to reduce greenhouse gas emissions to achieve the 2020 goal, paving the way for achieving the 2050 goal.

> The County Legislature committed to reduce emissions from 2008 levels by 20 percent by 2020 and at least 80 percent by 2050.

In 2008, Tompkins County government facilities and operations emitted approximately 6,000 MTCO2e and used 87,000 MMBtus of energy. Buildings and facilities were the biggest emitters at 52 percent, followed by vehicle fleet at 30 percent. In 2008, the Tompkins County government spent $1.7 million for its total energy costs. Buildings accounted for $1.3 million or 78 percent of all County government energy costs. Vehicles fuel expenses were $364,000, or 21.6 percent, and streetlights/traffic signal electricity cost $7,000, or 0.4 percent of County government energy costs.

ISSUES AND OPPORTUNITIES

No one solution or approach will bring about a major reduction in community energy usage and greenhouse gas emissions. Rather, this complex issue requires a suite of strategies be implemented, including both reducing energy demand and making more efficient use of energy, to see progress.

Consider Energy and the Economy Together*

Addressing our community's energy needs while reducing greenhouse gas emissions poses an immense challenge that demands immediate action if there is a hope of avoiding the direst consequences of climate change. The goal of reducing community emissions 80 percent by 2050 was not selected at random, but was determined by the United Nation's Intergovernmental Panel on Climate Change (IPCC) as the minimum that must be attained. Achieving that goal is an imperative that has been thrust upon the community by global forces and one that is becoming clear cannot be put off until 2050 or even 2030. The November 2014 IPCC's Fifth Assessment Synthesis Report states that "Delaying additional mitigation to 2030

> The overall goals for strengthening the local economy and reaching the energy and greenhouse gas emissions targets are compatible and can be mutually reinforcing.

** For more information see The Economy Chapter, "Supporting Infrastructure for Economic Development - Energy Infrastructure" section.*

Photo by: emmathewise/Bigstock.com

Green jobs can help power Tompkins County's economy

will substantially increase the challenges associated with limiting warming." The need to take steps to limit fossil fuel use grows in urgency with every new climate change-related impact that is experienced and "tipping point" that is identified.

Even though this topic is critical and should be a key driver in decision-making in the community, it is also important to recognize the other aspects of living in Tompkins County that make life prosperous and sustainable. Without good jobs from successful businesses, few residents could continue to live here. Without housing and transportation systems to sustain those employees, they would need to find work elsewhere. There need to be ways of addressing long-term and immediate energy needs and emissions that also contribute to the vital local economy.

One way to begin this collaboration is to bring a broad variety of voices to the discussion of community goals and strategies, as well as identify tangible steps to meet both energy and economic development goals. While the overall goals for strengthening the local economy and reaching the energy and greenhouse gas emissions targets are compatible and can be mutually reinforcing, it is also important to recognize that there may be specific instances where they come into conflict. In such cases it may be helpful to create public-private partnerships to evaluate the issue more closely and incentivize actions that reduce greenhouse gas emissions. Although the goal would be to find a mutual gains solution to the perceived conflict, it is likely that some instances will arise where no clear mutually beneficial solution can be identified and, in such cases, the attempt to meet multiple goals will need to be weighed in making a decision.

It will be important in such instances to consider the energy and economy pictures as a whole. If, for example, it is determined that fossil fuels are necessary to power a certain development because of the positive impacts on the economy, there should be a clear understanding of where energy use will be curtailed in other segments to compensate for the additional usage. Tackling the climate crisis will require unity in action and the community must develop ways to discuss these difficult issues in productive and positive ways. Rethinking how decisions are made around economic development and energy use will be critical to maintaining a high quality of life in 2015, as well as in 2050.

Explore Infrastructure in Energy Focus Areas*

Several areas are critical to the economic success of the county including downtown Ithaca; the business parks and industrial sites proximate to Ithaca Tompkins Regional Airport; Cornell's Campus on East Hill; and South Hill, including Ithaca College, the South Hill Business Campus, and the Emerson (Chainworks) site. These are areas that currently host substantial development, are expected to support new development, and are ripe for potential adoption of innovative energy solutions. Possible solutions include increased deployment of renewables, reduced energy demand through energy efficiency, analysis of applicability of Combined Heat and Power facilities, and establishing micro-grids to provide added resilience to the electrical supply in the event of grid failure due to storms or other unforeseen events.

They are also areas that could benefit from direct engagement with NYSEG and others, including funders at NYSERDA, to evaluate current and future constraints of the energy infrastructure and devise long-term plans that will meet current and future business, residential, and community energy needs while reducing greenhouse gas emissions. This approach is in accordance with the New York State Public Service Commission's *Reforming the Energy Vision (REV)* process and framework which envisions a distributed energy grid with micro-grids as integral components of our energy system.

Reduce Energy Demand**

CHANGING BEHAVIOR. After years of having access to low-cost and abundant energy, U.S. society has become accustomed to using energy freely and without thought. Indeed, a poll commissioned by several State agencies and conducted in July and August 2014 found only 53 percent

* *For more information see The Economy Chapter, "Supporting Infrastructure for Economic Development - Energy Infrastructure" section.*
** *For more information see the Housing Chapter, "Energy Efficient Housing" section.*

Photo by Performance Systems Development

Local contractor improving energy efficiency of a house

of New Yorkers characterized themselves as knowledgeable about the amount of electricity used by various household appliances, and 48 percent said they understood the components of their electric bill. On the bright side, 69 percent believed it was important to reduce carbon emissions. Simple, immediate steps can be taken to reduce energy use that will also reduce greenhouse gas emissions and save money. This message has been at the core of the Get Your GreenBack Tompkins campaign to inspire all 42,000 households to take at least one step to save energy and money in the areas of heating and lighting, transportation, food, and waste. The campaign highlights steps individuals and businesses can take, ranging from carpooling to growing their own food to setting thermostats lower in the winter and higher in the summer.

IMPROVING ENERGY EFFICIENCY. There are many opportunities to use less energy through improved technology and better understanding of how systems operate. Both new and existing homes, businesses, vehicles, and appliances could be improved to greatly reduce total community energy use and associated emissions. Transportation, the sector in Tompkins County that uses the most energy and emits the most greenhouse gases, can achieve efficiency by transitioning to more fuel-efficient vehicles and improving alternative transportation options. The Federal government has taken leadership in setting higher energy efficiency standards for new vehicles and appliances, which will trickle down into the local level as people replace older models.

As for local buildings, more than half of the homes in the county are over 50 years old. A large percentage of these homes have little or no insulation, single-pane windows, and rely on aging heating systems. Sometimes these same homes have limitations imposed due to their location in historic districts. The energy loss that occurs in these homes is enormous and will, in many cases, become a financial burden on homeowners as energy prices rise. Homeowners and businesses can reduce energy use by air sealing and insulating, and upgrading furnaces in their homes and businesses.

One aspect of existing housing that makes it particularly difficult to improve energy efficiency is the so-called "split incentive" associated with rental housing, where the renter pays utility bills and the landlord would need to pay to upgrade the building. With over 40 percent of housing units rented in Tompkins County, this is a big issue which can result in the rental housing stock wasting energy and negatively impacting vulnerable populations as energy costs rise. It will be important to ensure that home energy retrofits are financially available to renters, landlords, and homeowners, as well as to people at all income levels.

While new housing will be more energy efficient than most existing housing due to continued improvements in New York's Energy Conservation Construction Code, significant strides can be made to reduce energy demand in new housing even further through good design and location. Local projects have found that it is possible to significantly reduce energy use by designing new housing to be much more energy efficient, tight and well-insulated; locating it in Development Focus Areas to allow people to more easily walk, bike and bus to work and activities; and being "design-ready" to take advantage of renewable resources, such as orienting homes with south-facing roofs for solar energy generation. Given the difficulty in retrofitting existing houses to improve energy efficiency, it would be prudent to ensure new construction will not require retrofitting in the future.

Local projects have found that it is possible to significantly reduce energy use by designing new housing to be much more energy efficient.

Use of energy-efficient technologies that produce heat and electricity can also be expanded in Tompkins County to help achieve energy sustainability. A few examples of technologies that focus on efficient processes include: combined heat and power systems that utilize waste heat generated from electricity production to warm buildings; advanced air- and ground-source heat pumps that move heat

Solar Tompkins 2014 Program

rather than convert it from fossil fuels; distributed heat networks that circulate heat through pipe systems; and distributed electricity micro-grids that provide power to multiple users using solar or wind resources.

Transition to Renewable Energy Sources

A long-term solution that needs to expand dramatically in the near-term to avoid the worst impacts of climate change will be to transition to renewable sources of energy for heat, electricity, and transportation. Developing a diverse energy portfolio that includes renewable energy sources will allow the Tompkins County community to meet its future energy needs in a responsible and sustainable manner. In addition to incentives at the Federal level, New York State offers an attractive package of rebates and tax incentives, as well as net metering legislation, to help consumers more readily afford renewable energy systems. Locally, the Tompkins County Legislature has permanently exempted residential solar energy systems equipment and installation services from local sales and use taxes. Tompkins County can draw on local renewable energy sources that include solar, wind, biomass, water, geothermal, and methane from animal waste. While each of these sources have significant potential in the county, each faces its own obstacles to full deployment, ranging from shading limiting siting of roof-mounted solar to local regulations limiting wind turbines to air quality concerns limiting biomass stoves.

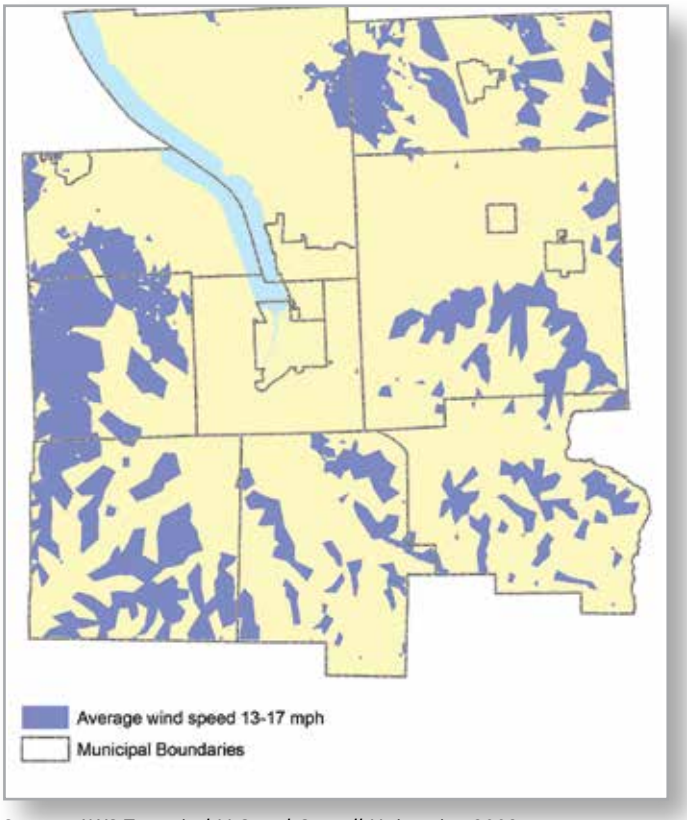
Developing a diverse energy portfolio that includes renewable energy sources will allow the community to meet its energy needs in a responsible and sustainable manner.

SOLAR. Energy from the sun is one of the most quickly evolving and exciting technologies available in the transition to a sustainable future. The cost of solar PV has been rapidly decreasing and efficiencies are improving. At first glance, Tompkins County may not seem like an ideal place for solar energy, but it actually has two-thirds of the solar resource of Arizona, and a better solar resource than that found in Germany, a global leader in solar energy production.

As of August 1, 2014, the New York State Energy Research and Development Authority (NYSERDA) reported Tompkins County had 510 grid-connected solar arrays, up from 93 in 2008. Those numbers are expected to greatly expand within the next year, due to the successful Solar Tompkins program that resulted in over 400 households contracting to install 3 MW of new solar. In addition, there are two large-scale solar farms in development in the community.

WIND. The threshold speed for wind power suitability varies across studies, with some studies using values as low

Potential Wind Areas



Source: AWS Truewind LLC and Cornell University, 2003

as 11 miles per hour (mph) for small wind systems and others recommending 14.5 mph average wind speeds for utility-scale wind farms. In general, the wind speeds in the county are rather low compared to requirements for utility-scale wind farms, with a maximum average wind speed of approximately 16.8 mph, according to estimates prepared by AWS Truewind, However, many areas offer potential for small or medium-scale wind.

Medium-scale wind (100-500 kW) may be particularly suitable in locations such as farms or other institutions that have higher wind speeds, large on-site demand, available land, and the ability to take advantage of incentive programs to make the financing attractive. Another potential in the future may be to provide energy for off-site users through remote net metering.

One bright spot for wind energy is the development of Black Oak Wind Farm in the Town of Enfield. Located at the site of the largest high wind resource area in the county, this 11.9 MW facility is expected to begin construction in late 2014 and will be New York State's first community-owned wind farm.

BIOMASS. Biomass, in the form of forests, brush, and crops, can be cut or pelletized and used for home heating. Biomass that is burned in efficient, clean-burning stoves could help residents make the transition away from non-renewable energy, and especially help rural homeowners who rely on expensive fuel oil and propane for their heat. As of 2012, there were 180,000 acres of forest and brushland and 10,000 acres of inactive agricultural land that could potentially be used for biomass production. In 2013, a team involving Cornell Cooperative Extension in eight Southern Tier counties, Ehrhart Propane and Oil of Trumansburg, MESA Reduction Engineering and Process of Aurora, New England Wood Pellet, and several businesses in the region were successful in obtaining State funds to jumpstart the bulk wood pellet delivery business in the region.

GEOTHERMAL. Geothermal energy is heat from the Earth's core and ranges from molten rock magma to the nearly constant temperatures found in the upper 10 feet of the Earth's surface. Ground-source heat pump technology uses the stable temperatures beneath the surface, in conjunction with some electricity to operate it, to very efficiently heat and cool buildings. Heat energy can be extracted from the earth in the winter and added to the building, and extracted from the building and added to the earth in the summer. Reaching well beyond the application of shallow, ground-source heat pumps, Cornell University is evaluating "deep rock" geothermal to provide heating and, potentially, electricity to its campus. If this technology were to be successfully adopted, it could serve as a model for surrounding areas and the world.

HYDROPOWER. The many streams in the area have historically provided power to the community, as is evidenced in the many old mill dams scattered throughout the county. Currently, water resources are being used to supply energy in Tompkins County by individuals and Cornell University. Cornell recently upgraded its hydroelectric facility below Beebe Lake, which increased the plant's annual output by 20 percent. There is potential for more hydropower to be harnessed at the individual level, as well as at the community level, using micro-hydro technology to tap the fast-moving waters in local streams. Micro-hydro power produces up to 100 kW of electricity from naturally flowing streams and can provide a more continuous supply of electricity than many other small-scale renewable technologies.

BIOGAS. Methane, a byproduct of decaying organic waste, can produce electricity from the county's agricultural waste and wastewater treatment plants. Harvesting methane also reduces the amount of this harmful greenhouse gas emitted into the atmosphere. The Ithaca Area Wastewater Treatment Facility captures methane from digesters to meet one-quarter of the plant's electricity needs while also heating some of its buildings.

Emissions and Sequestration

Reducing fossil fuel energy use in the community will reduce greenhouse gas emissions. Additionally, emissions can be reduced by protecting and enhancing resources that naturally remove carbon from the atmosphere. The natural process of carbon sequestration absorbs and stores atmospheric carbon in local land, forests, and wetlands. Protecting and sustainably managing these natural resources is vital to reducing levels of greenhouse gases in the atmosphere, and Tompkins County is fortunate to have abundant natural resources to help reduce community emissions.

Protecting and sustainably managing these natural resources is vital to reducing levels of greenhouse gases in the atmosphere.

Reduce Waste

The manufacture, distribution, and use of the goods and food consumers rely on in their daily lives—as well as management of the resulting waste—all require energy. This energy mostly comes from fossil fuels, which contribute greenhouse gas emissions to the atmosphere. Making smart choices about purchasing, using, and disposing of materials can make a big difference in the amount of waste produced and the resulting greenhouse gas emissions. The Tompkins County Solid Waste Division is a leader in the field in making it easy for consumers to reduce the amount of waste sent to the landfill. In 2013, a total of 16,821 tons of waste was sent to the Seneca Meadows Landfill in Waterloo, NY, marking an 11 percent reduction from the previous year. Also in 2013, the County received 15,323 tons of recyclable materials, and Cayuga Compost collected 1,807 tons of food scraps, showing that the community is currently recycling more than it is landfilling. The County has a goal of diverting at least 75 percent of waste from landfills by 2016 which is likely to be met given the robust reuse scene in Ithaca with over 40 thrift and consignment shops and the large number of homeowners and businesses that compost food scraps at home and work.

TAKING ACTION

STRATEGIES. Specific actions that support the principle and policies in this chapter are outlined in two key countywide documents: the *Tompkins County 2020 Energy Strategy (2010)* and the *Cleaner Greener Southern Tier Regional Sustainability Plan (2013)*.

The Tompkins County Legislature endorsed the *Tompkins County 2020 Energy Strategy* in 2010. The Legislature has adopted a goal of reducing greenhouse gas emissions in the community by at least 80 percent from 2008 levels by 2050. The first step along that path is to achieve a 20 percent reduction by 2020. The Strategy concluded this first step could be achieved by proactively implementing programs and solutions to reduce energy use. To achieve this target, the Energy Strategy identified measures already being taken by key stakeholders, as well as measures to be taken at the local level:

The *Cleaner Greener Plan* identified 22 top actions to achieve emissions goals.

- New local measures, such as Property Assessed Clean Energy (PACE) Program, Waste Diversion Program, Transportation Demand Management, Biomass for Rural Heating, and preparing an Energy Road Map, would result in a total savings of 23 percent of the 2020 emissions reduction goal.
- Measures taken by higher education institutions would result in a total of 47 percent of the 2020 emissions reduction goal. Cornell University, Ithaca College, and Tompkins Cortland Community College have all prepared climate action plans and taken steps to reduce their greenhouse gas emissions.
- Measures taken by New York State, primarily implementing the Renewable Energy Portfolio Standard, adopted in 2004 and expanded in 2009, would result in a total savings of 19 percent of the 2020 emissions reduction goal.
- Measures taken by the Federal government would result in a total savings of eight percent of the 2020 emissions reduction goal. The primary measure would be to establish higher lighting and appliance energy efficiency standards for residential and commercial use, as called for in the Energy Independence and Security Act of 2007.
- Measures taken by other community entities, including local municipalities and public schools, would result in a total savings of three percent of the 2020 emissions reduction goal.

The *Cleaner Greener Plan* looked at the issues of energy, greenhouse gas emissions, and sustainability at the regional level and identified 22 top actions to implement to achieve emissions goals. These included promoting energy efficiency and renewable energy in residential and commercial buildings and facilitating deployment of solar PV and solar thermal systems.

PARTNERS. While there are many actions that can be led by departments within Tompkins County government, many also require a collaborative approach. Key leaders and partners include local municipal planning and public works departments, Cornell Cooperative Extension of Tompkins County, Tompkins Community Action, the Tompkins County Climate Protection Initiative, the Park Foundation, and institutions of higher education. Education and engagement of the broader public is undertaken by many organizations including Get Your GreenBack Tompkins, Sustainable Tompkins, the Sustainability Center, Creating Healthy Places, and Bike-Walk Tompkins. Local businesses are also critical to providing the services necessary to make the energy transition including energy

performance contractors, local renewable energy designers and installers, Finger Lakes Reuse, and many other organizations devoted to reducing energy use and greenhouse gas emissions.

COUNTY ROLE. County Government plays many roles in energy and greenhouse gas emissions actions, including improving the energy efficiency of its own facilities and operations, administering programs that help others reduce energy use, and partnering on efforts to show leadership on the topic in the community. The County is currently considering joining the Energize NY Finance Property Assessed Clean Energy program to assist commercial and non-profit organizations to finance energy upgrades and renewable energy projects.

County Actions to be Initiated within Two Years

- By the end of 2015, finalize the Tompkins County Energy Roadmap to determine the most effective and efficient means of meeting the community's long-term energy and greenhouse gas emissions goals and begin implementation.
- Conduct a greenhouse gas emissions inventory for both the community and County government using 2014 data.
- Work with municipalities to develop tools to encourage widespread deployment of renewable energy systems.

[1] Greenhouse Gas is the term used for gases that trap heat in the atmosphere. The principal greenhouse gases that enter the atmosphere as a result of human activity are carbon dioxide, methane, and nitrous oxide.

[2] Renewable Energy Credits are tradable, non-tangible energy commodities that represent proof that 1 MWh of electricity was generated from an eligible renewable energy resource. These certificates can be sold, traded, or bartered, and the owner of the REC can claim to have purchased renewable energy.

[3] MMBtu stands for one million British thermal units, a measure of energy.

[4] Carbon dioxide equivalent units (CO2e) is a measure of the combined ability of all emitted greenhouse gases to trap heat over a given lifetime in the atmosphere, relative to the effects of the same mass of carbon dioxide released over the same time period.

High Volume Hydraulic Fracturing and Horizontal Drilling for Natural Gas

In December 2014, the Commissioners of the New York State Departments of Health and of Environmental Conservation recommended that New York State ban High Volume Hydraulic Fracturing (HVHF) and horizontal drilling for natural gas in shale formations, most notably the Marcellus Shale, and the Governor deferred to their recommendation. This summary of the proposal for HVHF was written prior to that announcement. It should be noted, however, that New York State does not prohibit the acceptance of HVHF wastewater for treatment, allows the use of brine that is a byproduct of the HVHF process on roads and construction sites, and imports HVHF gas that may still contain radioactive materials from other states.

The Marcellus Shale resource is fundamentally different from prior natural gas development in the state in that it is of relatively uniform distribution within a broad geographic area which would have been likely to lead to more intensive well development with the attendant network of access roads, pipelines, and other facilities. HVHF also requires a tremendous amount of water with chemical additives, resulting in additional anticipated infrastructure impacts and energy use to both deliver water to the site and address wastewater treatment issues. Tompkins County has asserted that these characteristics were likely to result in cumulative impacts of a scale and intensity unlike any prior natural gas development in the state.

In a case involving the Tompkins County Town of Dryden, New York State's highest court, the Court of Appeals, upheld the right of local municipalities to ban HVHF under their home rule zoning authority. Several other municipalities have passed similar bans.

In the County's most recent comments to the DEC in January of 2013, the broad-reaching cumulative impacts to New York State of HVHF and the lack of measures to adequately assess or address cumulative impacts in both the proposed regulations and the revised draft Supplemental Generic Environmental Impact Statement (rdSGEIS) were noted. The Tompkins County Planning Department has quantified some of the potential impacts within Tompkins County:

- If built out to the horizontal drilling spacing standards outlined in the rdSGEIS, Tompkins County could have anticipated one eight-well, five-acre industrial site per square mile (640 acres), or a total of 512 well sites, assuming no development within city or village boundaries.
- Over 2,500 acres of land could have been directly developed as well pads and nearly 60 miles of access roads to the well pads could be built. Under these conditions, over 1,000 acres of forestland would be developed and the forested landscape would be further fragmented.
- According to the rdSGEIS, each well could utilize five million gallons of water for HVHF activities. Under the build-out conditions this would have resulted in total water usage of over 20 billion gallons. The three major water supply plants in Tompkins County together use 2.6 billion gallons of water per year.
- According to the rdSGEIS, the development of a single well would generate 1,200 truck trips. The development of nearly 4,100 wells would have generated the equivalent of a 27 percent increase in heavy truck traffic on State roads in Tompkins County, if it occurred over 30 years, and an 82 percent increase in heavy truck traffic on State roads if it occurred over ten years.
- Using the figures presented in the rdSGEIS, the Tompkins County Planning Department estimated the lifetime greenhouse gas (GHG) emissions from one eight-well pad would have been roughly equivalent to one year of GHG emissions from the entire Tompkins County community.

There would also have been more localized impacts on water quality, noise and light pollution, agriculture, community character, and a host of other issues. Should HVHF ever be reconsidered and approved in the future, it is likely an amendment to the Comprehensive Plan would be required to address these issues.

In parts of the Finger Lakes region support for the continued growth in tourism has led many tourism related businesses to question the establishment of industries that are deemed to be incompatible with the qualities that draw visitors to the area. In addition to HVHF, plans for natural gas and underground liquid petroleum gas storage in abandoned salt mines have come under increased scrutiny.

adaptation

The best, most recent climate data point to a future of increased temperatures and shifting precipitation patterns for Tompkins County and New York State. With extreme hazard events likely to increase in frequency and intensity, the community needs to take steps now to reduce community risks associated with these anticipated changes.

PRINCIPLE

Tompkins County should be a place where the entire community is prepared for the economic, environmental, and social impacts of climate change.

POLICIES

It is the policy of Tompkins County to:

- Maintain floodways and limit development within floodplains to reduce damages from floods.
- Improve connectivity of open space to prevent fragmentation of ecosystems and isolation of plant and wildlife populations.
- Promote adaptation measures that lessen climate impacts on the local economy.
- Encourage actions that protect vulnerable populations from the impacts of climate change.
- Prepare for community recovery in the event of disaster.

SNAPSHOT
OF THE COUNTY TODAY

As has been widely reported, over the last 100 years, average global temperatures have increased 1.4°F, sea levels are rising, and extreme weather events like heat waves and heavy precipitation are occurring with greater frequency. To provide more detailed climate forecasts and specific adaptation strategies for New York State, the New York State Energy Research and Development Authority (NYSERDA) commissioned a report titled, *ClimAID: the Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State* (2011). The ClimAid report, led by scientists from Cornell and Columbia Universities, outlines how climate change is already affecting people and resources across the state, what to expect in the future, and strategies to prepare for those impacts.

The ClimAID report specifically highlights the need for Tompkins County to prepare for the following regional impacts:

- ***Heat waves*** will become more frequent and intense, increasing heat-related illness and death and posing new challenges to the energy system, air quality, and agriculture.
- ***Summer drought*** is projected to increase, affecting water supply, agriculture, ecosystems, and energy production.
- ***Heavy downpours*** are increasing and are projected to increase further. These events can lead to flooding and related impacts on water quality, infrastructure, and agriculture.
- ***Ecosystem changes*** including species range shifts, population crashes, and other sudden transformations could have wide-ranging impacts, not only for natural systems but also for health, agriculture, and other sectors.

The ClimAID report estimates temperatures will rise 4.1°F to 6.8°F across the state by the 2050s and the average annual precipitation levels may increase by up to 12 percent in the same time period. This precipitation is not predicted to be distributed evenly over the course of the year, but will likely occur largely during the winter months as rain. An increased likelihood of drought is projected for the late summer and early fall. Continuing the latest observed trends, more precipitation is expected to fall in heavy downpours and less in light rains.

Community Risks

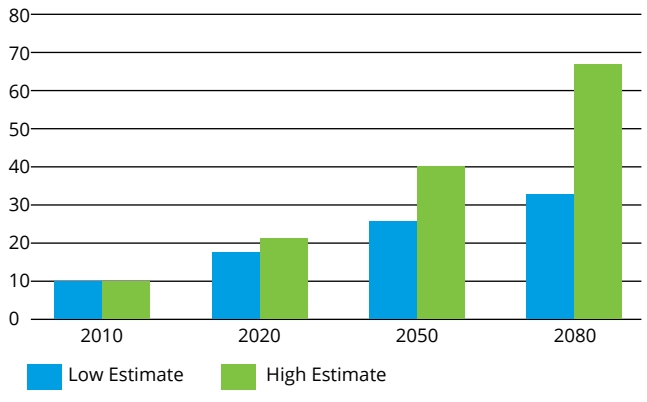
The climate-related risks in Tompkins County that were emphasized in the ClimAID report point to the following specific vulnerabilities.

- ***Heavy downpours*** will put those living in or near floodplains at even higher risk. Businesses, roads, and other infrastructure located in floodplains will also be more at-risk. Since many homes located in floodplains are less expensive, lower income residents may be especially vulnerable to the impacts of flooding.
- ***Heat waves and summer drought*** increases could have impacts throughout the region. In particular, the local dairy industry, which is the county's dominant type of agriculture, is vulnerable because of the impact of heat on dairy cow milk production.
- ***Ecosystem changes*** will affect the county's many natural features as invasive insects, weeds, and other pests move north. In considering wood boring pests, infrastructure and buildings near heavy forest stands will be particularly vulnerable.

In addition, the ClimAID report highlights rural areas as being more vulnerable to extreme events such as floods, droughts, ice storms, and other climate-related stressors. Outdoor recreation activities, such as fishing, skiing, and snowmobiling, may also be negatively impacted by the changing climate.

In 2013, in response to severe weather events such as Superstorm Sandy, Hurricane Irene, and Tropical Storm Lee, New

Estimated Number of Days with Temperatures in Excess of 90°



Source: 2014 ClimAID Update (New York State Energy Research and Development Authority)

York State recommended actions be taken to more effectively respond to, and bounce back from, future storms and other shocks. The 2013 ClimAID report emphasizes the importance of taking immediate proactive actions to address both short-term and long-term needs. As the report states, "Our infrastructure was not built or financed in a day. Making it more resilient will take longer than a day, or a year, or even a decade. But the time to start is now." It is important the community promote mitigation and adaptation strategies that enable incremental adaptation across all sectors and in every community over time.

ISSUES AND OPPORTUNITIES

Climate Impacts on Economy

The ClimAID report estimates that by mid-century the economic impacts of climate change are likely to approach $10 billion annually. Impacts may be felt unevenly across regions and industries throughout the state. With an increase in severe weather events there is an increased likelihood of damage to property and infrastructure. Should substantial damage occur in the City of Ithaca, economic disruption and transportation gridlock are likely to result. While it may be difficult to determine precise impacts to Tompkins County it seems quite likely that impacts will be felt to the agriculture, tourism, and small business sectors. With anticipated changes to extreme temperatures, milk production is expected to decrease, putting Tompkins County's largest agricultural sector, with $37 million dollars in market value (2012), at risk.

The ClimAID report estimates that by mid-century the economic impacts of climate changes statewide are likely to approach $10 billion annually.

As a region that benefits from recreational tourism like fishing, skiing, and snowmobiling, fluctuations in extreme weather events may also have impacts on this thriving industry. Lastly, small businesses may be less likely to cope with long term disruptions that could result from severe weather events and are less likely to have the capital to invest in adaptive measures to lower their risk.

Building Community Resilience

Community resilience is sometimes referred to as a three-legged stool of mitigation, adaptation, and response/recovery. Tompkins County has an established history of advancing mitigation measures to lessen the intensity of hazards, as well as a substantial response/recovery network to tackle hazard events during and post-event. Communities in the county have expanded hazard planning to incorporate adaptation or modification of the environment and structures to make them better suited to a changing climate. Greater attention to adaptation will be required as our region embraces new climate realities. To begin thinking more proactively about adaptation and collectively reduce hazard risk, Tompkins County and each of the other 16 municipal partners integrated the latest climate data and adaptation concepts into its *Tompkins County Hazard Mitigation Plan: 2013 Update*.

The *Hazard Mitigation Plan* profiled each of the hazards for which Tompkins County jurisdictions are at risk: 22 types of hazards affect the region. The plan defined each of these hazards, examined their historical occurrence, historic cost and damage estimates, as well as future potential impacts based on the latest available climate data. The existing hazards occurring throughout the county that could be affected by climate change are: severe storm, flash flood, ice storm, severe winter

Dryden Dairy Barn

storm, hurricane, ice jam, infestation of invasive species, lake flood, landslide, fire, utility failure, and water supply contamination. Hazards identified by the plan as areas of emerging concern are epidemics and drought.

As the effects of climate change will be experienced locally, it is imperative local communities take meaningful steps to adapt. It is becoming increasingly clear that state and local governments experiencing the negative impacts of climate change will need to lead adaptation efforts. In an era of tight budgets, it is important to identify cost-effective actions that offer multiple benefits to the community. An example of such an action is stream buffer protection which can reduce flooding downstream while at the same time improving wildlife habitat and reducing the amount of sediment and pollutants entering waterways.

Vulnerable Populations

Specific groups are particularly vulnerable to climate hazards. These include the elderly, disabled people, and health-compromised individuals who are particularly susceptible to the impacts of heat waves; low-income people who have limited ability to meet higher energy costs; farm workers who may be exposed to more chemicals if pesticide use increases in response to climate change; asthma sufferers who will be more vulnerable to the decline in air quality during heat waves; and people who depend on public transportation and lack private cars for evacuation during emergencies. Small businesses are also identified as being particularly vulnerable, as they are typically less able to cope with costly climate related interruptions and stresses, such as power and communication service disruptions, than larger businesses. By identifying and working with vulnerable populations and assessing barriers they face in building resilience, the community will be able to support those in greatest need in reducing risks from climate change.

The potential for more flooding in the area calls for an increased vigilance as to how and where development occurs.

Climate Science and Local Municipalities

One outcome of the Tompkins County hazard mitigation planning process and the release of the region-specific ClimAID report was increasing interest on the part of local governments in staying up-to-date on climate science. Municipalities realize that to prepare towns, villages, and city for these impacts, it will be crucial to receive regular updates on likely impacts of climate change. This presents an opportunity for researchers at Cornell and State agencies to share the latest climate information with municipalities and discuss implementation strategies on a regular basis.

Protecting Natural and Physical Infrastructure*

The potential for more flooding in the area calls for an increased vigilance as to how and where development occurs. It is critical new development occur outside of high risk areas, such as floodplains, and decisions on infrastructure investments be made with climate change in mind. Actions that advance both resilience and quality of life offer multiple community benefits.

It is particularly important to protect floodplains, stream buffers, and wetlands as they all play critical roles in water management. These areas can be maintained in their natural state as well as restored when their ability to function have declined. Future development, including fill, can be located away from floodplains, streams, and wetlands and existing structures can be relocated out of those critical areas. A community priority is the updating of area Flood Insurance Rate Maps to better identify high risk floodplains. The New York State Department of Environmental Conservation is currently creating the process by which floodmaps will be updated in Tompkins County.

One tool to help in the protection of floodplains is FEMA's Community Rating System which provides flood insurance premium reductions to residents in communities that participate in the program. This program requires municipalities meet higher flood risk awareness, like providing property owners with technical advice on how to protect their building from flooding and having stronger floodplain regulations to ensure currently vacant floodplain parcels will be kept free from development. To date, none of the communities in Tompkins County are participating in this program.

Expensive investments in physical infrastructure, such as water and sewer mains, treatment plants, roads, roadside ditches, bridges, and government offices should all include climate change projections in the design, maintenance, and

** For more information see the Water Resources Chapter, "Stormwater Runoff and Flooding" section.*

decision-making process. With significant public investment expected to be required in the future to help overcome the impacts of climate change, decisions now should be made with an eye toward making sure these investments can endure.

Climate Displacement

Although Tompkins County is at risk to many of the aforementioned hazards, it remains a comparatively resilient place. The county has bountiful and high-quality natural resources, including clean and abundant water, and fewer dramatic swings in weather patterns than is predicted for other regions of the United States and world. As more communities experience severe effects of climatically induced hazards, areas like Tompkins County may become highly attractive to people currently living outside of the county. An influx of "climate refugees" would require adaptation of local plans and strategies.

Communicating Adaptation

Despite a growing awareness that climate change is happening and already impacting Tompkins County, much needs to be done to improve how these critical risks and necessary adaptation measures are communicated to the county's diverse population. Strengthening engagement in all sectors of the community around issues of climate change will increase awareness, decrease risk, and improve resilience.

Flooded Community Space at Titus Towers, City of Ithaca

TAKING ACTION

STRATEGIES. The best framework for advancing adaptation is through implementation of the *Tompkins County Hazard Mitigation Plan*. The 2013 plan examined hazard impacts in relation to the latest climate science and includes recommended steps for advancing adaptation and mitigation measures. These measures included things like performing engineering based risk assessments on critical facilities that take into account climate projections and developing a countywide debris management plan.

Adaptation actions can be categorized as follows:

- Resistance – actions to resist the impacts, like the establishment of manmade barriers
- Adjustment – actions to modify existing practices, like changing development patterns, land use, health programming, and engineered design
- Retreat – actions to leave key areas in a natural state, like abandonment of development and the restriction of development in hazardous areas

Part of the benefit in advancing adaptation through the *Hazard Mitigation Plan* is that each of the municipalities in Tompkins County participated in preparing the plan and implementation meetings occur at least annually. Also, funding is available from FEMA for pre-disaster mitigation work, as long as local hazard mitigation plans are updated every five years.

PARTNERS. Adaptation will largely be driven by agencies in the areas of planning, public works, health, and emergency response. To advance adaptation, in part through mitigation, it is essential that each local municipal partner is involved. One of the critical partners to communicate concerns and coordinate actions will be the Tompkins County Council of Governments (TCCOG). Due to the multi-disciplinary nature of adaptation it is further important to work closely with the Tompkins County Climate Protection Initiative (TCCPI), the Tompkins County Emergency Planning Committee, the County Health Department and local climate scientists.

COUNTY ROLE. County Government has a number of important roles with respect to adaptation. The County Planning Department, Health Department, Department of Emergency Response, and County Highway Division are all involved in aspects of implementing the *Hazard Mitigation Plan* including those items related to adaptation. In addition, the Tompkins County Environmental Management Council, Water Resources Council, and Agricultural and Farmland Protection Board will play key roles in advancing adaptation into the future.

County Actions to be Initiated within Two Years

- Assess the vulnerability of the County government's critical facilities to the impacts of climate change.
- Prepare a community disaster recovery plan to prepare the community to take the actions; including those that build economic resilience, to bounce back from a disaster should it occur.
- Conduct an inventory of pipeline stream crossings in the county and identify those of highest priority in order to advance measures to reduce risk to human health and the environment.

neighborhoods and communities

QUALITY OF LIFE IS ENHANCED IN COMMUNITIES WHERE THERE ARE FRIENDLY RELATIONSHIPS AMONG NEIGHBORS; WHERE THE BUILT ENVIRONMENT IS ATTRACTIVE, FUNCTIONAL, AND DESIGNED AT A HUMAN SCALE; AND WHERE RESIDENTS FEEL THEY CAN LIVE A SAFE AND HEALTHY LIFE. PROXIMITY OF HOUSING TO EMPLOYMENT, SCHOOLS, PARKS, SHOPPING, AND OTHER SERVICES HELPS CREATE WALKABLE, VIBRANT NEIGHBORHOODS. CONCENTRATING MOST NEW DEVELOPMENT IN DEVELOPMENT FOCUS AREAS WILL PROVIDE THAT PROXIMITY AND MAKE IT POSSIBLE TO INVEST IN THE QUALITY OF THE BUILT ENVIRONMENT.

healthy communities

Healthy communities are not only more enjoyable places to live, but provide numerous additional benefits. These types of communities typically have lower health care costs, less absenteeism, lower levels of anxiety, and fewer injuries. According to Smart Growth America's 2014 report *Measuring Sprawl* people living in more compact, connected areas have longer, healthier, and safer lives in addition to greater access to economic opportunities. The report's findings indicate residents in these types of communities spend less on the combined cost of transportation and housing and have more transportation options available to meet their needs.

This chapter addresses how the built environment impacts public health and safety. Healthy communities are designed in a way that provides people equitable access to a high quality of life regardless of age, income, or ability. Mixed land uses bring people closer to the places where they work, play, and access goods and services. Community members are not dependent on cars, but instead enjoy safe bicycle and pedestrian infrastructure along with other transportation options that promote physical activity for all abilities. Public spaces and meeting places are easily accessible and inviting for social gathering and interactions, and no one is forced to be socially isolated. Transit, parks, natural areas, and healthy foods are readily available to all community members. Safe community design minimizes exposure to crime, accidents, violence, and hazards. An accessible community with housing for all segments of the population that is close to services and facilities and well served by mobility options is a more equitable community. It allows all people to be integrated into community life regardless of whether or not they suffer from physical, mental, or developmental impairments, or have mobility limited by age or income.

PRINCIPLE

Tompkins County should be a place where the built environment promotes healthy, safe, and active lifestyles.

POLICIES

It is the policy of Tompkins County to:

- Promote bicycling and walking throughout the county by making these transportation modes safe, efficient, and appealing options.
- Encourage the development of lively streets with a variety of opportunities for daily activity, recreation, and social interaction.
- Foster the expansion of a countywide trail network.
- Encourage efforts to improve the accessibility of the built environment to allow everyone to participate in community life.
- Promote parks, community facilities, recreational activities, and networks that support regular social interaction and physical activity.
- Discourage land uses that threaten community health and safety.

SNAPSHOT OF THE COUNTY TODAY

Health of Tompkins County Residents

In March 2014, the Robert Wood Johnson Foundation released findings indicating Tompkins County was the second healthiest county in New York as measured in four categories: health behavior, clinical care, social and economic factors, and physical environment. Among the social and physical environment factors analyzed were access to exercise opportunities, proximity to health providers, availability of social support networks, and level of community safety. While these findings identify many positive aspects of community health, the Tompkins County Health Department's *Community Health Assessment 2013-2017* tried to capture a comprehensive picture of the physical health of the county's residents. The report notes nearly one out of every three middle- and high-school students in Tompkins County is overweight or obese, and it lists making "opportunities to engage in healthy lifestyle activities for adults and children, particularly young families" as a high priority.

Social health can be impacted by physical development and design.

Social health, which involves the abilities to form satisfying interpersonal relationships and to adapt comfortably and act appropriately in various situations, can be impacted by physical development and design and is important to the well-being of both individuals and the larger community. Social health issues for young people are highlighted in the 2012 *State of Tompkins County Youth* report prepared by Tompkins County Youth Services. Residents between the ages of 15 and 18 indicated "the need for community gathering places for youth to socialize and hang out in a positive environment." This report also notes "transportation remains a barrier for youth to participate in activities and to secure employment." While much of Tompkins County is designed to support healthy living, one does not have to look far to find locations where activities of community members are limited based on poor design and the dominance of the automobile. Social health also significantly affects mental health.

Improving how all people access and utilize trail networks benefits public health, natural resource conservation, quality of life, social connections and tourism.

The Built Environment

STREETS. Street, road, site, and neighborhood design play a key role in how safe and inviting communities are to walk, bike, take transit, and participate in neighborhood events. Street design that encourages these behaviors includes lane widths that balance the needs of all street users, on-street parking designed to accommodate cyclists and drivers, adequate crossing times and sensors for pedestrians and cyclists, street trees to buffer pedestrians from traffic, building facades in close proximity to the street with interesting design features, adequate space for buses to decelerate and accelerate at bus stops, and safe areas for transit riders to wait for, board, and exit buses. Although there are areas in the county where this level of preferred design is seen, there are many other areas where these aspects are absent, limiting access to various destinations and opportunities for social interaction.

The *Tompkins County Walkability Assessment Methodology and Case Studies* (2007) examined the areas of Northeast Ithaca and the Village of Trumansburg. This study's detailed analysis of street and sidewalk conditions resulted in making one of the priority goals to "provide safer, more accessible walking routes to desired destinations" including schools. Municipalities are working to make those improvements, including the recently developed *City of Ithaca Sidewalk Policy* (2014). This policy more comprehensively addresses sidewalk needs in the City, replacing piecemeal repairs and construction by property owners with the City taking responsibility, resulting in reduced costs and faster rates of improvements.

PARKS, TRAILS, AND RECREATION. Accessible regional trail networks, public open spaces, and community facilities that connect all residents are also components of the built environment that increase activity levels, provide opportunities for social interaction, and result in health benefits. Studies from Active Living Research[1] indicate people with very good access to public open space are 50 percent more likely to achieve high levels of walking, defined as walking 180 minutes or more a week.

New York State operates four State Parks within the county, each of which offer a

broad range of recreation opportunities including boating at Allan H. Treman State Marine Park, swimming at Robert H. Treman State Park, hiking the gorge trail at Buttermilk Falls State Park, and viewing wildlife and the spectacular waterfall at Taughannock Falls State Park. Additionally, municipalities maintain nearly 500 acres of parkland including the frequented City of Ithaca parks at the southern end of Cayuga Lake. These are complemented by Cornell University Natural Areas and Finger Lakes Land Trust Preserves that provide additional opportunities for outdoor recreational activities. Due to this abundance, the County does not own or operate any parkland.

Tompkins County is fortunate to have a number of safe community trails, many of which weave through rural areas and provide connections to population centers. Important trail corridors include the Black Diamond Trail, the Ithaca-Dryden Trail, the South Hill Recreation Way, the East Hill Recreation Way, the Cayuga Waterfront Trail, the Gateway Trail, and the Finger Lakes Trail. Beyond transportation and recreation impacts, formalizing and improving how all people access and utilize these trail networks benefits public health, natural resource conservation, quality of life, social connections, and tourism.

Community members of all ages also heavily rely on school-based and other recreational opportunities and facilities for physical activity opportunities and opportunities to socialize. Recreational programming is well supported at local parks and municipal spaces through efforts of the inter-municipal Recreation Partnership, which includes accessibility as one of its program values. The Towns of Dryden, Groton, Lansing, Newfield, and Ulysses (together with the Village of Trumansburg), and the City of Ithaca, through its Youth Bureau, each maintain a recreation department which provides facilities ranging from parks and playing fields to swimming pools, skating rinks, pavilions, trails, and more. The Towns of Caroline, Danby, and Enfield, the County, and Village of Lansing are also members of the Recreation Partnership. Programming ranges from day camps to swim lessons, concerts, movie nights, sports leagues, and various special events. Although many recreational opportunities cater to children, older residents also depend on safe access to events at the local colleges and universities, the eight

Trails

Source: Tompkins County Planning Department

Active Use of Multi-Use Trail

regional libraries, and agencies such as the Greater Ithaca Activities Center, Cornell Cooperative Extension, Southside Community Center, Lifelong Center, and community halls in rural areas.

Development patterns that widely separate housing, shopping areas, schools, and other community destinations reduce the ability of individuals to independently travel between destinations and interact with one another. Mixing land uses – commercial, residential, recreational, educational, and others – in neighborhoods or places accessible by bicycle, by transit, and on foot can foster lively and diverse communities. A mix of uses attracts people to shop, meet friends, and live in neighborhoods like Fall Creek in the City of Ithaca or villages like Trumansburg, two areas that have seen rapid appreciation in the value of residential real estate. Although such areas exist throughout the county, there are opportunities to create more.

Healthy Food

Access to healthy local food is another key component that promotes health. Farmers in and near Tompkins County offer a number of ways to access fresh local food including farmers markets, Community Supported Agriculture (CSA), and you-pick operations, along with restaurants and grocery stores that offer local food options. In the third of the county that is actively farmed, dairy remains the dominant industry, although farm types are increasingly diverse, including a higher percentage of vegetable, soybean, and poultry operations. The majority of these enterprises occur on smaller sized farms which often directly market to Tompkins County consumers. Several programs exist to promote access to healthy food for all including community gardens, acceptance of food stamps at farmers markets, subsidized CSA shares, and efforts to bring fresh, local produce into schools.

Ithaca Farmers Market

ISSUES AND OPPORTUNITIES

Examining how both our youngest and oldest residents interact with our community and each other provides a helpful basis for identifying opportunities to improve community design to benefit both physical and mental health outcomes. By 2040, children and seniors will make up almost half of the national population. The U.S. Surgeon General's *National Prevention Strategy* (2011) identifies increasing the number of Americans who are healthy at every stage of life as its primary goal. The strategy includes recommendations to "encourage community design and development that supports physical activity," and to "facilitate social connectedness and community engagement across the lifespan." This physical activity and sense of community can be increased through local efforts to improve the accessibility and safety of the built environment, pedestrian connections, and recreational opportunities.

Examining how both our youngest and oldest residents interact with our community and each other provides a helpful basis for identifying opportunities to improve community design.

These types of community design impact mental health. The U.S. Centers for Disease Control's *Built Environment and Health Initiative* notes that good design can reduce mental health stresses. For example, access to green space has been linked to faster recovery from illnesses and injuries, improved ability of children to concentrate, and reduced levels of both property and violent crimes. Community design is also a social equity issue, as poor quality design has often been concentrated in areas with poorer or minority populations.

Land Uses*

Mixed land uses are critical to achieving great places to live, work, and play. A mix of land uses supports a more varied population and a wider commercial base to support public transit. People with disabilities report a greater difficulty in meeting daily needs, including those related to physical and social wellness, in areas where such a mix does not exist. Mixed land uses can enhance the vitality and security of an area by increasing the number of people using sidewalks and walkways. A mix of land uses also helps to revitalize community life because streets, public spaces, community buildings, and retail establishments again become places where people meet and talk.

A mix of land uses supports a more varied population and a wider commercial base to support public transit.

Some land uses and management practices may be incompatible with a healthy and safe community. Several municipalities in Tompkins County have put in place bans on certain heavy industrial activities that would conflict with local comprehensive plans and community goals, and the County has banned the use of byproducts of gas drilling activities on County roads. The County has also passed a Neighbor Notification Law to require that adjoining property owners be informed when pesticide application is planned. The County and municipalities, often by their joint efforts through the Tompkins County Council of Governments, need to continue to be alert to such potential threats to health and safety and devise appropriate responses.

Streets and Roads**

While there are many segments of streets and roads in the county that do a good job of accommodating all modes of transportation, overall there is room for improvement among most of the county's transportation network, as evidenced by only 47 percent of the streets in the City and villages having sidewalks. Vehicles were involved in 62 accidents involving bicyclists or pedestrians during 2013, resulting in 12 serious injuries and 37 minor injuries to those cycling or walking.

When streets and roads are designed for the safety of all users, positive street activity increases and people more fully engage in their communities. Studies have shown that if people perceive a safety issue in their community, their likelihood of engaging in physical activity is reduced. Neighborhood design which encourages informal social interactions provides natural "eyes-on-the-street" surveillance that discourages crime and increases street use. In community planning, it is important that decisions are made with public safety in mind. Lighting levels appropriate to the use of the area, street crossings that are short and well-paved, seating that allows for rest and refuge from the elements, and landscaping that allows people to clearly see each other and traffic are among key elements of a safe street. Safer, more interesting corridors for pedestrians, bikes, and transit riders reduces congestion and dangerous conflicts as more road users feel comfortable using alternatives to personal vehicles, which also improves the experience for remaining motorists. Streets that are designed and safely accessible for all users, including pedestrians, bicyclists, motorists, transit riders, and drivers, are commonly referred to as complete streets. Intermunicipal cooperation is critical to ensuring the safety and continuity of pedestrian, bike, and transit amenities and healthy communities across the county.

Recognizing the impact safe design has on transit riders' health and willingness to use public transportation, Tompkins County Area Transit (TCAT) has worked with local municipalities to improve facilities to create safe, comfort-

Streets Alive! Event on Cayuga Street, City of Ithaca

* *For more information see the Development Patterns Chapter, "Livability Through Good Design" section.*
** *For more information see the Transportation Chapter, "Shifting People from Driving Alone" section.*

able waiting and boarding areas for transit riders. It will be important for these efforts to continue, with an increased emphasis on improvements along rural routes such as park and rides where safe, pleasant waiting areas for transit riders of all ages and abilities could be provided.

Reducing the number of people relying on personal vehicles reduces air pollution, resulting in public health benefits. According to the U.S. Environmental Protection Agency (EPA), 51 percent of the carbon monoxide in typical U.S. cities comes from vehicles, with vehicle emissions contributing significant amounts of the air pollutants that affect human health, including those with chemical sensitivities, and the environment. The transportation sector consistently uses the most energy and emits the most greenhouse gases within Tompkins County. Although Tompkins County is considered an "attainment" area by the EPA, an area that does better than the national ambient air quality standard under the Clean Air Act Amendments of 1990, there are consistent concerns that air monitoring stations making these determinations are located outside of Tompkins County and may not provide truly accurate local data.

> If people perceive a safety issue in their community, their likelihood of engaging in physical activity is reduced.

Parks, Trails and Recreational Facilities*

The *Tompkins Priority Trails Strategy* (2014) identifies the key trails in the community which would form the basis of a 51-mile system of connected multi-use paths and 69 miles of pedestrian-only thru-hiker trails. With added investment to complete and connect them, many of these trails can become transportation pathways for walking and bicycling. Implementing this strategy has obvious recreational benefits, but many of the trail improvements also lend themselves to increased commuter opportunities.

A large portion of the community's parks and recreational facilities are located in areas that are difficult to access without a vehicle. It is important to locate recreational amenities in areas that can be reached by walking, cycling, and transit so users can access them without relying on personal vehicles. This is particularly important given the demographic shift anticipated, where the number of older adults is expected to double by 2030. The need for recreational spaces to support the needs of older adults, and people with disabilities, will only become more important over time, as will the accessibility of these facilities to non-drivers as more people forego driving by choice or necessity. Current efforts, such as TCAT's summer routes to several area parks, can be built upon to improve the accessibility of park and recreational facilities. Care should also be taken to increase opportunities for those with disabilities so that they can more actively enjoy the region's parks, trails, and recreational facilities.

Neighborhood Design**

Dependence on the automobile for even the shortest household trips increases the number of vehicles using the streets, limits social interaction among neighbors, and limits mobility for non-drivers, adding to the increasing trend of social isolation The 28,237 Tompkins County residents commuting to work alone as of 2012 and 67,008 trips taken by seniors and those in need of paratransit on Gadabout in 2013 indicate automobile dependence remains high.

The U.S. Department of Health and Human Services' Rural Assistance Center identifies the disconnect between family and community and social isolation as risk factors for developing certain mental health conditions and for increasing substance abuse. New housing development can be designed to incorporate streets and sidewalks that connect to the broader community fabric. Native vegetation and landscape reinforce the sense of place and connection and should be an integral part of neighborhood design.

Photo by TCPD

Gadabout Traveling Through the City of Ithaca

* *For more information see the Natural Resources Chapter, "Access" section.*
** *For more information see the Development Patterns Chapter, "Livability Through Good Design" section.*

Houses can be oriented in a way that facilitates spontaneous social interactions while also allowing privacy. Both neighborhoods and homes should be designed in a way to encourage visitability, meaning designed in a way that can be lived in or visited by people who have trouble with steps or who use wheelchairs or walkers. Strong social connections and familiarity with neighbors and community are also vital for crime prevention and sense of safety.

Housing Design

Housing design that enables independence can be a preventive form of health care that ultimately reduces demands on services. Residential development can be situated and designed in a way that enables people of all physical ability levels to live as independently as possible while reducing environmental stressors, a concept sometimes referred to as universal or enabling design. New residences, as well as home retrofits, should include features such as adequate lighting, 32-inch clear doorways, and zero grade entries to allow for easy use of walkers and wheelchairs, and at least an accessible half bath on the first floor so that people of varying abilities can live in and visit these homes.

It is important to not limit improvements to older populations as the term universal design often implies. Doorknobs should be designed for smaller hands, storage should be accessible for those tall and short alike, and automobiles should not be a requirement for participation in society no matter one's age or level of function. Public investments should always be made in a fashion that supports design that allows all people to thrive.

Healthy Food

Options to obtain healthy food in Tompkins County are steadily improving. Throughout the year, the Ithaca Farmer's Market continues to thrive downtown, on the Cayuga Inlet, and near East Hill Plaza. Building on this market's success, several towns and villages support smaller-scale markets bringing more healthy food options to these communities.

Diverse commercial agricultural activities provide a variety of healthy food options, from locally produced dairy products to Community Supported Agriculture shares of fruits and vegetables. Other creative programs that help make the connections between healthy local food and consumers include Cornell Cooperative Extension's Meat Locker Project, where consumers can rent space in a collective walk-in freezer to store locally purchased bulk meat in lieu of obtaining a home freezer. In addition, more residents are growing their own food at home or in community gardens.

Although many of the farmers' markets now accept SNAP (food stamp) benefits and other programs for low-income seniors and families with children, one of the challenges moving forward will be making sure healthy food is both affordable and easily accessible to underserved populations. The Food Bank of the Southern Tier estimated that in 2013, 13 percent of the county's population was food insecure. The number of individuals and families requesting food assistance through local food pantries, shelters, and other providers continues to increase. These providers and programs, such as free and reduced price meals in schools and SNAP benefits, are vital to addressing hunger among lower income community members. Land use regulations can be written to allow access to healthy food in both commercial areas and roadside stands. As noted in the Natural Resources section, the protection of high quality farmland within the county is paramount to allowing regular access to healthy, locally sourced food.

TAKING ACTION

STRATEGIES. Actions that support this chapter are included in the ITCTC's *2035 Long Range Transportation Plan* (2014) and the *Tompkins Priority Trails Strategy* (2014). The *Long Range Transportation Plan* identified initiatives, such as safety education, support for the expansion of bicycling and walking, and incorporation of "complete street" features in roads within the urbanized area. The actions identified within the *Priority Trails Strategy* will assist the development and maintenance of five key trails to create an outstanding trail-based recreation and transportation network. One of those five trails is the Black Diamond Trail, connecting the four State Parks in the county.

The Tompkins County Health Department's *Community Health Improvement Plan 2013-2017* also provides strategies and suggested partnership activities to address the community's most pressing health concerns. Although actions are closely aligned with public health efforts, they provide guidance for productive partnerships to pursue in an effort to ensure the community advances its desired health outcomes.

PARTNERS. Healthy communities rely heavily on the design of the built environment, and require those working in public health, transportation, historic preservation, and public safety to ensure that designs safely meet people's

needs. County agencies require a number of partners to improve coordination of the overlap between the built environment and health. TCAT and the ITCTC are critical to planning for and meeting transportation needs throughout the county. The Human Services Coalition (HSC) of Tompkins County is an important partner in its ability to coordinate organizations working in the areas of health and human services in order to identify and meet local service needs. The HSC's Creating Healthy Places program is working to reduce obesity and prevent Type 2 diabetes by changing the environment to increase physical activity and consumption of healthy foods.

Streets and sidewalks are primarily the responsibility of local municipalities. They are also responsible for reviewing new development projects and can ensure that they incorporate healthy design elements.

Additional partners include gerontology experts at Cornell and Ithaca College who help to inform discussions regarding the needs of seniors. The Finger Lakes Independence Center advocates to improve the quality of life for people with disabilities and their families, and works with individuals in need of assistance. Cornell Cooperative Extension of Tompkins County provides a number of resources and programs related to health throughout the lifespan, transportation equity, access to healthy foods, and more. Parks, trails, and recreation efforts involve municipalities, the Finger Lakes Trail Conference, the Cayuga Trails Club, Black Diamond Trail Enthusiasts Network, the Tompkins County Chamber of Commerce Foundation, New York State Department of Environmental Conservation and Office of Parks, Recreation and Historic Preservation, landowners, and other interested community members and organizations.

COUNTY ROLE. Health is an important component of County Government activities, with a number of departments filling key roles. The Tompkins County Health and Mental Health Departments assess health needs and concerns within the community, connect individuals with treatment and other types of assistance, and educate community members about physical and mental health issues. The Department of Social Services connects individuals and families with food, mobility, and other assistance needed to maintain their well-being. The Planning Department's data and expertise regarding population trends, land use, housing, the environment, and community facilities, together with the ITCTC's work in mobility and transportation, assists efforts to shape the built environment in ways that encourage healthy living. The Office for the Aging (COFA) and the Youth Services Department provide data and expertise related to the health and well-being of older adults and youth. The Office of Human Rights works to increase awareness and enforcement of civil rights laws, including those pertaining to accommodations of disabilities.

County Actions to be Initiated within Two Years

- Develop a healthy communities strategy as a collaborative effort of County departments.
- Establish a formal role for the County in trail development.
- Prepare and share a sidewalk inventory with municipalities.

[1] Giles-Corti (2004). *Public Open Space and Physical Activity: How Important is Distance, Attractiveness and Size?*

development patterns

A pattern of development that replicates characteristics of traditional neighborhoods or builds new neighborhoods based on the efficient use of existing infrastructure and strengths of existing communities will combat sprawl and preserve open land, natural resources, and public and private funds. Such development can take many forms, from clustered housing in rural hamlets to dense urban neighborhoods. It also allows for choice of living environments including existing suburban areas and rural homesteads.

PRINCIPLE

Tompkins County should be a place where new development is focused in compact, walkable, mixed-use communities.

POLICIES

It is the policy of Tompkins County to:

- Strengthen downtowns as retail, service, employment, and community centers.
- Encourage municipalities to protect rural character and scenic resources by limiting sprawl.
- Promote more housing and mixed-use development in Development Focus Areas.
- Support land use policies and regulations and public infrastructure improvements to encourage private investment in the Development Focus Areas.
- Preserve and enhance the distinct identities and historic character of existing communities.

SNAPSHOT OF THE COUNTY TODAY

Historic patterns of traditional development are still very visible and prominent in much of Tompkins County. The pattern of a main street neatly lined with historic buildings sitting amid a grid of neighborhood streets can be seen in the City of Ithaca and its neighborhoods, and in most villages and historic hamlets. Suburban development patterns, which were the dominant development trend of the second half of the twentieth century, can also be found throughout the county.

Nationally, during the post-World War II era, many communities experienced rapid expansion at the edges of their population centers. Central neighborhoods within cities, towns, and villages were emptied of wealth and workers in favor of newer, low density, dispersed developments on their fringes. This pattern of development has had a dramatic effect on the social and economic viability of existing communities, as well as significant impacts on the natural environment and quality of community life. The development of formerly open lands has reduced plant and animal habitats, degraded water resources, and influenced transportation choices that have degraded air quality, reduced physical activity, and increased the threat of global climate change.

This pattern is evident in Tompkins County. For over half a century, new construction has primarily located in rural areas, outside of the city and villages, by a ratio of two to one. This suburban sprawl and low-density, scattered rural development have provided additional housing and living options for residents. In the 1960s and 70s, a significant new commercial center was established in what is now the Village of Lansing. After the construction of NYS Route 13, shopping centers and apartment complexes were drawn to the access provided by the Triphammer Road interchange with Route 13.

For over half a century, new construction has primarily located in rural areas, outside of the city and villages.

More recently, commercial development has gravitated to the Southwest portion of the City of Ithaca, with development of several big box stores and related smaller commercial plazas.

Development outside established centers of development uses more land. Between 1995 and 2012, the amount of developed land in Tompkins County increased by 25 percent, or 6,000 acres, while the population only increased by five percent. Nearly 90 percent of the newly developed lands were outside the Development Focus Areas.

ISSUES AND OPPORTUNITIES

Sprawl and Traditional Neighborhoods

Sprawl has led to disinvestment in traditional community centers and degradation of urban and village neighborhoods. In some cases community green spaces have been lost to make room for highways, parking, and drive-through convenience. At the same time rural areas have experienced fragmentation and loss of farmland, forests, wildlife habitats, and other open space resources.

Population and Housing in Villages and City

	1980	*1990*	*2000*	*2010*
POPULATION				
In City and Villages	47.3%	45.3%	43.9%	43.2%
Outside City and Villages	52.7%	54.7%	56.1%	56.8%
HOUSING UNITS				
In City and Villages	48.0%	44.7%	43.5%	41.7%
Outside City and Villages	52.0%	55.3%	56.5%	58.3%

Source: U.S. Census Bureau

A key opportunity to combat this sprawling land use pattern is growing interest in returning to a pattern of development that resembles more closely the traditional neighborhood and village than the typical late twentieth century suburb. Evolving demographic, economic, environmental, and fiscal changes call for a return to communities built with these trends in mind:

- Baby boomers are downsizing and concerned about needing to drive everywhere
- Young adults are driving less and seeking to live in mixed-use neighborhoods
- Families are smaller
- More households have two wage earners
- Growth in household incomes is flatter
- State and Federal funds for infrastructure are no longer plentiful
- Energy costs, for housing and transportation, are growing
- Greenhouse gas emissions are widely accepted as driving climate change

New concepts of urban design make such density compatible with many of the amenities that were sought by those moving to suburban areas, such as more green space, more parks and trails, and increased safety. A denser pattern of development also provides enhanced living options for the aging population, including the opportunity to use public transit for health care visits and other services.

A denser pattern of development provides enhanced living options for the aging population.

While density is concerning to many due to perceptions of noise and lack of privacy, new design features have made many of these concerns obsolete. For example, more energy-efficient homes with thicker walls and more insulation are often very quiet spaces and can be located in closer proximity without increasing noise. Other ways to create successful dense neighborhoods are to accommodate a diversity of residents at varying stages of life to create mixed age and income neighborhoods and to invest in public spaces with sidewalks, public seating and gathering places, and street trees and other plantings to provide access to the outdoors.

Redevelopment in existing neighborhoods may threaten important historic resources. The preservation of historic resources can be fundamental to community character and quality. The massing, size, scale, materials, and architectural features of historic structures can provide design elements for use in new construction so redevelopment promotes the sense of place. The 1977 County publication of *Historic Preservation in Tompkins County* includes an inventory of historic resources in Tompkins County. Local municipalities can use local land use laws to establish standards for design and redevelopment of historic structures and in historic districts.

The Cost of Sprawl

Sprawl has also contributed to an increasing cost of providing government services. Highways, water lines, and sewer lines have been extended beyond our capacity to maintain them in the long-term. Reliance on the automobile has increased traffic and put additional strain on the ability to maintain highway infrastructure. It has also created new problems of increased air pollution and greenhouse gas emissions that governments struggle to address. In rural and suburban areas strain has been placed on volunteer fire departments and other emergency services to meet the needs of a dispersed community.

Nodal development uses the resources existing neighborhoods offer and maintains the value of public and private investments in infrastructure and facilities.

Nodal Development*

Nodal development, that is, development that is clustered in an existing or planned population center, is a way to direct growth towards existing communities already served by viable infrastructure. Nodal development uses the resources existing neighborhoods offer and maintains the value of public and private investment in community infrastructure and facilities. By encouraging development in these areas, communities benefit from a stronger tax base, closer proximity of jobs and services, increased efficiency of already

** For more information see The Economy Chapter, "Supporting Infrastructure for Economic Development - Commercial Centers" section.*

Development Focus Areas

A - Trumansburg
B - Jacksonville
C - Enfield Center
D - Newfield
E - Danby
F - Brooktondale
G - Slaterville
H - Varna
I - Urban Center
J - South Lansing
K - Groton
L - McLean
M - Dryden
N - Freeville
O - Etna
P - NYSEG Area

Source: Tompkins County Planning Department

developed land and infrastructure, reduced development pressure in fringe areas, and conservation of farmland and open space.

A recent study and related strategy[1] adopted by Tompkins County identified four types of Development Focus Areas: one Urban Center, five Established Nodes, two Emerging Nodes, and eight Rural Centers. The difference among these types is largely a matter of scale and is mostly a function of the availability of public services, primarily public water and sewer and transit.

The ***Urban Center*** includes portions of the City of Ithaca, the Towns of Ithaca and Lansing, and the Villages of Cayuga Heights and Lansing and is the largest of the Development Focus Areas. The urban center is the historic employment, retail, service, and government center for the surrounding region; has a dense internal transit system, providing frequent opportunities to travel between destinations within the Center; has water and sewer infrastructure; and supports the greatest diversity of housing, businesses, and employment.

Nodes, whether established or emerging, are walkable in size. A general rule of thumb is that people are willing to walk up to ten minutes, roughly a half-mile, to run an errand or walk to school, but for any greater distance, the inclination shifts to driving. Nodes, like Urban Centers, have public water and sewer systems capable of supporting dense and diverse development. ***Established Nodes,*** as the name implies, already exist and have a mix of housing types, diverse businesses and services, and employment opportunities. ***Emerging Nodes*** have some water and sewer infrastructure (or plans for those services) with the capacity to support mixed-use development; however, they lack the mix of land uses that would make them Established Nodes.

Rural Centers are also walkable in size. They usually have a mix of residential development, employment, businesses, and services. The critical difference between Nodes and Rural Centers is the lack of water and sewer infrastructure in the Rural Centers. These centers lack both water and sewer infrastructure and, thus, cannot support the intensity of development envisioned in Nodes. However, they do serve an important function as commercial and service centers for the surrounding rural populations.

Infill Development

Many existing neighborhoods can accommodate much of the growth that communities require through infill development, brownfields redevelopment, and the rehabilitation of existing buildings. Infill development consists of building homes, businesses, and public facilities on unused and underutilized lands within existing communities, including redevelopment of sites with existing buildings. Such development consumes less land and makes more efficient use of existing facilities and services. Taking advantage of infill development opportunities keeps resources where

Infill development consumes less land and makes more efficient use of existing facilities and services.

Restaurant Row in the City of Ithaca

people already live, allows rebuilding to occur, creates density to support transit and other amenities, and is key to accommodating growth that supports the quality of life of existing residents.

Vacant land comes to mind first when considering infill development. However, underutilized land and brownfields, once cleaned, may offer even more opportunities. Single story strip malls can be converted to multiple story buildings with a combination of retail space on the first floor, offices on the second, and residences on upper floors. Large lots with one home can be redeveloped with two or three units.

Infill development requires special design considerations to assure projects fit the surrounding neighborhood, have access to adequate infrastructure to support the new demand for public services, and include design features that will attract new businesses and residents to the development.

Livability Through Good Design[2]*

The success of Development Focus Areas depends, in large part, on their ability to create a vibrant, livable community that addresses both the shortcomings of sprawl as well as those features of lower density development that appeal to many. Although no single design template can be applied to all of these areas, there are planning and design principles that can help the community maintain its historic character while supporting additional development that provides a high quality of life.

Planning and design principles exist that can help maintain historic character while supporting more development.

RESIDENTIALLY DIVERSE. Development Focus Areas should be dynamic communities able to accommodate a diversity of residents at varying stages of life. From senior housing to family-oriented developments, successful Development Focus Areas contain a mix of housing types that appeal to a variety of demographic groups. Housing types include detached single-family homes, apartments, condominiums, and townhouses. This residential diversity helps accommodate a broad range of incomes and needs, while also helping support area services and businesses. With the higher densities, residential privacy and safety can be addressed through careful design, building orientation, and site layout.

BUSINESSES AND SERVICES. To best support its residents, the overwhelming majority of businesses and services in a Development Focus Area should be located in the core or, in the case of the Urban Center focus areas, neighborhood commercial areas. This concentration of services makes it easy for residents to run multiple errands on a single trip.

WELL DESIGNED. Good neighborhood design through the use of codes or design guidelines helps achieve higher residential densities while maintaining livability and is a prerequisite for attracting both residents and businesses. These should be specific to each Development Focus Area and created in consultation with property owners, businesses, and citizens. Codes or guidelines can stipulate simple design features like having storefronts and entryways face streets or parks.

ADDRESS NOISE POLLUTION. Noise pollution is a disincentive for people to move to denser areas. Buildings with thicker walls and more insulation can reduce indoor noise levels, as well as reducing energy use. Landscaping, building orientation, and glazing treatments specialized for sound abatement can also help reduce the impacts of noise on residents.

PUBLIC REALM. An active, engaging, and safe public realm is central to a successful Development Focus Area. Comfortable sidewalks, public seating and gathering places, street trees and other plantings, public art, and ground level street-front retail are all components of a public realm where

** For more information see the Healthy Communities Chapter, "Land Uses" and "Neighborhood Design" sections.*

people want to spend their time. Investing in and upgrading these spaces can help attract more pedestrians and street traffic and promote local businesses.

GREEN INFRASTRUCTURE. Natural features should be protected and integrated into Development Focus Areas. Notable vegetation and landforms should be maintained as focal points or incorporated in the overall design. The integration of natural landscapes and vegetation into urban settings contributes to stress reduction and better air quality. Naturalized stormwater management is also encouraged to reduce infrastructure service costs and create additional multi-purpose green and open space. In general, a minimum of 20 percent of a Development Focus Area's gross area should be maintained as park or open space.

VEHICLE MOVEMENT. As is the case in the City of Ithaca and villages in Tompkins County, State Highways transect most of the Development Focus Areas, creating special design challenges. The primary challenge will entail creating a street where the movement of vehicles *through* the area does not impede local pedestrian and bicycle activity *within* the area and, in fact, supports access to local businesses and services.

TAKING ACTION

STRATEGIES. Although local government land use plans and regulations are the main drivers of what form the county takes in the future, Tompkins County prepared a Development Focus Areas strategy to create a coherent vision for development that crosses municipal boundaries. The other plan that looks across municipal lines at development patterns is the *Cleaner Greener Southern Tier Regional Sustainability Strategy*.

The Development Focus Areas Strategy identified five broad categories of actions needed to achieve the pattern of development envisioned here:

- ***Density and Design.*** Promote compact mixed-use development in the Development Focus Areas. The success of these communities will be dependent, in part, on the quality of design.
- ***Development Regulations.*** Review local laws, including zoning and subdivision regulations, to ensure they promote the type of development envisioned in this Strategy.
- ***Infrastructure Improvements.*** Implement improvements to existing public water and sewer systems to support compact mixed-use development.
- ***Connections.*** Provide pedestrian facilities within each Development Focus Area to make walking an attractive transportation alternative. Provide and maintain transit connections between the Urban Center and the other Development Focus Areas. Also, provide strong pedestrian and bicycle connections between the Development Focus Areas and nearby existing developed areas.
- ***Controlling Sprawl.*** Most of the benefits of concentrating growth in the Development Focus Areas will not be achieved if a sprawling pattern of development continues outside of these areas. Development outside the Development Focus Areas should not require the expansion of water, sewer, and transit services and should fit the character of the surrounding rural landscape. Limited infill of existing suburban areas might also be expected.

PARTNERS. As emphasized above, local governments play the key role in taking these actions. Towns, villages, and the City, working independently and together, can put in place the legal framework to support this strategy. They have the authority to make the day-to-day decisions to support this pattern of development.

It is envisioned at least two-thirds of all new residential development would occur in the Development Focus Areas.

Other important partners in helping to promote compact walkable communities are the providers of the infrastructure and services that form the base of these communities: water systems, wastewater systems, roads, and transit systems. In addition to municipalities, these are the Bolton Point Water System, the Ithaca Area Wastewater Treatment Facility, and Tompkins Consolidated Area Transit. The Downtown Ithaca Alliance works to maintain and develop downtown Ithaca as the county's center for "banking and finance, business and professional offices, government and community services, downtown residences, and as a retail destination."

COUNTY ROLE. It is envisioned in the future at least two-thirds of all new residential development would occur in the Development Focus Areas. Tompkins County's role is three-fold in achieving this vision: providing support to municipalities as they undertake these activities; strongly advocating for appropriate types of development within Development Focus Areas and rural land uses outside of

the focus areas; and addressing the intermunicipal aspects of implementation, such as providing public transit services to the focus areas, focusing infrastructure investment in the focus areas, and promoting efforts to provide strong pedestrian and bicycle connections between the focus areas and nearby existing developed areas.

County Actions to be Initiated within Two Years

- Work with municipalities to identify potential infill or redevelopment sites within Development Focus Areas.
- Provide technical assistance to municipalities to establish land use policies and regulations that support development within Development Focus Areas.

[1] *Building Vibrant Communities in Tompkins County … a Development Focus Areas Strategy.* 2012.

[2] *Ibid.*

Tompkins County Legislature Mission and Vision Statements

JANUARY, 1997

MISSION. The mission of the Tompkins County Board of Representatives [County Legislature] is to collectively meet the needs of our residents and communities and to realize the Boards' articulated vision. County government will perform those functions not provided as well by individuals, the private sector, other levels of government, or the not-for-profit sector. County activities will be designed to protect and enhance the lives of the county's diverse residents and communities in ways that are compassionate, ethical, and creative within the limits of what residents financially support.

To this end we will:

- Allocate fiscal resources consistent with our vision, goals, policies, and community needs
- Foster open and honest communication among governments and county residents and employees, County government will initiate dialogue on the community needs, the appropriate role of County government, and satisfaction with the County's direction, initiatives, and services
- Create and implement policies that:
  - enhance the economic opportunity and well-being of all county residents
  - safeguard the health, safety, and rights of our residents and employees
  - protect the natural environment for future generations and maintain the built environment
  - prevent the need for more costly future services
- Encourage and support programs that:
  - achieve the County's goals
  - deliver needed services
  - serve vulnerable populations
  - strengthen families and communities
  - enhance our quality of life
- Operate a well-run organization by:
  - using a well trained, diverse workforce of employees, qualified contractors, and volunteers
  - providing adequate personnel, financial, facility, and informational support to approved programs
  - producing a balanced budget that supports the County's vision, mission, and goals and has appropriate reserves for future uncertainties
  - carrying out the mandates of state and federal governments
  - acting as a resource and partner for other local governments
  - responding flexibly and responsibly to emerging needs and changing mandates

VISION. The vision of the Tompkins County Board of Representatives [County Legislature] is a county where our residents' social and economic well-being flourishes in an environment that is physically safe and supportive.

- We see a community where all people are physically safe, financially secure, and able to enjoy physical, social and mental well-being,
  - where residents of all ages are valued and included and feel that way;
  - where families of all kinds are considered important and strengthened;
  - where those most vulnerable are cared for respectfully and fairly;
  - where all people appreciate diverse cultures and opinions, take personal responsibility for their actions and treat each other with civility;
  - where freedom of expression and privacy are respected and protected;
  - where individual learning and growth opportunities abound and full participation in civic life is fostered;
  - where arts and cultural resources are supported as important community assets.
- We see a community where diverse economic enterprises prosper and are in harmony with the natural and built environment,
  - where everyone can learn job skills and have employment opportunities;
  - where all residents share equitably in the wealth of the community and support the community in accordance with their ability to pay;
  - where all residents can support themselves, their families, and their community from generation to generation.
- We see a community where all people respect the land, and historic and cultural sites, and act as wise stewards or our finite resources and the beauty of the landscape,
  - where land-use decisions reflect this stewardship;
  - where our historic and cultural heritages are respected and protected by all;
  - where people, goods, and information travel easily and safely on networks that are well-integrated into the environment.
- We see a community where local governments, educational institutions, places of worship, businesses, and community organizations work together to provide high-quality, cost-effective services easily available to all.