

# **4. TRANSPORTATION SYSTEM: A SUSTAINABLE VIEW**

## **INTRODUCTION**

This chapter will provide a description of the transportation system in Tompkins County and address specific transportation issues under four sections categorized as follows:

**Connectivity** - The primary focus areas of connectivity in Tompkins County are the different transportation networks that help to move people and goods in our community. A well connected region has transportation networks with many links, numerous modal options, and minimal service dead-ends.

**System Integration** - The section concentrates addressing issues that make the transportation system operate more effectively and efficiently. System Integration incorporates different issues of the Mobility goal and objectives, congestion mitigation, travel demand management, transportation system management, and alternative travel modes.

Also in this section is a discussion of issues related to intermodal links and freight movement. The section will address system-level needs required to provide efficient connections and choices between various modes of transportation, and improved communication and coordination within the transportation community including the freight and commercial passenger sectors.

**Environmental** - This section describes the concerns and issues associated with the impacts of transportation and urban development on the natural and built environments.

**Safety** - This section addresses the *Federal* requirement for a safety element in the plan. Safety and emergency management programs are identified and their relationship to transportation is described.

**Financial** - This section addresses the *Federal* requirement for a financial plan. The section estimates financial federal resources, along with their state and local contributions, available for the development, operation, and maintenance of the transportation system and will demonstrate how the long-range transportation plan is fiscally constrained.

While this Chapter attempts to clarify issues under each of the above sub-headings, the reader should be aware that substantial overlap does exist. Transportation issues are critically interconnected with activities in the areas of land use, housing, watershed protection, agriculture, economic development, etc. This plan focuses attention on transportation but the interdependency of transportation with other sectors cannot be overstated.

## **CONNECTIVITY**

### **1. Metropolitan Transportation System**

Federal regulations state that the long-range transportation plan shall, at a minimum: "*Identify existing and proposed transportation facilities (including major roadways, transit, multimodal and intermodal facilities, pedestrian walkways and bicycle facilities, and intermodal connectors) that should function as an integrated metropolitan transportation system, giving emphasis to those facilities that serve important national and regional transportation functions*" (23 CFR§450.324.f(2), June 2, 2014). One of the functions of this section will be to meet this legislative requirement.

Infrastructure can be defined as the basic facilities, equipment, and installations needed for the functioning of a system. This section focuses on issues primarily associated with the development and operation of capital transportation infrastructure including roadways, bridges, the transit system, pedestrian and bicycle facilities. Transportation related programs and initiatives are also mentioned as they play a key role in informing and providing more options for the traveling public.

#### ***a. Roadways***

The City of Ithaca, located at the center of Tompkins County, is approximately 25 miles from the nearest Interstate Highway, I-81 in Cortland County. Tompkins County is served by a network of State, County and local roads. Due to the City of Ithaca's central location, many of the state roads meet there. Tompkins County has one principal arterial, New York State Route 13, which is also the only Tompkins County roadway included on the National Highway System (NHS). An application has been made to reclassify a second road, NY State Route 79 from the City of Ithaca to Tioga County, as a principal arterial to be included in the NHS. Final designation had not been received at the time of preparation of this plan.

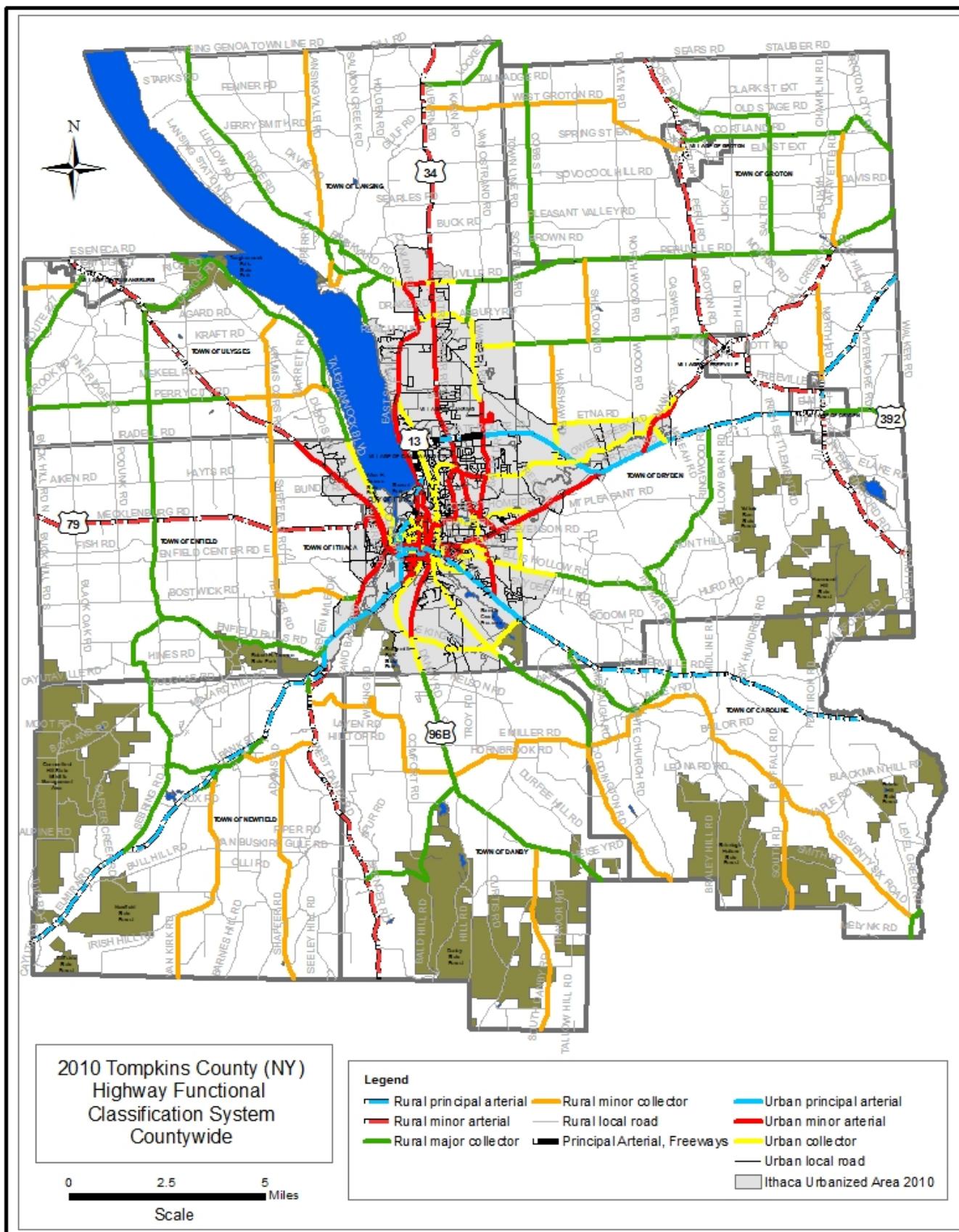
**FIGURE 4.1** and **14.2** show the approved Highway Functional Classification System for Tompkins County. **TABLE 4.1** describes the mileage and relative percentages of the federal-aid system in Tompkins County. **TABLE 4.2** lists the mileage of roads in Tompkins County by type of route, meaning which type of jurisdiction has responsibility of the road. Town roads are by far the most abundant road

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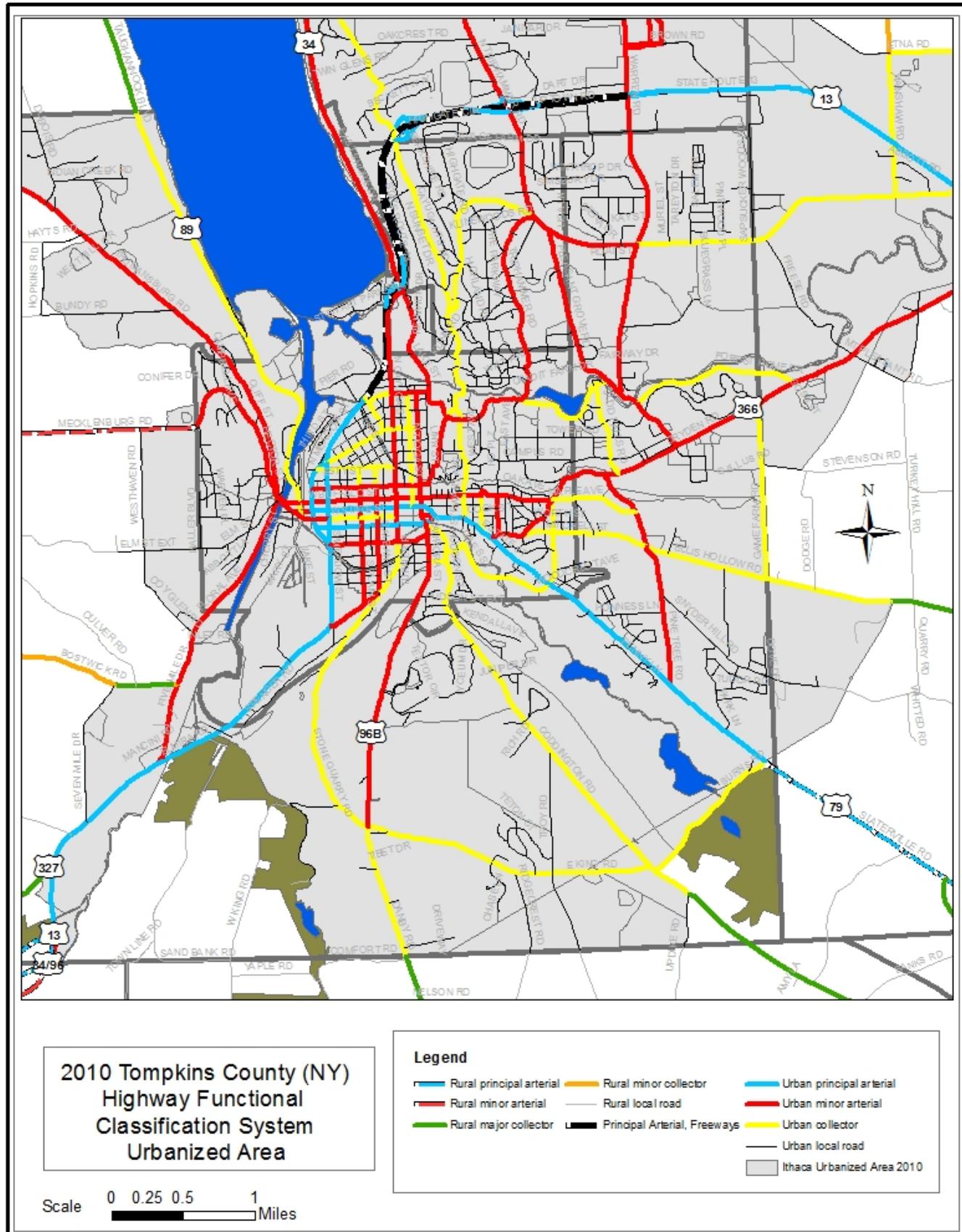
type, with County and State roads also having a significant proportion for roadways in the county.

Functional Classification is important because it helps identify roadways that are eligible for federal aid and because different design standards are applicable depending on the roadway classification. Rural minor collectors and local roads are not eligible for federal aid funding. The functional classification of roads is usually reviewed every ten years after the decennial census, but can be updated at any time to reflect infrastructure changes. The federal-aid functional classifications system for Tompkins County was approved by FHWA on February 26, 2001 and last amended by the ITCTC Policy Committee May 18, 2004. This functional classification scheme is legislatively required as a prerequisite to the use of federal transportation funds. The classification of roads was accomplished by ITCTC, local planning and NYSDOT staffs following federal guidelines.

This functional classification system is useful for planning and programming purposes for a number of reasons; first, as previously mentioned, it is required by law and is an absolute prerequisite for the use of federal aid, second, it is "regional" in scope, thus it is homogenous throughout the area and third, the process of classification is technically derived, based on the location of relative trip activity nodes and on establishment of an appropriate mix of functional classes by percentage (Source: Highway Functional Classification: Concepts, Criteria and Procedures, March 1989, Publication No. FHWA-ED-90-006). Great care was taken in developing a functional classification system that is reflective of actual roadway use and fully accommodates the technical needs of transportation officials.



**FIGURE 4.1**



**FIGURE 4.2**

TABLE 4.1			
Federal Aid Road System – Descriptive Statistics 2000 System (based on Census 2000)			
Functional Class	Centerline Miles	Percent	FHWA Guidelines
<b>URBAN ROADWAYS</b>			
Urban Principal Arterial - Freeway	7.10	2.23%	
Urban Principal Arterial	15.90	4.99%	
<b>Total Urban Principal Arterial</b>	<b>23.00</b>	<b>7.22%</b>	<b>5-10%</b>
Urban Minor Arterial	57.80	18.14%	
<b>Total Urban Arterial</b>	<b>80.80</b>	<b>25.35%</b>	<b>15-25%</b>
<b>Urban Collector</b>	<b>52.30</b>	<b>16.41%</b>	<b>5-10%</b>
<b>Urban Local Street</b>	<b>162.60</b>	<b>50.02%</b>	<b>65-80%</b>
<b>RURAL ROADWAYS</b>			
Rural Principal Arterial	17.30	1.77%	2-4%
Rural Minor Arterial	57.10	5.86%	
<b>Total Rural Arterial</b>	<b>74.40</b>	<b>7.63%</b>	<b>6-12%</b>
Rural Major Collector	117.20	12.02%	
Rural Minor Collector	83.20	8.53%	
<b>Total Rural Collector</b>	<b>200.40</b>	<b>20.56%</b>	<b>20-25%</b>
<b>Rural Local Road</b>	<b>700.10</b>	<b>71.81%</b>	<b>65-75%</b>
<b>TOTAL</b>	<b>1,293.60</b>	<b>100%</b>	

TABLE 4.2		
Road System – By Route Type		
Source: Tompkins County Road Centerline File		
Road Type	Centerline Miles	Percent of Total Miles
State Roads	180.3	12.9%
County Roads	302.7	21.6%
Town Roads	648.4	46.4%
City Streets	61.5	4.3%
Village Streets	77.5	5.5%
Institutional Streets (CU, IC, TC3)	21.8	1.6%
Private Roads	63.4	4.5%
Abandoned / Vacant	0.3	0.0%
No info / no public access	42.6	3.1%
<b>TOTAL</b>	<b>1,398.5</b>	<b>100%</b>

### b. Bridges

The major infrastructure issues related to bridges include maintenance and operations, traffic safety, and capacity (addressed later in this chapter).

NYSDOT performs periodic inspections of all bridges. Bridge condition ratings are assigned in a scale from 1 to 7, where 1 is a failing structure and 7 is excellent. The scale uses a weighted formula that accounts for several structural components of a bridge. Bridges that score less than 5 are in a condition that is considered ‘Nearly Critical’. They are candidates for rehabilitation work, replacement or perhaps closure. ‘Critical Element’ condition bridges are those that either have an inspection rating of less than 3.0 (there are two of these in Tompkins County) or have a low inspection rating with a high Annual Average Daily Traffic count (there are three of these in Tompkins County). ‘Critical Element’ bridges are given priority funding over ‘Nearly Critical’ bridges. A ‘Critical Element’ or ‘Nearly Critical’ rating does not mean a bridge is unsafe. A bridge that is considered unsafe would be closed to further use.

According to NYSDOT's data, there are 206 bridges in Tompkins County that were inspected in the past 5 years. Of these, 64 are State-owned, 133 are locally owned, and authorities and others own nine (five by Cornell and four by the NY State Parks). Of all the bridges, 11.7% are rated as ‘Critical Element’ or ‘Nearly Critical’. The ‘Critical Element’ bridges are located as follows:

- North Aurora Street over Cascadilla Creek  
(BIN# 2210550) – City of Ithaca
- Caldwell Road over Fall Creek  
(BIN# 3047450) – Tompkins County
- Freese Road over Fall Creek  
(BIN# 3209800) – Tompkins County
- Groton City Road over Fall Creek  
(BIN# 3314230) – Tompkins County
- Red Mill Road over Fall Creek  
(BIN# 3209790) – Tompkins County

**FIGURE 4.3** and **FIGURE 4.4** show the location of the bridges of Tompkins County along with their bridge rating.

**TABLE 4.3** shows that the percent of deficient State and Local bridges has increased since 2003, but is still lower than figures from 10 years before. The nine ‘authority’ bridges in the county have experienced significant decline in condition over the last nine years. BNAM figures indicate that eight out of the nine of these bridges are deficient.

The ITCTC recognizes the importance of bridge maintenance as a critical factor in having a safe and efficient transportation system. Over the years numerous bridge projects have received funding through the TIP. The ITCTC will continue to include bridge maintenance as an important component of project development efforts.

TABLE 4.3						
BRIDGE CONDITION						
Source: NYSDOT						
Owner	1999		2003		2014	
	% Deficient	Avg. Rating	% Deficient	Avg. Rating	% Deficient	Avg. Rating
State	36%	5.88	28%	5.64	32%	5.48
Local	58%	5.05	39%	5.54	43%	5.26
Authority	66%	4.90	64%	4.73	89%	4.46

### c. Transit

Public transit service in Tompkins County is provided by TCAT. In 1996, Tompkins Consolidated Area Transit (TCAT) was authorized by the New York State Legislature. In 1998, the City of Ithaca, Cornell University and Tompkins County agreed to form TCAT as a joint venture to operate public transit service in Tompkins County. In 2005, the parties reorganized TCAT as a not-for-profit corporation. TCAT contracts with GADABOUT Transportation Services, Inc. for demand responsive paratransit service required by the Americans with Disabilities Act (ADA paratransit).

TCAT analyzes its bus route performance and proposes adjustments to fares and specific routes in response to evolving fiscal conditions and customer demands. TCAT operates in every town in Tompkins County. Nearly 62% of Tompkins County residents live within one quarter (¼) mile of a bus route, with 88% for urban and 31% for rural populations. (Source: Tompkins County Planning Department). In 2013, TCAT used 53 buses to operate service on 33 routes (including one summer-only route and one ‘demand and response’ route) with a diverse range of schedules for academic year, summer and yearlong service.

Public transit routes are shown in **FIGURES 4.5** and **4.6** (Note: TCAT continuously reviews its bus routes in an effort to improve service; therefore, the bus routes shown in the maps may be changed at any given time). These same maps indicate transit ridership levels based on ridership surveys as:

- Very Low Ridership = 1-50 riders per day
- Low Ridership = 51-100 riders per day
- Good Ridership = 101-150 riders per day
- Very Good Ridership = 151-500 per day
- Excellent Ridership = more than 500 riders per day

Transit routes showing the most ridership were #30 (Commons-to-Cornell-to-Shops at Ithaca Mall), #81 and #82 (Cornell University Campus) and the #10 (Cornell University to Commons Shuttle). Since 2005, the top

three urban routes with the highest ridership (30, 81 and 10) carried nearly 50% of total TCAT ridership.

**FIGURES 4.7 and 4.8** show the principal transit boarding locations in the TCAT for 2013. The downtown Ithaca bus stops at Seneca and Green Streets handled the most passengers, along with Parking Lot A, East Ave. at Sage Hall/Stater Hall and Tower Road at Cornell. Other principal activity nodes include The Shops at Ithaca Mall, Collegetown, and Cornell University campus locations at Parking Lot B, and Hasbrouck Apartments.

Before consolidation in 1999, TCAT annual ridership peaked in 1996 at 2,141,191 trips. TCAT experienced strong ridership growth after the consolidated service began in the fall 1999. In 2005, TCAT ridership passed 3 million trips for the first time. In 2013 TCAT ridership was nearly 4.4 million trips. Demand for increasing the scale and scope of transit service continues as evidenced by the interest generated by the TCAT 2008-2009 Transit Development Plan and continued ridership increases.

Increased service demand during the 2008 gasoline price hike and recession offered evidence of the potential demand for increased service, particularly to serve the commuter traffic from rural towns and neighboring counties to the Ithaca urban area. The ITCTC will continue to work with regional partners to ensure that transit and other mobility options are used to serve the largest possible number of commuters into and out of Tompkins County.

TCAT continues to face a chronic capital-funding shortfall for timely bus replacement and operations. Neither federal nor state capital assistance programs are adequate to the task. In addition to rolling stock, there will be substantial capital facility needs to be addressed in the next twenty years. These include: (a) rehabilitating and expanding the transit center; (b) developing/enhancing park and ride facilities; (c) implementing communication technologies to improve service and passenger experience; (d) updated fare collection system to automate fare accounting; and (e) additional and renovated passenger shelters to increase accessibility, security and ease of use.

There is a clear demand for an expanded role for transit in Tompkins County based on ridership expectations, mobility needs and environmental and energy use community goals. In order to provide any realistic opportunity of advancing this vision, TCAT will need, at the very least, significant and continuous additional funding and possibly and entirely new paradigm of how the community selects and funds its priority transportation options. The ITCTC will continue to work closely with TCAT and other community partners to support high quality public transportation for Tompkins County.

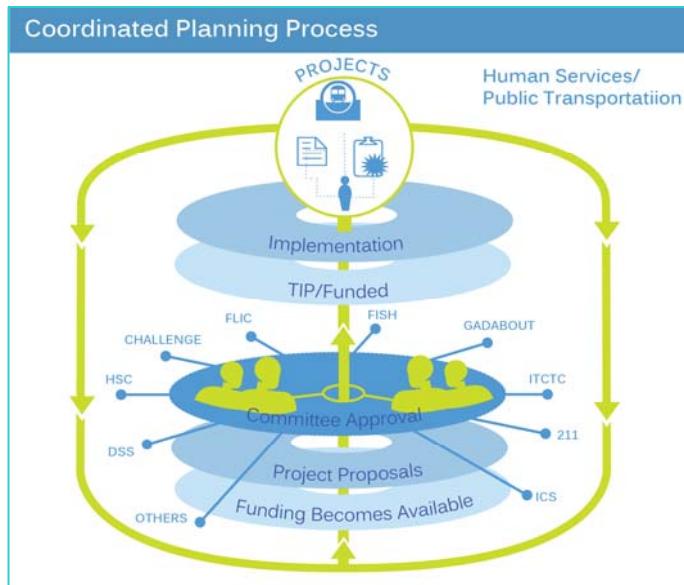
#### d. Paratransit

GADABOUT Transportation Services, Inc. was developed in 1976 and re-organized as a non-profit transportation corporation in 1981. GADABOUT provides wheelchair accessible, demand responsive service for people over 60 years and persons with disabilities in Tompkins County. GADABOUT ridership for 2013 was 67,008, including 31,657 ADA and 35,351 non ADA trips. GADABOUT's administration and operations center and paratransit buses are based and maintained at TCAT's transit facility. GADABOUT was an original tenant of the transit facility (with a fleet of 13 buses) when it opened in 1992.

In the next twenty years, with the generational shift of aging Baby Boomers, the demand for mobility services for seniors is expected to significantly increase. The trend of developing senior residential centers and mixed use, urban housing targeted to seniors will add to demand for flexible mobility services in general and, eventually, for paratransit and other ancillary senior transportation services.

#### e. Coordinated Plan

Mobility services targeted to provide job access for low-income persons and special needs populations needs continued attention. The Tompkins County Department of Social Services and ITCTC have closely cooperated to develop the *Coordinated Public Transit - Human Services Transportation Plan for Tompkins County* (Coordinated Plan). The Coordinated Plan is required under the Federal Transit Administration's program for enhanced mobility of seniors and individuals with disabilities (Section 5310 grants). Further, federal guidance advises using the coordinated planning process as a best practice for developing mobility management and Job Access operating assistance projects (Section 5307 Urban Formula and 5311 Rural Formula transit programs).



Under the Coordinated Plan, human services and transportation agencies work together to identify resources (federal and otherwise), service gaps, and annual project priorities to improve community mobility, increase the capacity of providers to supply more service, and to increase efficient delivery of transportation for human service needs. Selected projects are vetted by a special committee of TCAT and the Tompkins County Legislature. The County's Mobility Management program, in the Department of Social Services, coordinates project implementation. Federal transportation funds programmed through the Coordinated Plan process are included in the ITCTC Transportation Improvement Program and receive additional review through that process. The ITCTC will continue to work with its local partners to implement and maintain the Coordinated Plan process. The Coordinate Plan process is an important example of collaborative planning in the transportation sector in Tompkins County.

#### *f. Multimodal and Intermodal Facilities*

The issues associated with intermodal freight and commercial passenger facilities are discussed under a separate heading below. For the purposes of defining the Metropolitan Transportation System, a map of intermodal facilities is provided here (see **FIGURE 4.9**).

Multimodal facilities refer to the accommodation of various modes of transportation. In Tompkins County transit, bicycle and pedestrian facilities are the principal components considered under the "multimodal" aspect of this section. Specific discussions of bicycle and pedestrian issues appear later in this chapter.

TCAT's City Center bus stops around the Ithaca Commons enhance the public transportation experience for all customers and also results in improvements for pedestrians and bicyclists. The improved streetscape at the stops directly benefits the Downtown. The functionality of the passenger facilities promotes seamless multimodal integration.

The Ithaca intercity bus station is conveniently located in the West End of Downtown Ithaca, within walking and bicycling distance of most of the population in the Flats of the City of Ithaca. However, the inter-city bus station, which serves as a gateway for approximately 179,000 annual passengers, lacks basic passenger amenities, i.e. bathrooms, street furniture, bicycle parking. Rehabilitation or relocation of the intercity bus facility is needed to provide a modern facility. Currently, the intercity bus facility is served by the public transit system, taxis and paratransit. Regular and frequent service should be continued to facilitate transportation to the final destination of intercity travelers. Intercity bus service in Tompkins County includes three carriers and approximately 28 buses per day.

**g. Active Transportation-Bicycle and Pedestrian Programs**  
Together, the bicycle and pedestrian modes of transportation carry a significant percentage of the journey to work trips in the Tompkins County (pedestrian = 16%; bicycling = 1%). To achieve most goals of the LRTP, every effort should be made to maintain and enhance the trip share of these alternative modes to the automobile.

**Bicycles:** The need to develop an integrated, countywide bicycle system is crucial. Various efforts have contributed to this end but better coordination is needed.

The City of Ithaca adopted a Bicycle Plan in 1997, but has found implementation difficult for a number of reasons. A Bicycle Boulevard Plan was adopted in 2012 by the City. Currently the City is using a combination of federal, state and local funding sources to design and build the Cayuga Waterfront Trail connecting the City's waterfront destinations to each other and to nearby neighborhoods. This project should be completed by 2015. In addition, the City of Ithaca has a Bicycle Pedestrian Advisory Committee (BPAC) and continues to work on a variety of projects, including sidewalk improvements, the implementation of the Bicycle Boulevards plan, enhanced bicycle parking facilities, etc.

Cornell University has an active program to educate students about safe bicycle use and the network of trails and paths available to bicyclists on campus. Other municipalities around the county are advancing multiuse trail projects that eventually will interconnect and provide a comprehensive countywide system.

The countywide network of multiuse trails first identified in the ITCTC's 1996 Transportation Trail/Corridor Study, together with the Black Diamond Trail, will provide regional connections between many population centers in Tompkins County. The multiuse trails will provide regional pedestrian and bicycle connections that will complement local pedestrian and bicycle networks (i.e. sidewalks, bicycle lanes, etc.). The ITCTC plan for countywide trails is shown in **FIGURES 4.13, 4.14, and 4.15**.

Substantial progress has been made in planning and development of the countywide trail system since the Trail/Corridor Study was completed. Most recently, in 2013, a trails coalition representing municipalities, Tompkins County, the ITCTC, numerous community organizations and interested private individuals, prepared a plan called the Tompkins Priority Trails Strategy: a vision for networked trails in Tompkins County (see Appendix X). This 5-year plan identifies a network of trails, the Tompkins County Priority Trails and Urban Connectors, and specifies steps needed to reach trail development. Most immediate among these projects are the Black Diamond Trail between Cass Park and Tioga Falls State Park, and the Gateway Trail, along the west flank of South Hill in Ithaca. These two projects are advancing to construction and should open for use in 2015-16. Together with the Cayuga Waterfront

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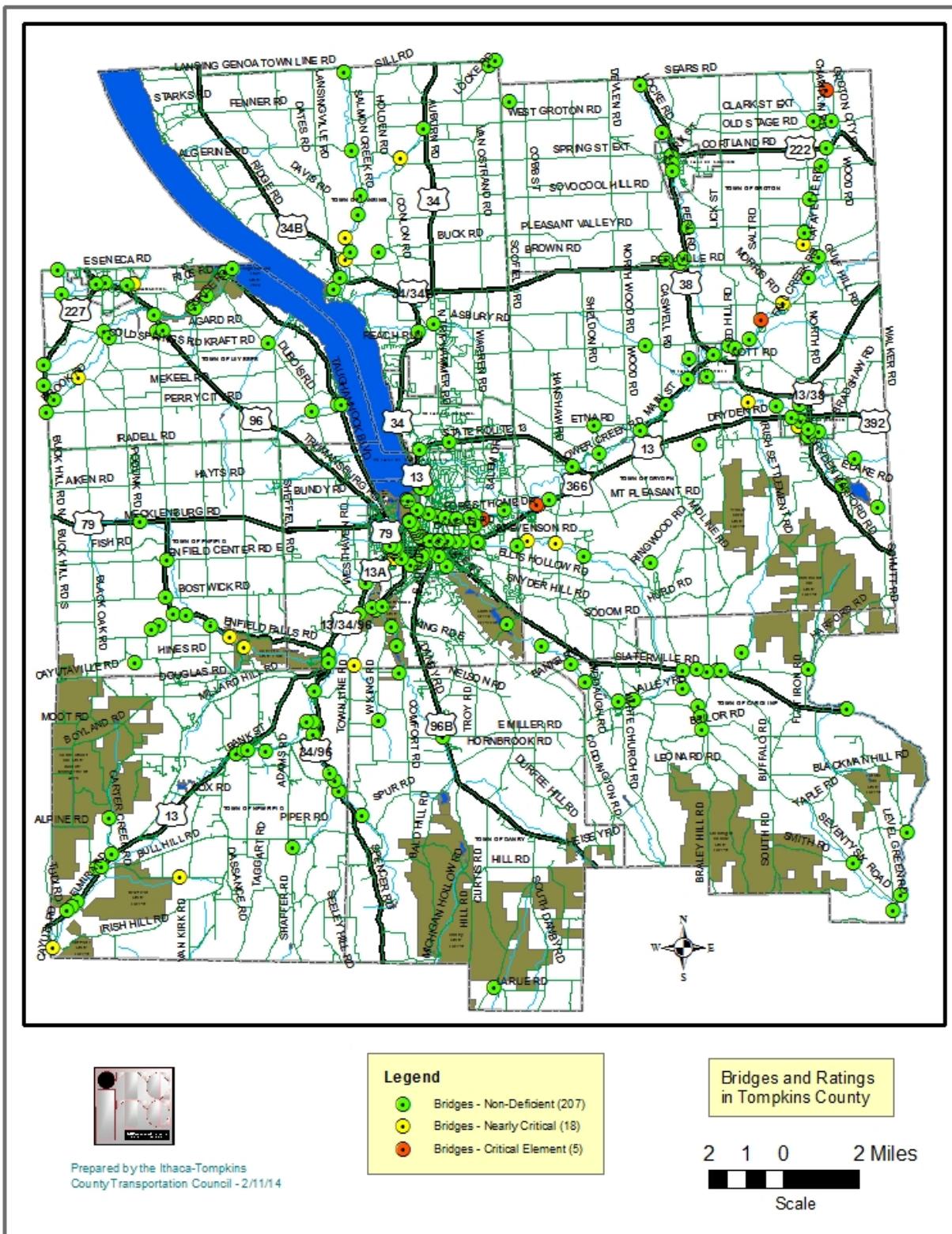
Trail they will offer interconnected bicycle transportation and recreation options to many destinations in the Ithaca Urbanized Area.

TCAT offers a popular Bikes-on-Buses program that serves thousands of customers every year. This program allows riders to combine their bicycle trips with transit in those occasions where a bicycle-only trip is not possible. Every vehicle in the TCAT fleet is equipped with bicycle racks. They are indicative of the interest and potential of developing an infrastructure for bicycling within the existing transportation system.

In 2007 ITCTC produced the first Bike Suitability Map for Tompkins County. Over 24,000 copies of this map were distributed throughout the county (at farmer markets, bike and outdoor shops, recreation facilities, colleges, etc). This popular map is in its 3<sup>rd</sup> edition (see **FIGURE 4.10** – Bike Suitability in Tompkins County – a representation of the data included the Bicycle Suitability map for Tompkins County). **TABLE 4.4** shows summary information of bike suitability in Tompkins County.

Some recommendations for development of a bicycle transportation system include cost-effective projects such as pavement re-striping to include bicycle lanes on appropriate roads, providing bicycle parking, road shoulder condition/width improvements, and road shoulder maintenance (especially cleaning of shoulders). Many options exist that are relatively low cost and which can be implemented with minimum delay or as part of ongoing maintenance efforts.

The ITCTC supports the development of a "bicycle-friendly" transportation system that serves to encourage increased bicycle use and make cycling safer. The primary policy position is that bicycles are legitimate forms of transportation that should be accommodated in the design process for transportation facilities and land use development. Doing so minimizes the potential for conflict with motorized vehicles, thus not only making the system safer but also making it more efficient for all modes.



**FIGURE 4.3**

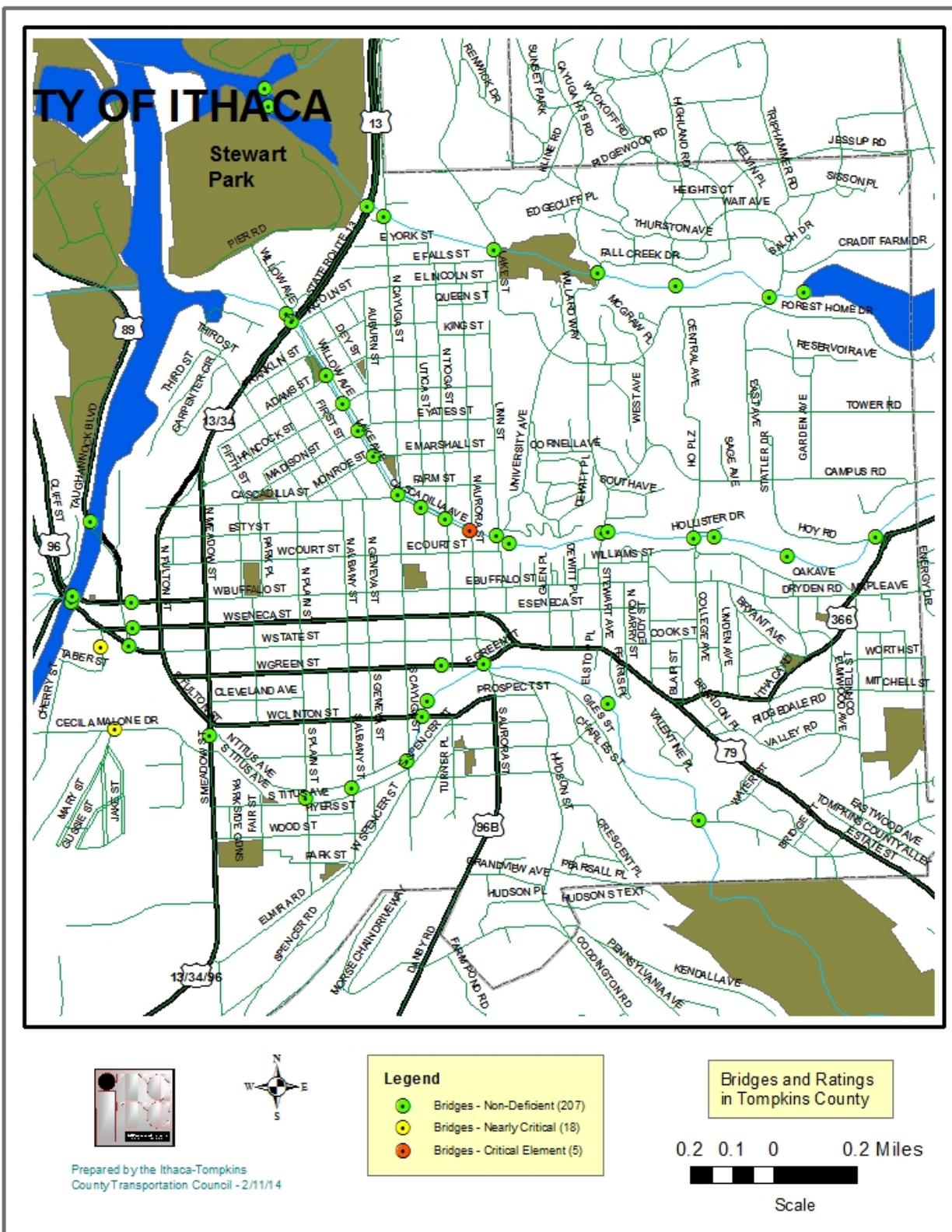
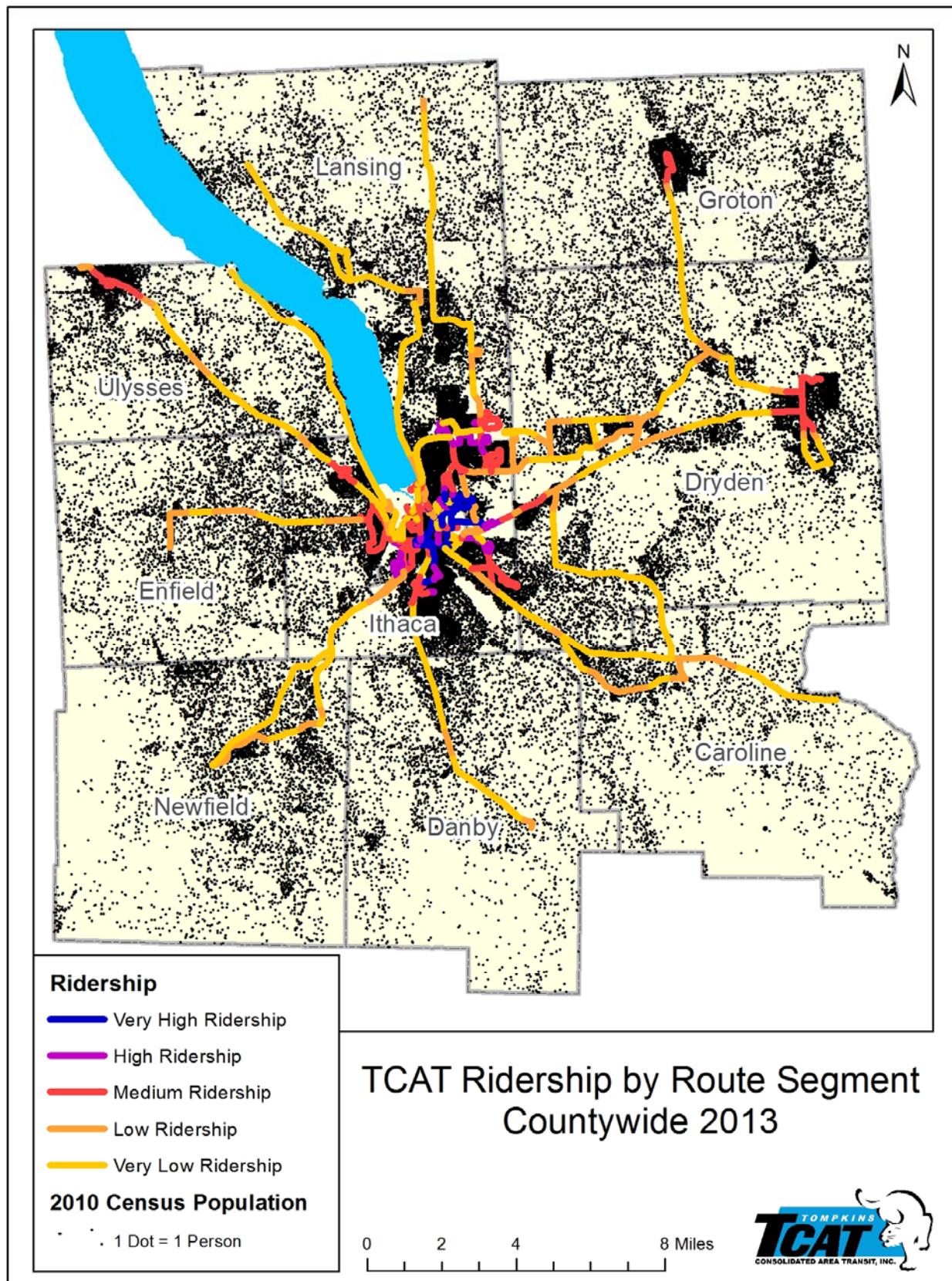
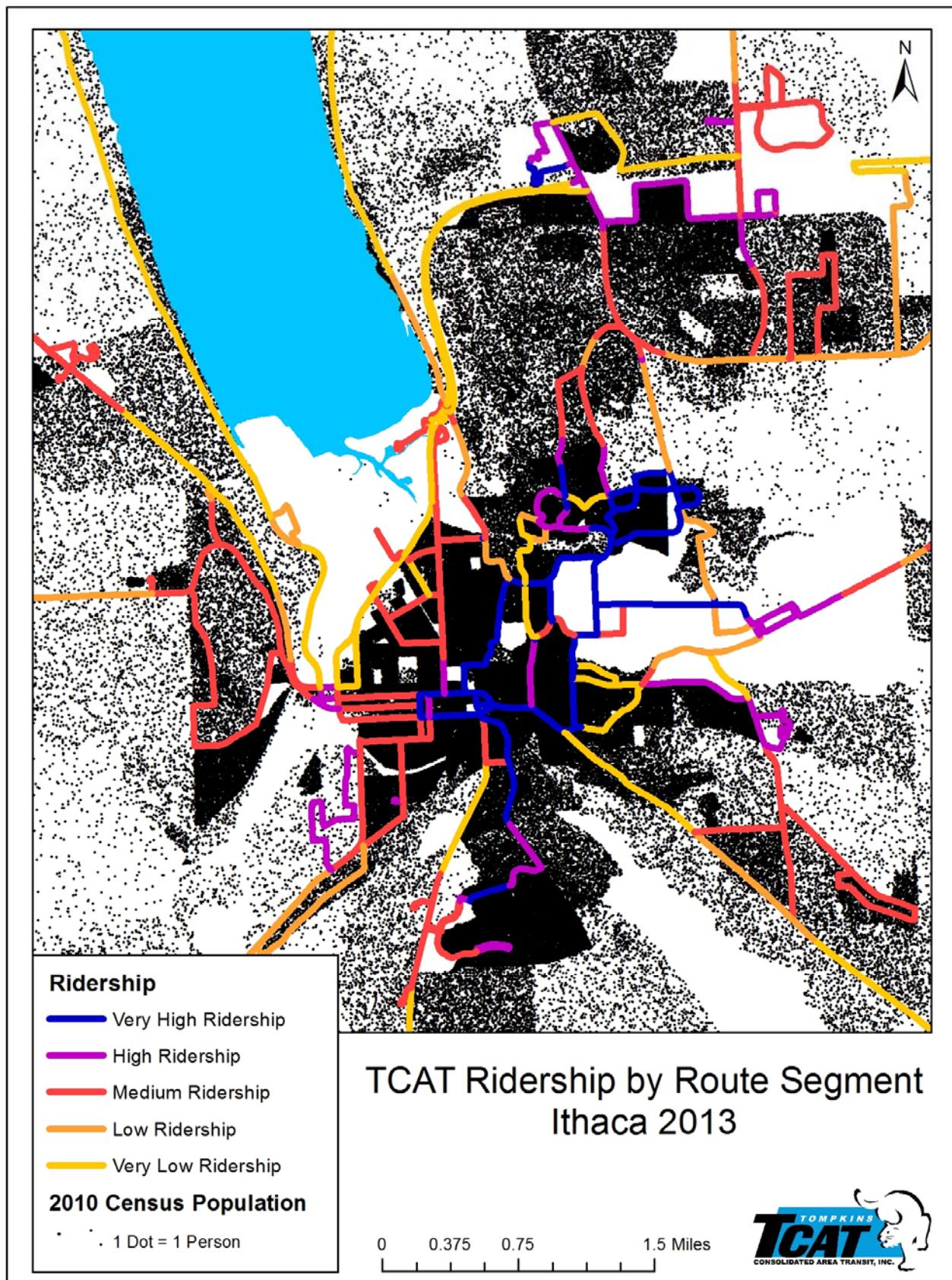


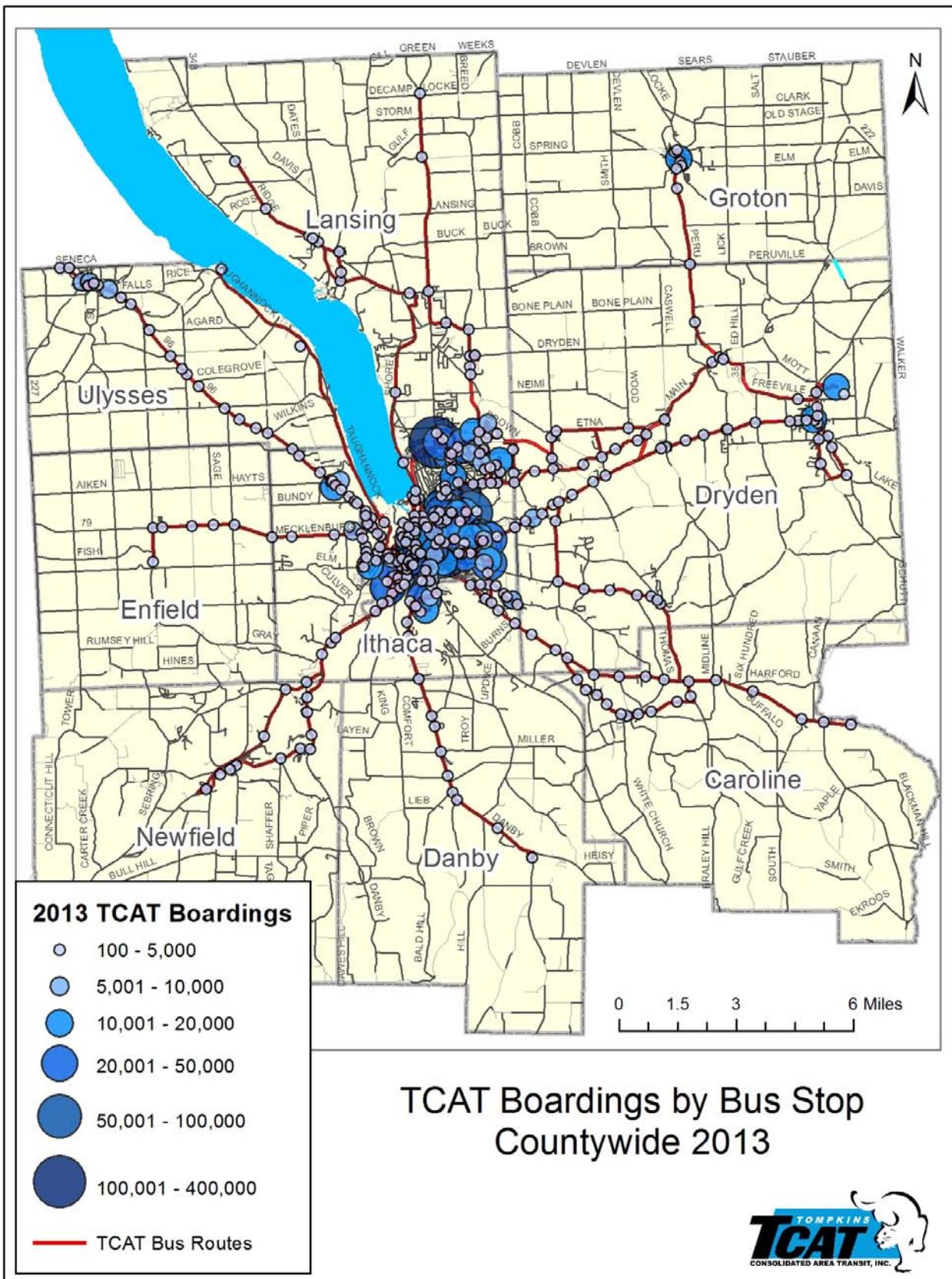
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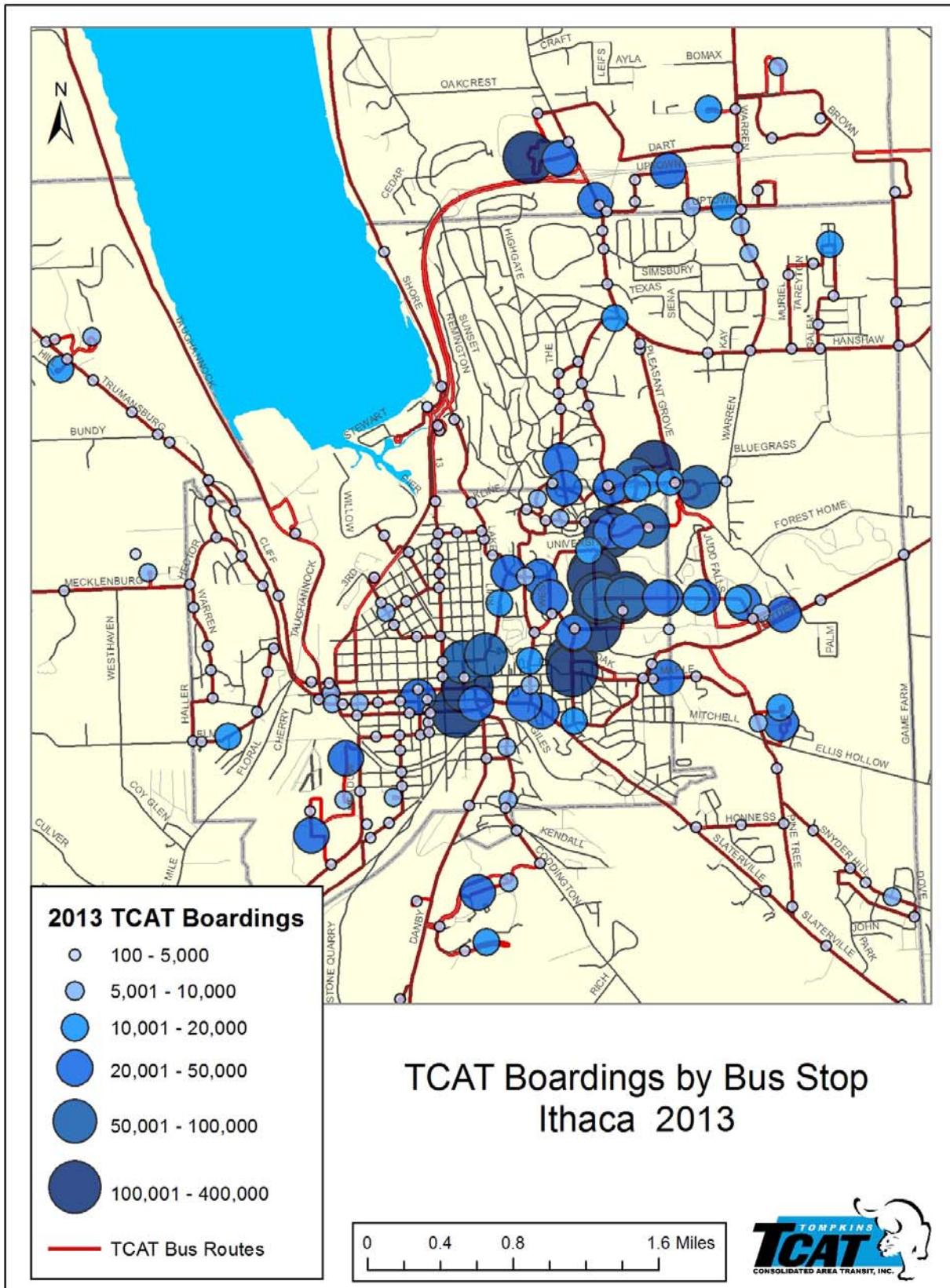
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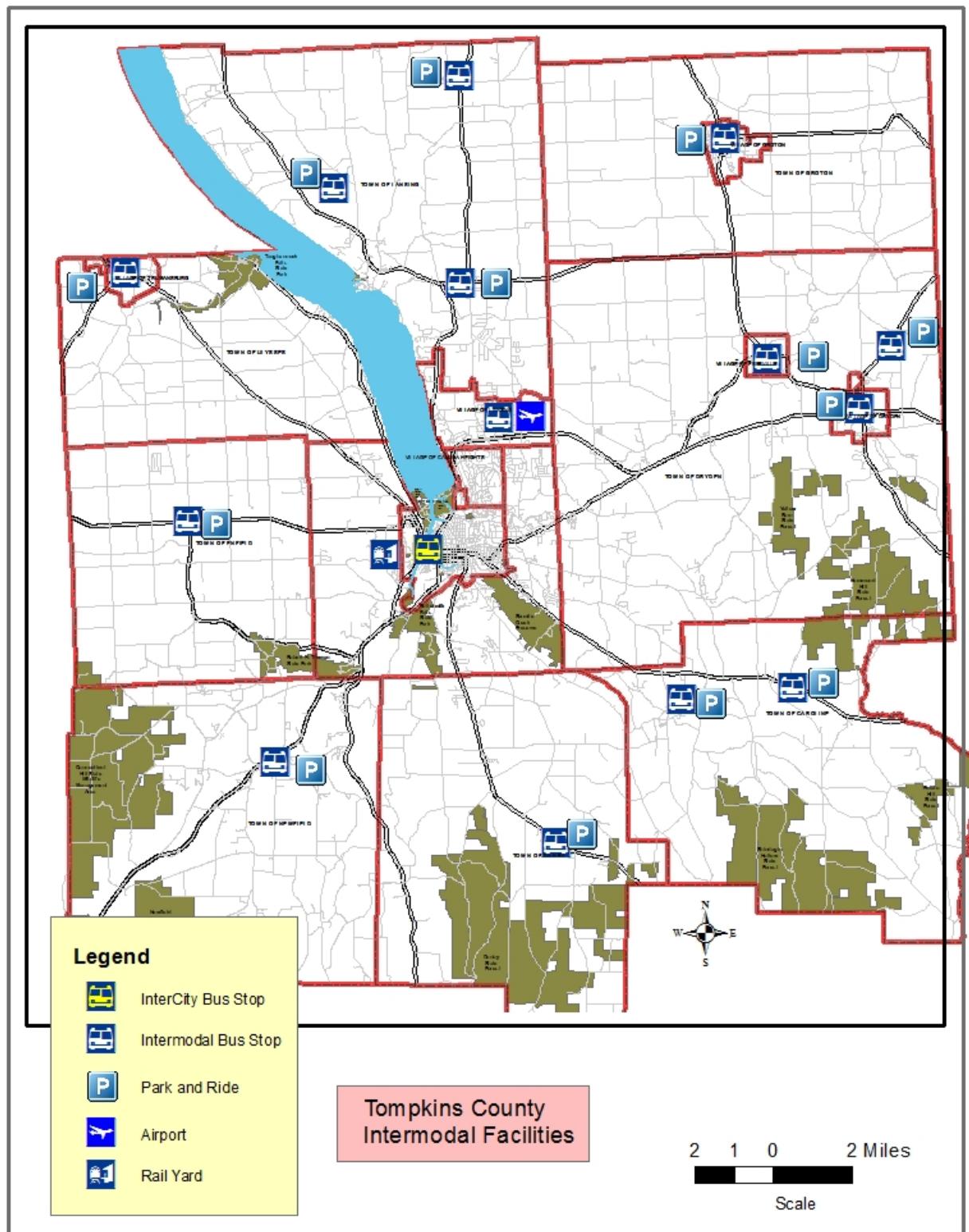
**FIGURE 4.6**



**FIGURE 4.7**



**FIGURE 4.8**



**FIGURE 4.9**

### **h. Complete Streets Network**

The Planning Committee of the ITCTC, working through an adhoc committee, has identified a well coordinated network of roads to form a Complete Streets Network for the urbanized area of Tompkins County. A ‘Complete Street’ is a street designed and operated to enable safe access for all users regardless of their mode of transportation, so that pedestrians, bicyclists, motorists or public transportation users of all ages and abilities are able to move safely along and across the street. The roadways selected have been inventoried to determine existing complete street design components. Over time, as maintenance and construction takes place on these roads the ITCTC will work with local project sponsors to include additional complete street components. As the network is completed it will tie together numerous residential, employment and activity centers so that travelers will have multiple transportation options to reach their destinations. A map of the complete streets network is shown in **FIGURE 4.16**.

network. The City possesses extensive GIS data on sidewalk facilities which is used in support of a new Sidewalk Policy that went into effect in January, 2014. This program moves away from burdening individual property owners with the entire cost of sidewalk installation and maintenance for sidewalks adjoining their property, towards the creation of five Sidewalk Improvement Districts funded by an annual sidewalk assessment fee.

Outside the City of Ithaca sidewalks are found mostly in the Tompkins County villages and in areas of the Town of Ithaca where there are denser settlement patterns. In 2002 the ITCTC completed a survey of pedestrian facilities countywide outside the City of Ithaca (see **FIGURE 4.11**), which was updated in 2009. This information was circulated widely to serve as a resource to local planners and decision makers. The location of sidewalks in the City of Ithaca is shown in **FIGURE 4.12**. **TABLE 4.5** shows the sidewalk miles for each municipality with sidewalks.

**TABLE 4.4**

#### **Bicycle Suitability – Score**

2013 System (from Bike Suitability Map)

<b>Bike Suitability Score</b>	<b>Centerline Miles</b>	<b>Percent</b>
<b>OUTSIDE CITY OF ITHACA</b>		
Excellent	110.7	14.6%
Very Good	242.8	32.1%
Good	264.0	34.9%
Fair	110.0	14.5%
Least Suitable	29.6	3.9%
<b>INSIDE CITY OF ITHACA</b>		
Heavy Traffic Volume	17.3	13.0%
Moderate Traffic Volume	57.1	39.7%
Low Traffic Volume	74.4	30.8%
Very Low Traffic Volume	117.2	16.6%

**TABLE 4.5**

#### **Streets with Sidewalks**

<b>Municipality</b>	<b>Road Miles</b>	<b>Sidewalk Miles</b>	<b>% Roads w/ sidewalks</b>
City of Ithaca	89.7	54.3	60.5%
Twn of Ithaca (w/o Vill.Cay.Hgts)		15.6	
Village of Cayuga Heights	24.6	9.8	39.8%
Village of Dryden	11.9	5.4	45.4%
Village of Freeville	6.1	1.3	21.3%
Village of Groton	12.5	6.0	48.0%
Village of Lansing	33.0	2.5	7.8%
Village of Trumansburg	12.6	5.2	41.3%

**Pedestrians:** As described in Chapter 2, Tompkins County has a large percentage of its journey-to-work trips that take place by walking (2010 ACS: 15.7% countywide; 42% in the City of Ithaca; 16.5% in the Town of Ithaca). Clearly, pedestrian movements are an extremely important component of local transportation planning. The ITCTC seeks to enhance the pedestrian experience in order to maintain and increase the number of people who choose this mode of transportation to complete their daily trips.

The City of Ithaca is served by a comprehensive network of sidewalks, though gaps do exist in the system. The ITCTC supports efforts to maintain and enhance this

The ITCTC will continue to work with local partners to enhance the network of sidewalks, trails and other pedestrian facilities to provide expanded connectivity between activity areas and improve the safety for users. The development of a pedestrian network that safely meets the needs of all persons would in itself provide an incentive for more persons to walk.

The Ithaca-Tompkins County Transportation Council also supports efforts to address pedestrian issues through design of the built environment. In particular the design of transportation facilities (i.e. roads, bridges, etc.) offers the opportunity to consider the needs of pedestrians. A number of intersection design treatments such as bulbouts, raised crosswalks, pedestrian signals, etc. should be considered for incorporation into projects. Sidewalks should be provided at every opportunity.

Educational initiatives, such as local schools providing specific training on pedestrian safety issues (to all age groups), and promotional campaigns for walking would also help in encouraging the use of this important mode of transportation.

The need to comply with ADA standards, and to consider issues such as how traffic signal (phase) timing may affect an elderly/disabled person's abilities to safely cross a street, is an important consideration in pedestrian planning. The importance of this issue will continue to increase as the average age of the population increases over the next 20 years.

Much progress has been made to address pedestrian issues on a project-by-project basis and as a fundamental policy in site plan review and project design. It is imperative that the ITCTC and its local members continue to prioritize and implement cost-effective improvements to the pedestrian network to ensure the safety of all pedestrians. The ITCTC will work cooperatively with its local partners to promote the actions and programs that will lead to the development of walkable communities in Tompkins County.

## **2. Collaboration**

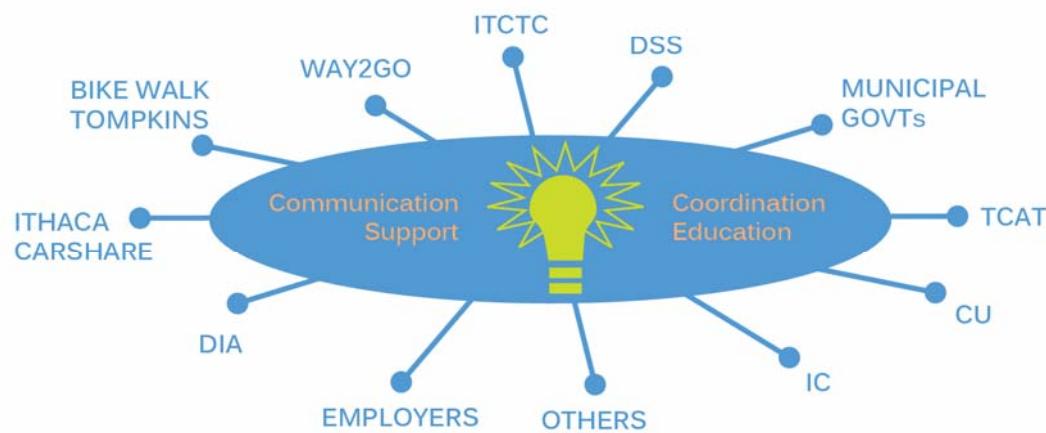
Achieving the goals of this plan will require active collaboration between all stakeholder parties in the provision of transportation. This includes everyone from civic groups, like Bike Walk Tompkins to private non-profits, like Ithaca Carshare and TCAT, to municipalities and other government agencies. Most major recent achievements in transportation in Tompkins County are the result of significant collaboration efforts. Examples are many:

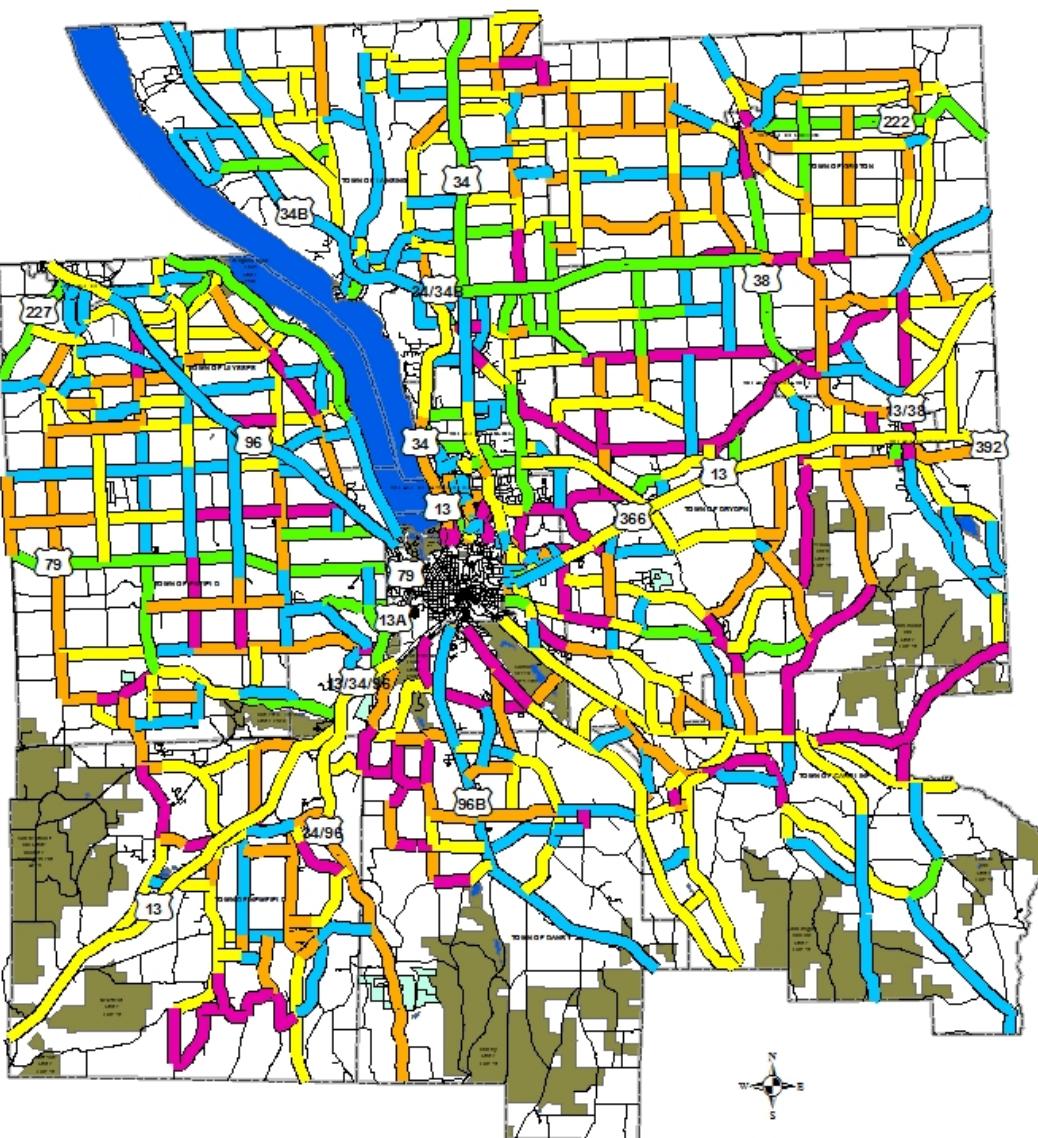
- TCAT – City of Ithaca, Cornell University and Tompkins County;
- Ithaca Carshare – citizen involvement, Cornell University, Ithaca College, ITCTC;
- Tompkins Zimride – ITCTC, Cornell University, Ithaca College, TC3, Tompkins County, TCAT, Way2Go, etc.;
- Cayuga Waterfront Trail - Tompkins County Chamber of Commerce, City of Ithaca, ITCTC, citizen involvement.

This is just a small sampling of collaborations that have resulted in significant projects. There are many more already built or ongoing as well as in the planning stages. An important function of the ITCTC is to continue to foster and support collaborative efforts that help a small urban area like Ithaca-Tompkins County achieve success in the implementation of transportation projects and programs.

## **Collaboration**

### **Transportation Providers & Partners**





#### Legend

- Bike Suitability
- Least Suitable
  - Fair
  - Good
  - Very Good
  - Excellent

Prepared by the Ithaca-Tompkins County Transportation Council - 2/11/14

Bike Suitability in  
Tompkins County 2013



<http://www.tompkinscountyny.gov/files/itctc/BikeSuitability/BikeMap2013.pdf>

FIGURE 4.10



## TOMPKINS COUNTY SIDEWALK INVENTORY

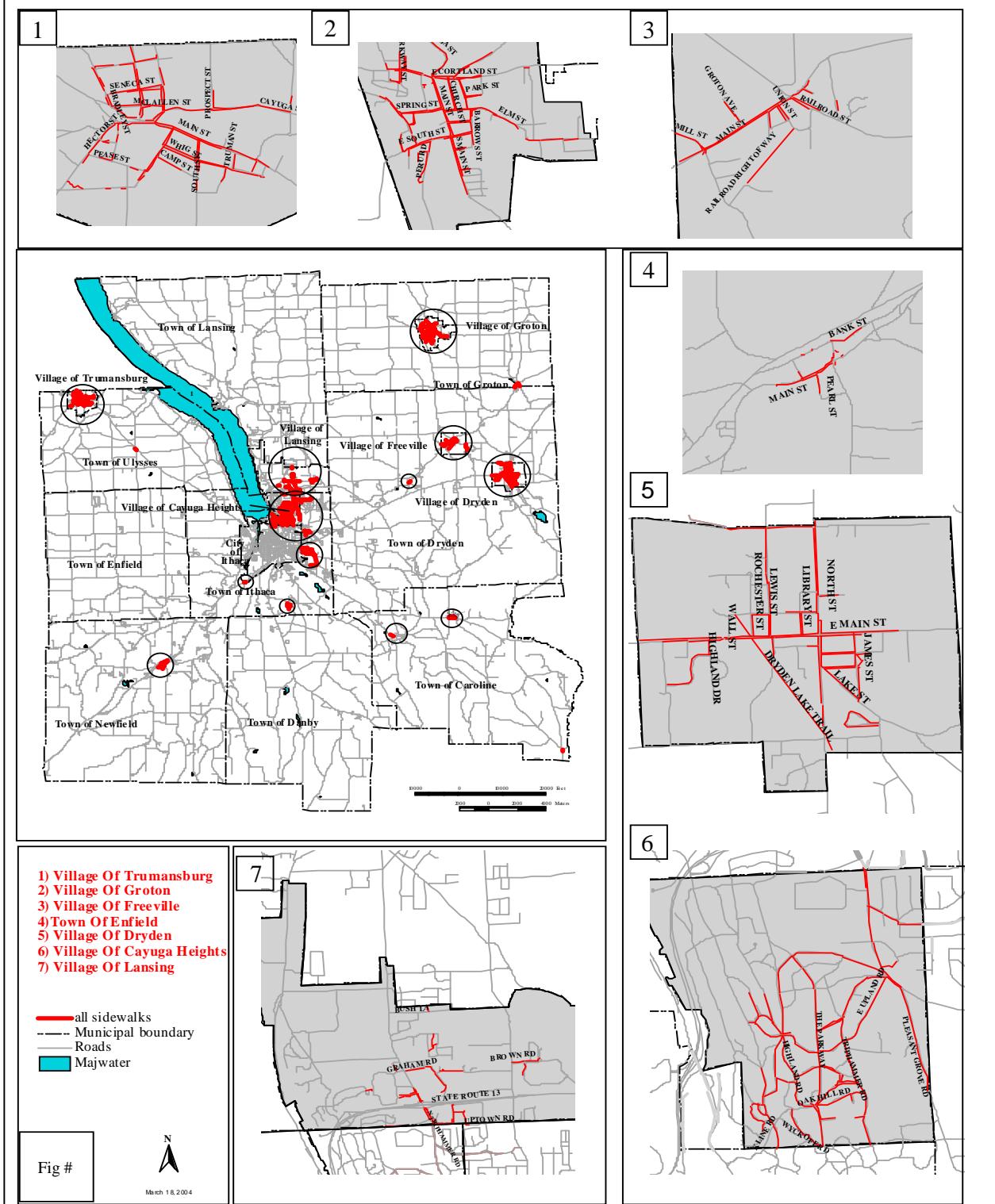
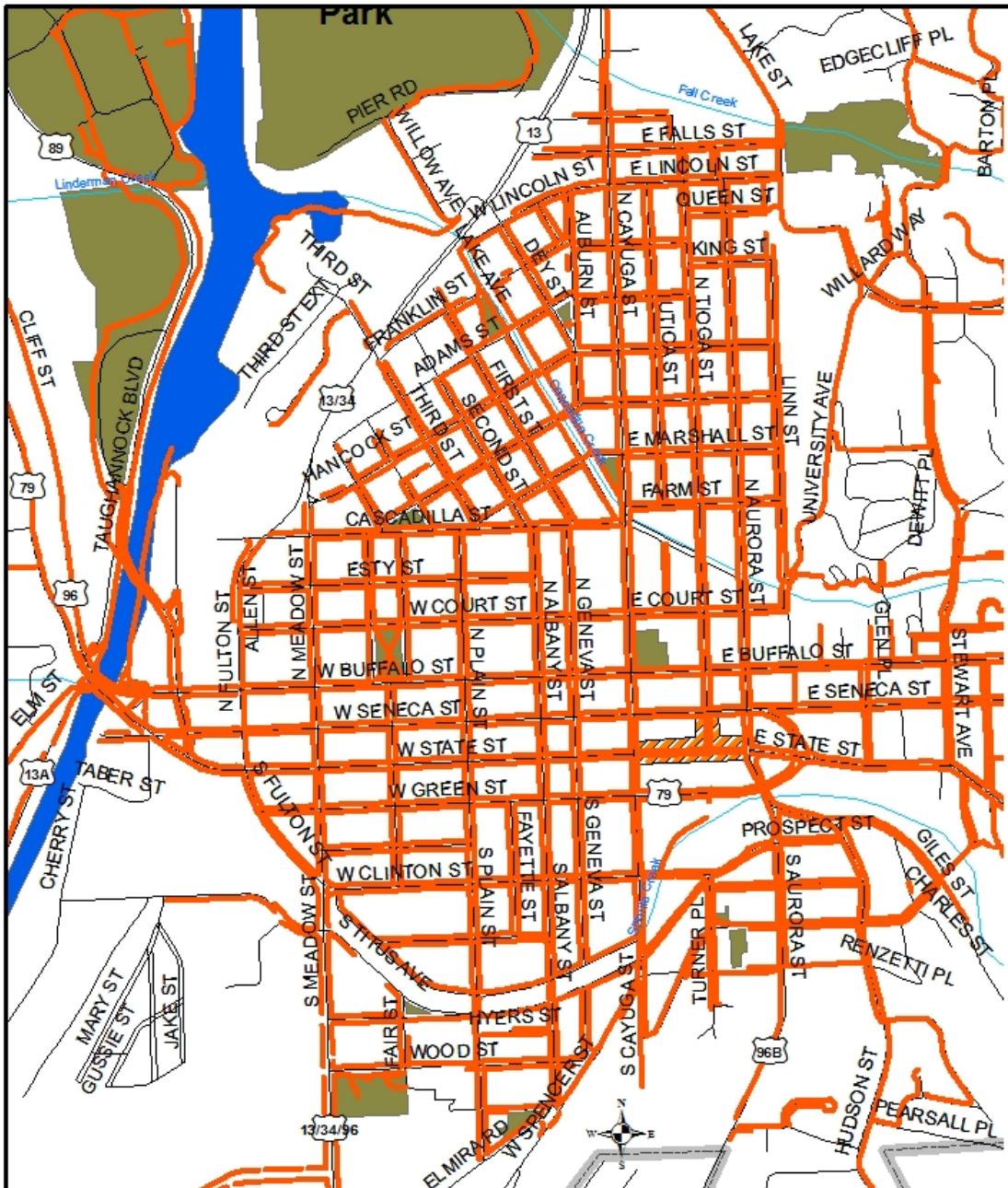


FIGURE 4.11

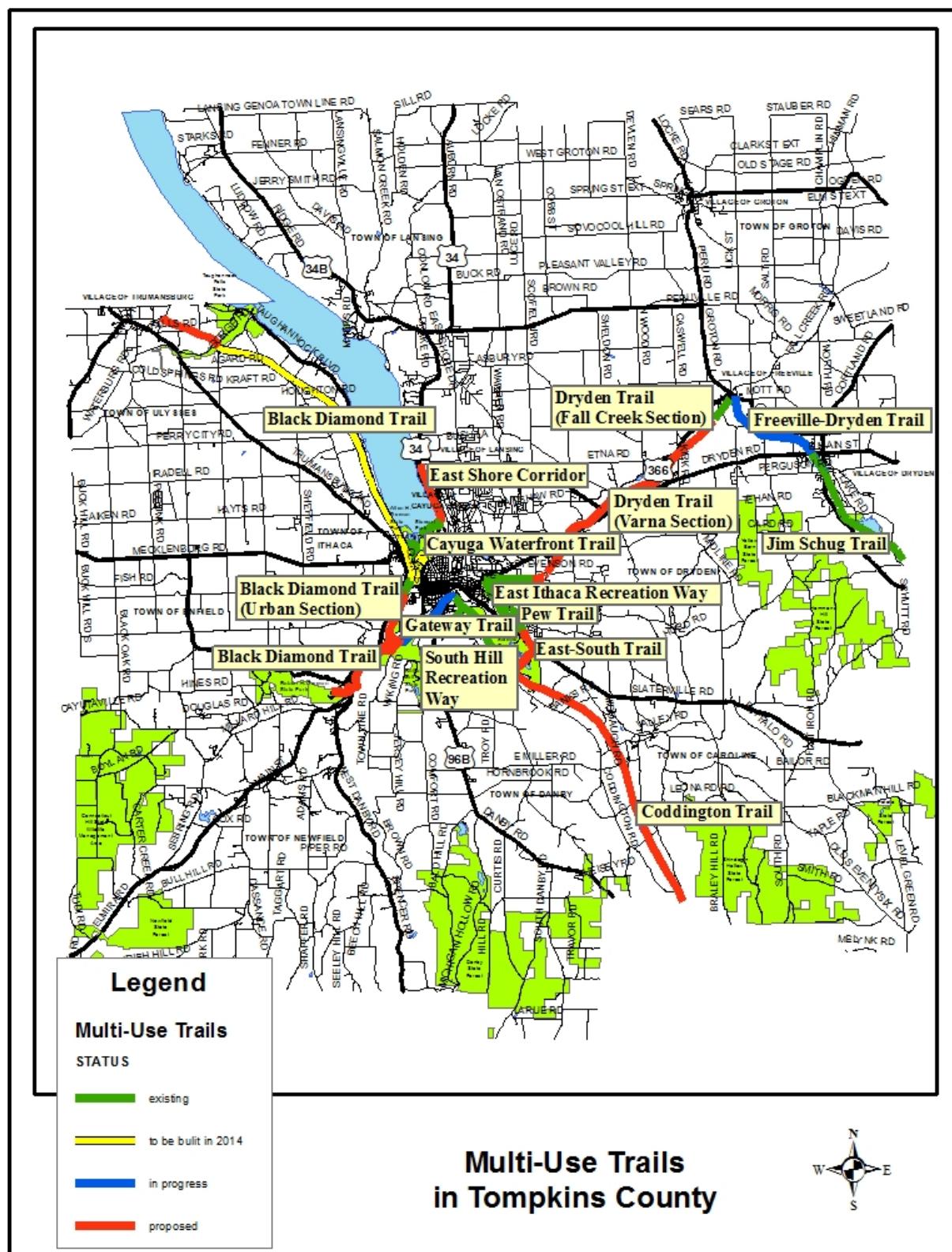


### Legend

— Road with Sidewalks

### Roads with Sidewalks City of Ithaca

**FIGURE 4.12**



**FIGURE 4.13**

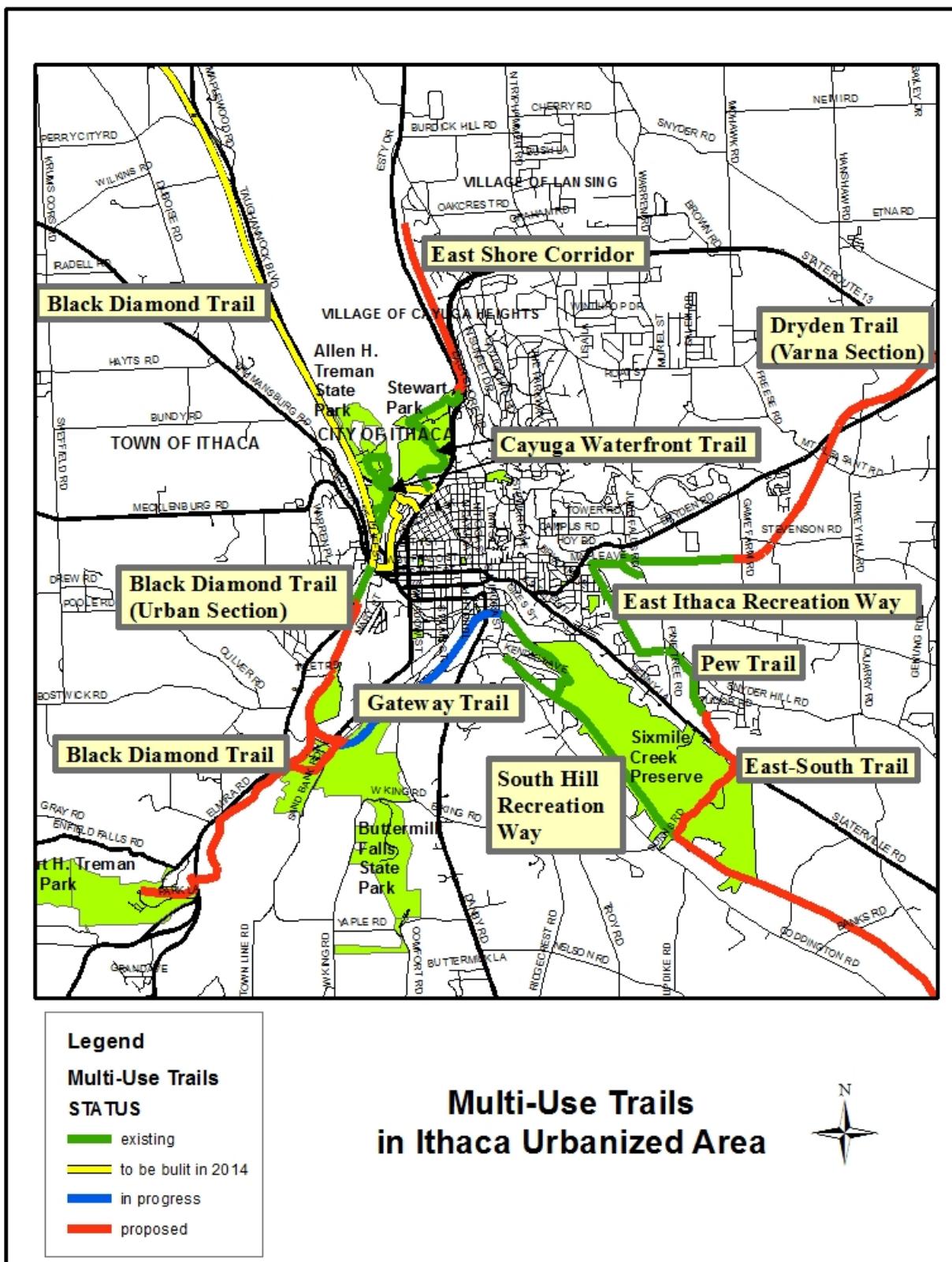


FIGURE 4.14

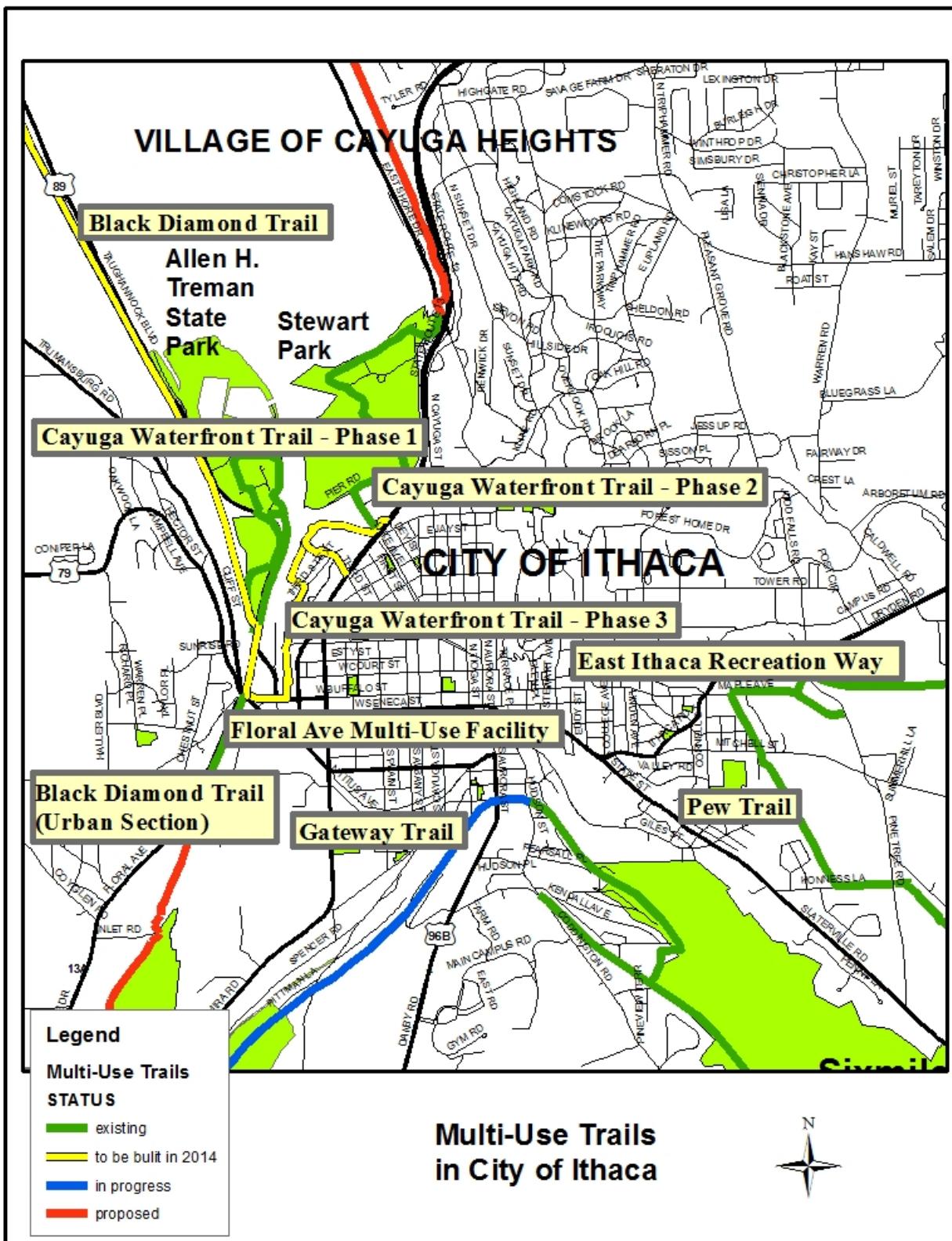


FIGURE 4.15

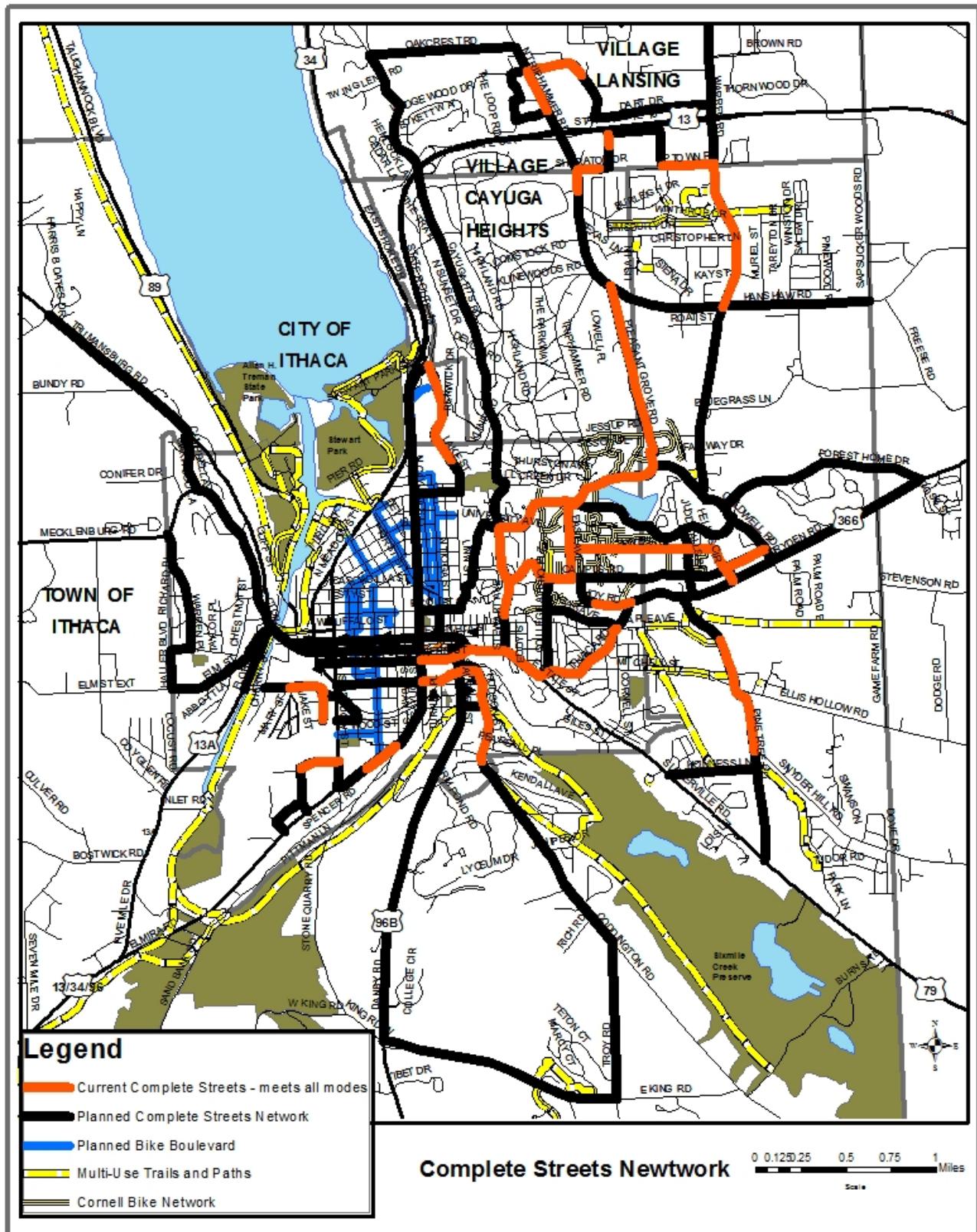


FIGURE 4.16

## SYSTEM INTEGRATION

### Introduction

This section concentrates on making the transportation system operate more efficiently as a coordinated system. Issues relate to the mobility impaired, travel demand management, transportation system management strategies, parking management and related data needs are addressed here.

### 1. Mobility Impaired

In the United States mobility impaired persons are commonly those persons who, for one reason or another, do not have personal access to the use of an automobile. In general, these persons are elderly, disabled, youths, or economically disadvantaged. It is a stated objective of Federal legislation to provide specific consideration for the transportation needs for these groups. Most critical in addressing the issues in this section is to continue to develop a well-integrated, strongly multimodal transportation system for Tompkins County. Every individual has a particular set of needs and limitations that cannot be addressed by single transportation mode strategies. Providing options in transportation - transit, paratransit, car share, ride share, bicycling, pedestrian, taxi, etc. - will allow individuals to achieve mobility without the need and burden of private automobile ownership.

The following should be considered: (a) making transportation a consideration in the planning of programs and facilities serving the elderly and people with disabilities; (b) studying and considering the development of day care facilities and other services in conjunction with major activity nodes/employment centers, and (c) considering the need to link low income neighborhoods to employment opportunities, retail and service centers, and recreational facilities.

Children's activities should also be considered in order to create initiatives and programs to reduce the number of trips related to these activities. ITCTC staffs meets regularly with members of the youth services community to coordinate efforts and planning for youth transportation. The following are possible areas of activity in Tompkins County: (a) work to decentralize organized activities, basing their location on neighborhood and community units; (b) provide enhanced transit service to those centralized activities that would include security features such as advanced registration and check-in for children; and (c) improve bicycle and pedestrian facilities in order to provide better safe access for children to events or transit stops, d) as possible, provide comprehensive and frequent transit service to the outlying areas of Tompkins County; e) open dialogue between the transit operators and the school districts to better

accommodate the youth population and f) enhance ridesharing opportunities for students and families.

### **2. Parking and Circulation**

Parking areas are an integral part of the transportation system. Their construction, maintenance (including snow removal), and performance must be considered as part of any planning process.

The City of Ithaca and Cornell University include the principal employment centers in the Tompkins County. In addition, they generate a significant number of recreational, personal, and entertainment based trips. Parking management in these two critical areas is crucial to addressing traffic circulation and public transportation issues. **FIGURE 4.17** shows the location of parking areas in the city of Ithaca.

The layout and design of parking areas can have a serious impact on the circulation patterns and efficiency of adjacent roads. Major developments should provide detailed on-site circulation studies that maintain the capacity of adjacent roadways by implementing access management techniques such as, minimizing curb-cuts and promoting internal circulation. In addition, full consideration of "alternative modes" (i.e., pedestrians, bicycles, public transportation vehicles) needs to be integrated in the design phases of parking lots.

Numerous studies and professional literature have focused attention to the land use/transit/parking interactions. In particular, there are strong arguments on how the provision of free or low-cost parking can influence the selection of travel modes in favor of private automobile use. In urbanized areas like the City of Ithaca, there are increased opportunities to offer the public options to private automobile use for transportation. Dense transit service, a comprehensive sidewalk network, car share, ride share, taxi use, Gadabout and bicycling all offer options for private automobile use, particularly drive-alone car use. Well developed parking management strategies that seek to capture the true cost of parking can help promote the use of alternative modes while at the same time providing parking access to help support a healthy urban environment.

It is also important to note the potential impact of minimum parking requirements on land use development potential. There is a trade-off between parking and other development options (residential, commercial). In urban areas seeking increased densities in order to stimulate their local economies and the vibrancy of the community, parking requirements may need to be reconsidered in order to allow more land to be dedicated to productive uses (residential, office, commercial) instead of parking.

The ITCTC will work with the City of Ithaca, Cornell Transportation Services, TCAT and other community

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partners in studying and developing parking management strategies and plans.

### **3. Design Issues**

#### *Roadway Design*

A significant amount of research and an ever-growing list of completed projects provide guidance in what is called Context Sensitive Design (CSD), or what NYSDOT calls Context Sensitive Solutions (CSS). This is an approach to transportation planning that recognizes that transportation has wide societal impacts and is not merely the practice of road construction to maximize vehicular movements. It can be defined as "...*a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting, and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. (Project for Public Spaces)"*

NYSDOT offers the following definition: "*Context Sensitive Solutions (CSS) is a philosophy wherein safe transportation solutions are designed in harmony with the community. CSS strives to balance environmental, scenic, aesthetic, cultural and natural resources, as well as community and transportation service needs. Context sensitive projects recognize community goals, and are designed, built and maintained to be sustainable while minimizing disruption to the community and the environment" (NYSDOT-Context Sensitive Solutions: <https://www.dot.ny.gov/divisions/engineering/design/dqab/css>).*

Roadway design can influence how transportation corridors operate: i.e. are they welcoming to non-motorized modes? Do they facilitate the provision of transit? What land uses are best suited for the road type? Therefore, one can expect the roadway design on a rural road to differ significantly from that in an urban area.

Within urbanized areas there are many different 'contexts' that need to be accommodated: main streets, residential neighborhoods, commercial districts, etc. In each of these, roadway design can play an important role on the land development patterns of adjacent properties. Design of a road as a single-mode automobile oriented commercial arterial, for example, will result in single-use development, large parking lots, and a road that is unfit for anything but driving. Walking and bicycling become inconvenient and unsafe, and with dispersed development, transit is less efficient. In contrast, a different road design can welcome pedestrians and bicyclists without losing capacity while allowing for mixed use development of adjacent properties. In a case like this road design can be the catalyst to help move away from sprawl development to a smarter, more efficient land use development pattern.

#### *Scenic Resources*

Residents in Tompkins County have shown a strong desire to consider the aesthetics and impacts of roadway projects during the planning stages. The ITCTC supports the idea that the "infrastructure should fit the land", through consideration of geographic conditions, environmentally sensitive areas (e.g., wetlands, etc.), and respect for existing land uses.

The possibility of creating a countywide scenic road system in Tompkins County has been included in past LRTPs, as was the need to identify and protect scenic areas, vistas, and corridors. This latter emphasis was also evident in the development of goals and policies for the Tompkins County Comprehensive Plan and the resulting project, Tompkins County Scenic Resources Inventory, to help identify scenic areas and views in Tompkins County ([http://www.tompkinscountyny.gov/planning/nri-scenic\\_resources](http://www.tompkinscountyny.gov/planning/nri-scenic_resources)).

The New York State Scenic Byways Program designated the Cayuga Lake Scenic Byway (CLSB) as a scenic byway in 2001. The CLSB is an eighty-six mile long system of roads circumventing Cayuga Lake, including: State Roads 89, 90, 34, 34B and 5/20 ([www.cayugalake.com](http://www.cayugalake.com)). Currently, the non-profit corporation Cayuga Lake Scenic Byways, Inc., serves as a facilitator agency implementing the byway's corridor management plan, applying for funding and otherwise managing the development of the CLSB in cooperation with interested parties and all three counties with jurisdiction: Cayuga, Seneca and Tompkins. It is expected that together with the Route 90 Scenic Byway the CLSB will provide a solid foundation for the development of a broader Finger Lakes Scenic Byway network. The ITCTC will continue its participation in development of the CLSB for the benefit of residents of Tompkins County (see FIGURE 4.18).

### **4. Transportation Demand Management**

Transportation Demand Management (TDM) is the name given to a series of strategies that can be utilized singly or in tandem to create a program whose purpose is to alleviate traffic problems through reduction of automobiles on the road, especially single occupancy vehicles. The strategies include combinations of improved alternatives to driving alone, incentives to use alternative modes, disincentives for driving alone, along with work hour management. The ITCTC supports implementation of voluntary transportation demand management programs, which target major employers or employment areas, such as downtown Ithaca. These programs should address work hours (flextime, compressed work weeks, staggered hours) telecommuting options, carpool/vanpool, guaranteed ride home, transportation allowances, parking management, enhancements to bicycle/pedestrian facilities, and the role of transit and car sharing as part of an overall strategy. The programs should also provide training and assist in start-up procedures. Potential benefits to employers include: reduced

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absenteeism, increased productivity, reduced parking costs, etc.

There are several other actions that are instrumental to the reduction of travel demand. For example: (a) promoting economic development and job development in locations that reduce total commuting mileage; (b) investigating the demand for teleconferencing centers at major activity nodes; and (c) implementing parking management policies that minimize the number of vehicles in specific areas (e.g., require residential permits, limit the number of on-street spaces, provide secure remote parking lots, etc.) in conjunction with incentives for use of public transportation, car sharing, car pools, walking or bicycling.

Integration of communication strategies for TDM including; public information, consumer education, proactive outreach to agencies and employers, customer feedback, and promoting coordination between service providers are the objectives of Cornell Cooperative Extension's Way2Go program. The potential benefit for integrating mobility information is much greater than the sum of marketing and advertising efforts of individual transportation providers. The Cornell Transportation Services Office has developed and promoted TDM strategies to the Cornell community since 1988 with great success. Cornell Transportation Services actively reaches out to Cornell students, faculty and staff with incentives and information on using TDM. The County Mobility Management Program conducts train-the-trainer programs on individual travel training (for persons who need training or coaching to access mobility services) for agencies with the aim of creating a network of experienced and trained travel trainers. The ITCTC will work with Way2Go, Cornell Transportation Services, the County and other local programs and agencies to facilitate and enhance access to information the will help the traveling public make informed personal transportation decisions.

Integration of revenue collection or payment among service providers is an unrealized opportunity for increasing consumer convenience and market growth. Several service providers are using new fare collection or access technologies. TCAT has a contactless smartcard (which is encoded in Cornell University identification cards), Ithaca Dispatch uses prepaid TaxiCash cards, and Ithaca CarShare uses a wireless key "fob" to access and lock its vehicles. What is missing is the ability for consumers to use a single payment media to access multiple transportation services, an EZ-Pass for local mobility. The EZ-Pass example simplifies using a consumer's credit card to pay for small transactions for trips. The goal is to maximize consumer convenience with a single payment media. ITCTC supports collaborative efforts to evaluate options for integrating payment media, involving financial and telecom partners working with transportation providers.

Public transportation plays a key role within travel demand management programs. The ITCTC supports efforts that will make public transportation easier to use by overcoming some of its associated penalties (time, inconvenience, etc.). Past studies by the ITCTC and TCAT propose strategies and recommendations aimed at enhancing transit service in Tompkins County. The ITCTC will work with TCAT and other MPO partners to facilitate implementation of those recommendations that show greatest promise. In addition the ITCTC will work cooperatively with other agencies to attract more commute riders to public transportation. This can be achieved through a series of strategies aimed at expanding and enhancing commuting services including: improving park and ride services, increasing promotion of transit, continued monitoring of bus route operational efficiencies, discount programs and other pricing incentives to commuters, and provide a guaranteed ride program. Furthermore, amenities should be provided to ensure passenger comfort, extensive customer support, and that information is available to the public 24 hours a day. **FIGURE 4.9** shows the location of existing rural park and ride facilities.

Technological innovations now allow for telecommuting and smart bus systems. Smart bus systems improve the quality of the communication between the public transportation system and potential riders. The ITCTC supports TCAT's efforts to provide improved printed schedules, station/stop signage and state-of-the-art passenger information systems. These latter include technologies that allow for interactive communications equipment located at transit stations/stops and use of the internet for trip scheduling and to provide real-time transit information. For example, an automated vehicle location system, utilizing global positioning technology (uses satellite signals to determine vehicle locations), can report real time positions of public transit vehicles, which are then relayed to the TCAT website where riders can see the exact location of their bus. Opportunities also exist for further enhancements to the current electronic fare payment system in order to increase convenience and ease of use for customers.

The ITCTC recommends studying, developing, and implementing projects and programs that enhance the feasibility of alternatives to single occupancy vehicle use. Public transportation services, ridesharing (carpooling), vanpooling, shared-ride taxi, paratransit, walking and bicycling should be promoted to reduce single occupancy vehicles. To achieve a higher percentage of trips made by bicycling and walking there is a need to improve and/or build walkway and bikeway networks with separate signage and traffic control devices for pedestrians and cyclists.

## **5. Transportation System Management**

Transportation System Management (TSM) involves managing the existing transportation system to obtain

increased efficiency, which relates to the "supply side" of the transportation system equation. TSM projects are often used as cost-effective means of reducing intersection or corridor related congestion.

The ITCTC travel demand model was used to identify links with the highest levels of congestion. The model based its analysis on estimating Volume-to-Capacity ratios (V/C ratio) for the principal roadways in the county. V/C ratios relate the traffic volumes to the roadways traffic capacity based on the road's geometry, traffic flow speeds and adjacent land uses. **FIGURES 4.19 and 4.20** display the output from the travel demand model for 2014 conditions. The travel demand model is currently designed to model the afternoon peak hour (5-6PM). Therefore, the map may not highlight links that experience congestion at other times. The circled areas in the City of Ithaca, for instance, are well recognized as areas of congestion during peak travel hours and weekends.

TSM strategies focus on upgrades to coordinated traffic signals, establishing formal traffic incident management plans addressing accidents and weather events, advanced planning for detour routes, providing real time information to drivers, coordinated/shared data collection. Specific roadway design changes such as alleviating bottlenecks on a road, adding a turn lane at an intersection or the use of alternative intersection designs (e.g., roundabouts) may be considered as TSM strategies. However more intensive capacity expansion – adding new lanes or new roads – is not considered TSM. The appropriate use of TSM measures should be determined on a case-by-case basis within the framework of a regional plan of action.

The ITCTC is supportive of ongoing efforts to upgrade traffic signals in the City of Ithaca, particularly in high traffic areas. Transit, bicycle and pedestrian needs should be considered in the design of the signals upgrade. Resources should be allocated to ensure the optimal management and operation of the traffic signal system.

## **6. Intermodal/Freight**

Present legislation requires federal, state, and metropolitan areas to focus on intermodal planning, which involves the efficient and effective operation of the transportation system. In order to obtain the most efficient use of the system, users must be able to select the most appropriate mode for each segment of a trip. The first step is to ensure that transfers between modes are possible and that users are given the option to choose between different modes. Invariably the transfer of people and goods within a transportation system will represent costs and time delays. The emphasis of intermodal planning is to provide users with the opportunity to choose between modes and provide them with the ability to transfer between them in a manner that minimizes costs and time delays.

The major intermodal (transfer) facilities in Tompkins County include: *Ithaca-Tompkins Regional Airport, intercity bus facility, park-and-ride facilities, and a small railroad yard* (see **FIGURES 4.9 and 4.21**). In addition, travelers in Tompkins County routinely transfer at bus stops and stations between pedestrian, bicycle and transit modes. As described in the 'Transit' section earlier in this chapter, the TCAT bus stops at Seneca St. and Green St. in downtown Ithaca and the A-Lot at Cornell are the busiest in the transit system. Other stops at Cornell and the Shops at Ithaca mall also serve a substantial numbers of customers and function as important intermodal facilities. This plan section is divided into two parts, freight movements and passenger movements.

### **Freight Movements**

Freight movement in the Greater Ithaca-Tompkins County area must be addressed in a different manner than in larger metropolitan areas. This region does not serve as a major hub for the transport of goods, but rather serves mostly as a destination to which goods are brought. The area relies heavily on trucking and rail for the movement of freight. Rail is used sporadically to transport coal to the AES Cayuga power plant. The railroad is also used to ship salt from the Cargill, Inc. salt mine in Lansing, and ash from the power plant. Unfortunately, the rail line crosses one of the most congested areas of the City of Ithaca. A problem exists when trains run through the City during the morning and afternoon peak traffic periods, creating significant backups on the main area roadways. The ITCTC supports increased coordination between the railroad, the City of Ithaca and emergency response providers to minimize the impact of rail movement through the City.

A minimal amount of freight is flown into Tompkins County Airport and there are no plans to increase freight movement in this mode. For other freight the area relies exclusively on trucking. (**FIGURE 4.21** shows the major freight generators and freight corridors in Tompkins County).

The ITCTC coordinated implementation of a consultant based Tompkins County Freight Transportation Study (FTS). The FTS was completed on April 2002. The study provided the first comprehensive look at truck movements countywide, including:

- truck traffic counts
- a truck origin/destination survey
- surveys of area residents, highway superintendents and major shippers/receivers

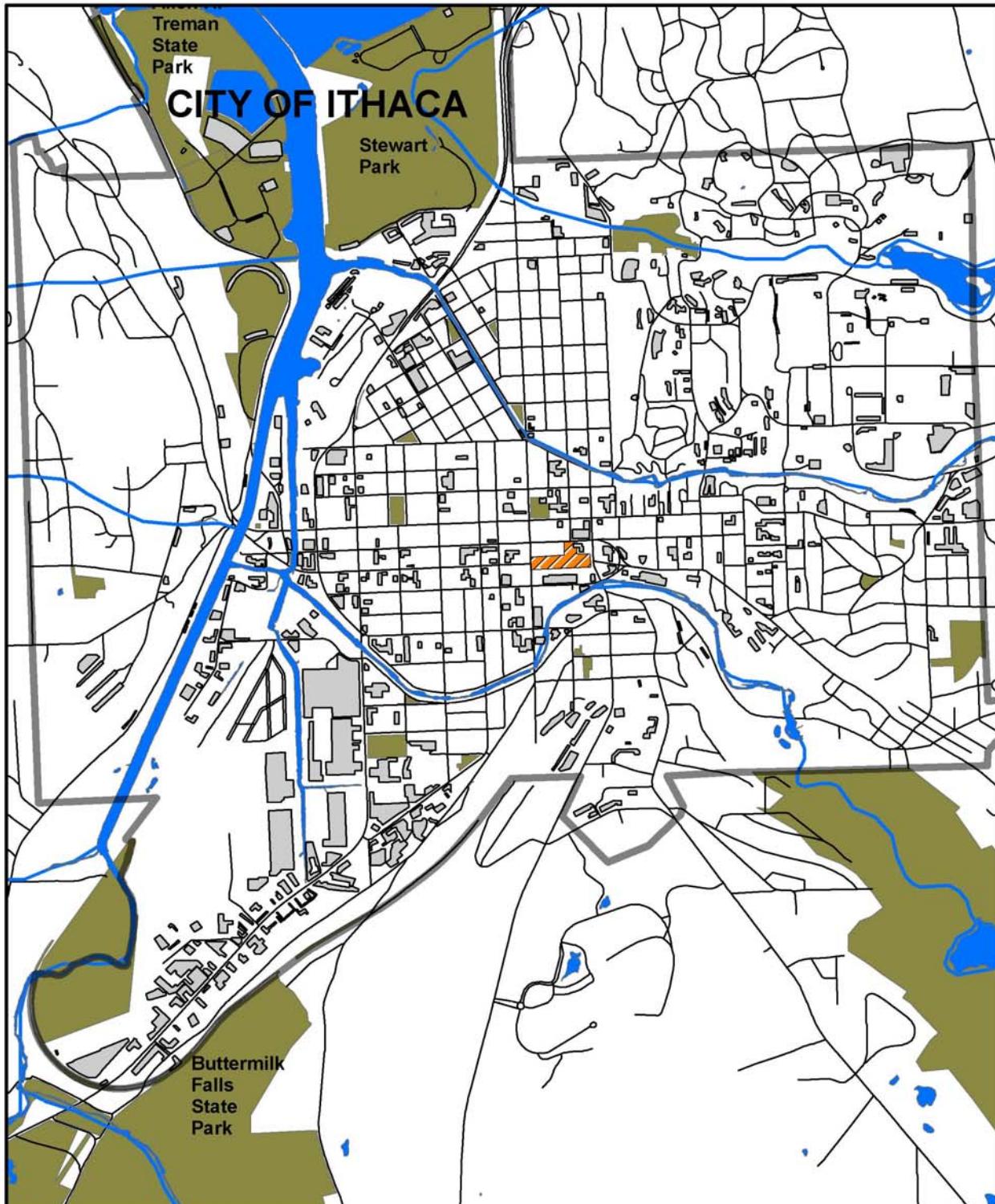


FIGURE 4.17

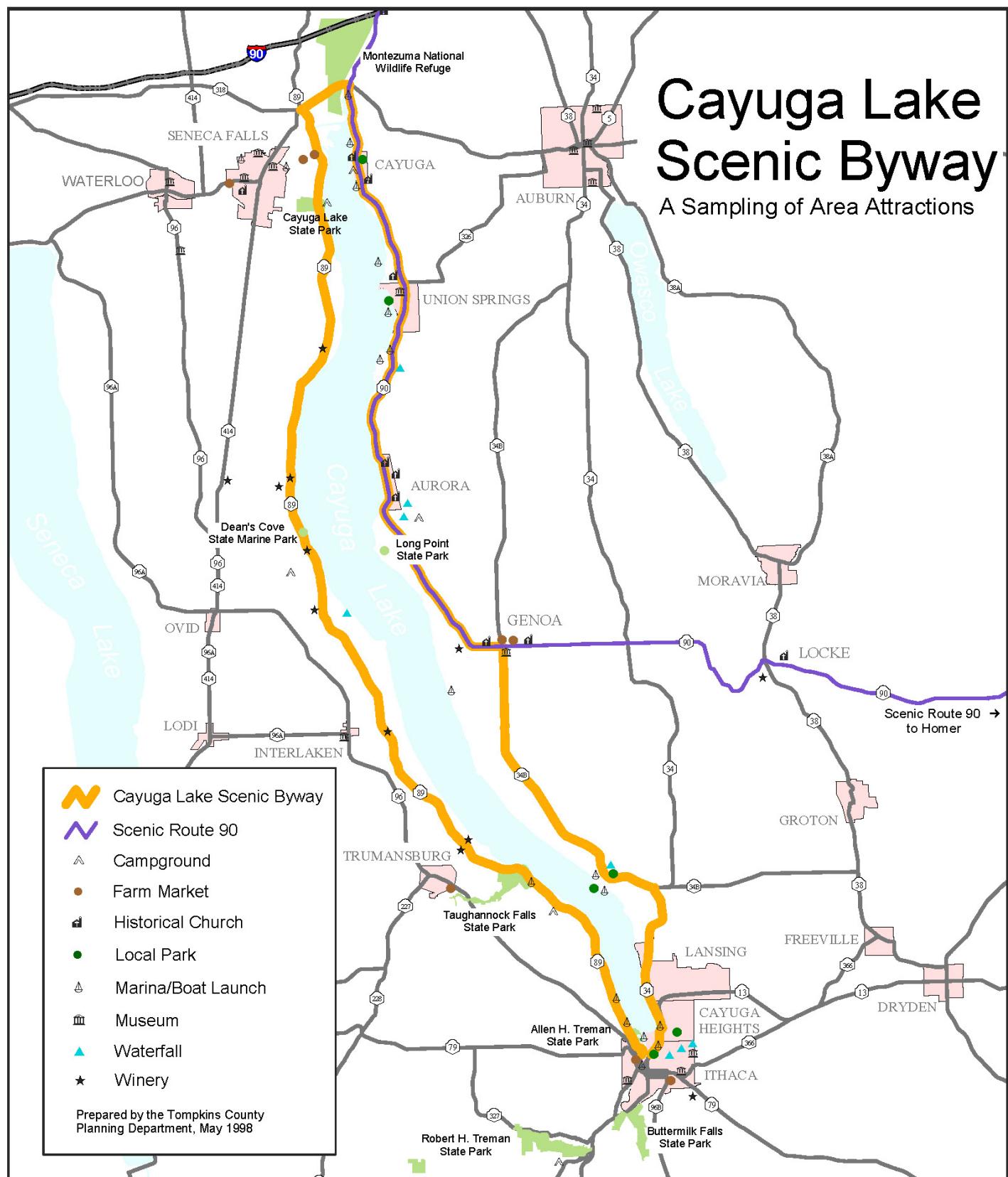
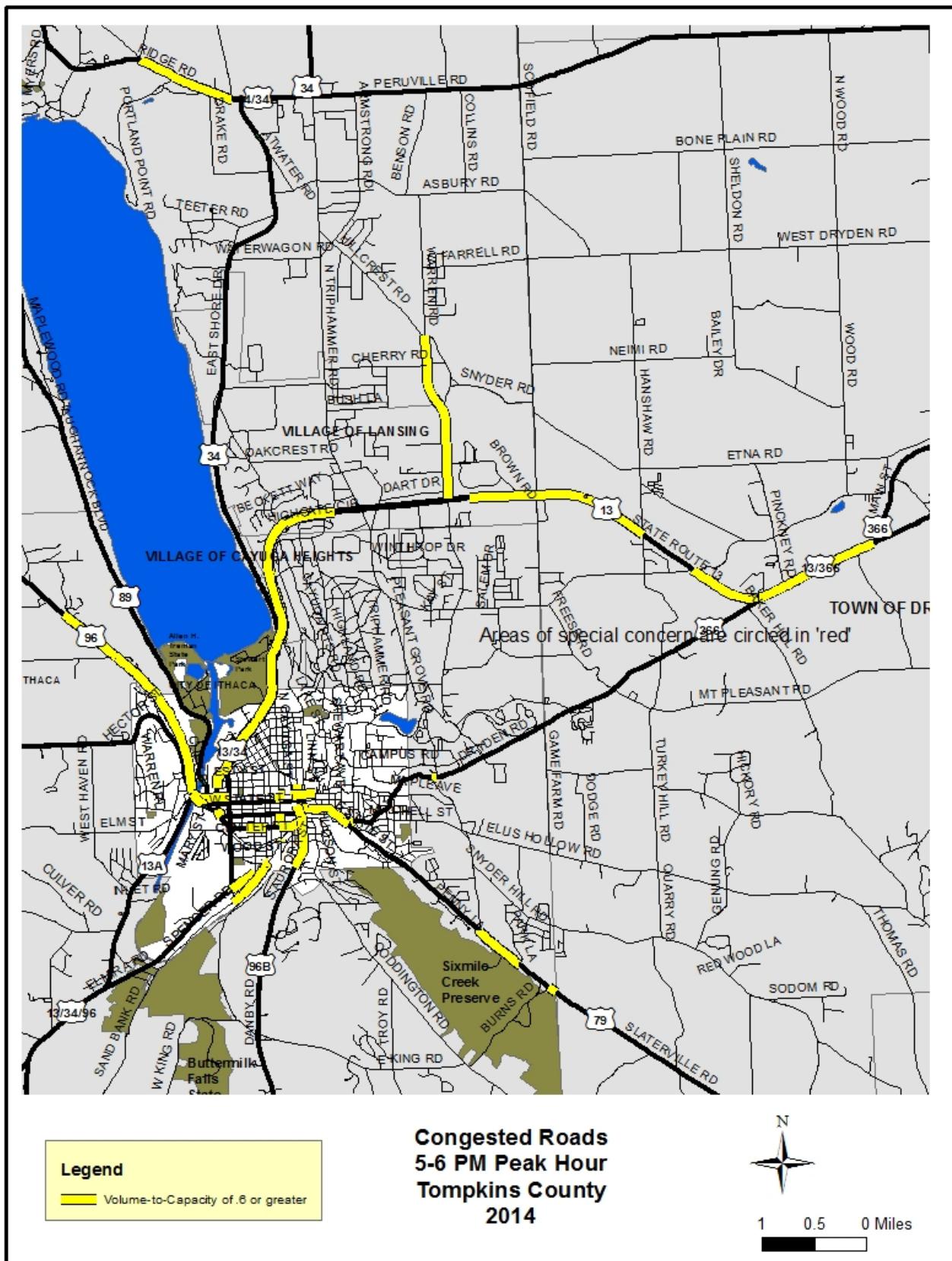
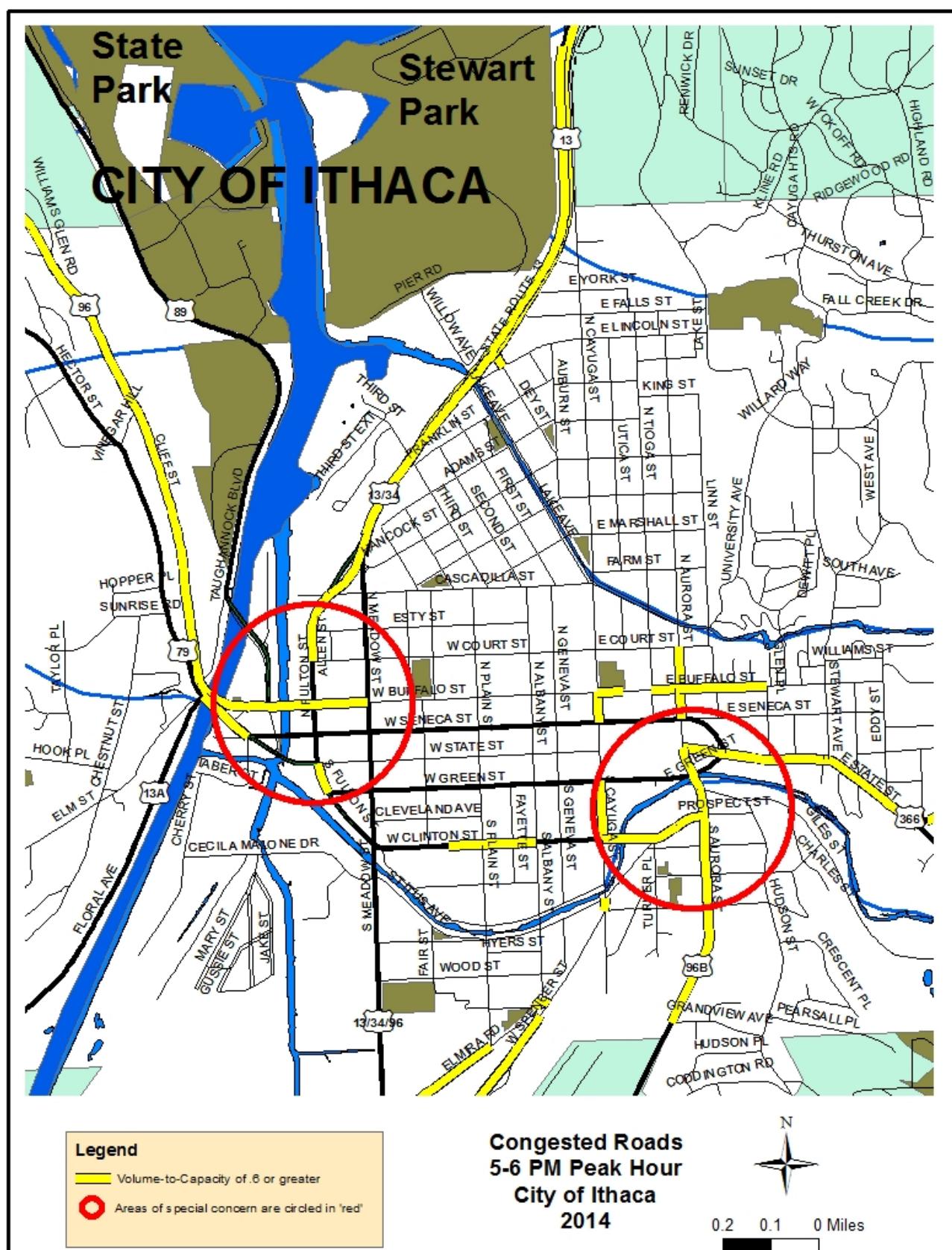


FIGURE 4.18



**FIGURE 4.19**



**FIGURE 4.20**

The FTS included a series of public meetings, developed and analyzed alternative strategies to address concerns and finally, presented a series of recommendations and mitigation strategies. A network of recommended truck routes, consisting mostly of NY state routes, was identified to provide for the safe movement of freight while best addressing the negative impacts of truck movements. Other recommendations address changes to ordinances, developing a truck route signing system, enhanced law enforcement, and creating a public education programs for truckers/shippers/carriers.

The FTS identified the long-standing generators of hazardous waste in Tompkins County. New York State does not require registration of vehicles that transport hazardous materials, nor does it have a set routing system for hazardous material hauling. State highways are built to handle all truck traffic. Hazardous materials haulers are likely to follow the same travel patterns as the rest of the trucks.

It is recognized that commercial delivery vehicles transport hazardous material and can offer small risks; however, larger quantities of materials should be specifically routed through the area to ensure a fast and efficient response by local agencies in the event of an emergency. Municipalities may regulate the routing of hazardous materials through ordinances. Such an effort would need to be coordinated to ensure the continuity of routes. Local agencies should consider developing a hazardous materials routing plan for the greater Ithaca-Tompkins County metropolitan area.

Tompkins County has access to water routes for shipping via the Cayuga Lake and Erie Canal system. Local companies, due to high costs, environmental regulations, and their frequent shipments to/from land-locked southward destinations, do not currently utilize water transportation for freight in the Tompkins County area. Nevertheless, it is possible that faced with increased costs in fossil fuels, water transport may regain an economic advantage over the 20-year planning horizon of the LRTP.

### **Passenger Movements**

The LRTP supports enhanced connectivity between the passenger modes of transportation available in Tompkins County: automobiles, intercity bus, public transit, bicycles, pedestrians, and air travel.

Currently TCAT provides regular public transit service to the Ithaca-Tompkins Regional Airport terminal. In addition, there is readily available taxi service, airport limousine and car rental services. As discussed under the CONNECTIVITY section, the Ithaca Inter-City bus terminal is served by the public transit system, taxis and paratransit. The facility is located within walking and bicycling distance of many residents in the Flats of Ithaca. Regular and frequent TCAT service to the inter-city bus

terminal should be continued and enhanced to facilitate transportation to the final destination of intercity travelers.

TCAT bus stops serve as important intermodal facilities. The ITCTC will continue to work with TCAT to improve bus stops in ways that facilitate intermodal use. These projects can take many forms – i.e. connecting bus stops to sidewalks, providing bicycle parking, providing shelter, providing traveler information (next bus arrival time) – depending on the needs of individual stops. TCAT's offers their popular Bike-on-Buses program, which provides two bike racks in every TCAT vehicle. This program is popular for cyclists looking to overcome the obstacles of hilly terrain in Tompkins County.

In 1996, TCAT began its Bikes on Buses (BoB) program. All TCAT buses were equipped with bicycle racks, providing a popular and important service to riders in Tompkins County. Buses carry approximately 18,000 bikes each year. The bike on buses program is arguably the most successful intermodal program in Tompkins County. The ITCTC will continue to work with TCAT to improve the transit systems ability to address needs of bicyclists and pedestrians by providing safe, attractive and accessible bus stops, passenger shelters, and park-and-ride lots with widespread distribution of bike racks. Tompkins County has a network of 13 rural park and ride lots which receive a high level of use.

Currently, Tompkins County is an importer of labor from surrounding counties. Approximately 15,000 people travel into the County on a daily basis for employment, many of them in single occupancy private vehicles. This commute pattern offers an opportunity to increase coordination with neighboring counties in order to offer effective options to driving alone – i.e. coordinate transit connections between counties, enhanced park and ride, ride sharing programs, etc.

## **ENVIRONMENTAL**

### **Introduction**

The transportation system must balance the protection of our natural, social, cultural, and historical resources with the need to address transportation demands. It is undeniable that the provision of transportation, particularly a system based on internal combustion engine cars and trucks, will generate significant undesirable environmental impacts. Environmental concerns range from the more direct vehicle related issues (e.g. air quality, noise impacts, energy use, etc.) to more community-level concerns (e.g. neighborhood preservation, jobs/housing balance, appropriate mixed-use development, etc.). There are several transportation related

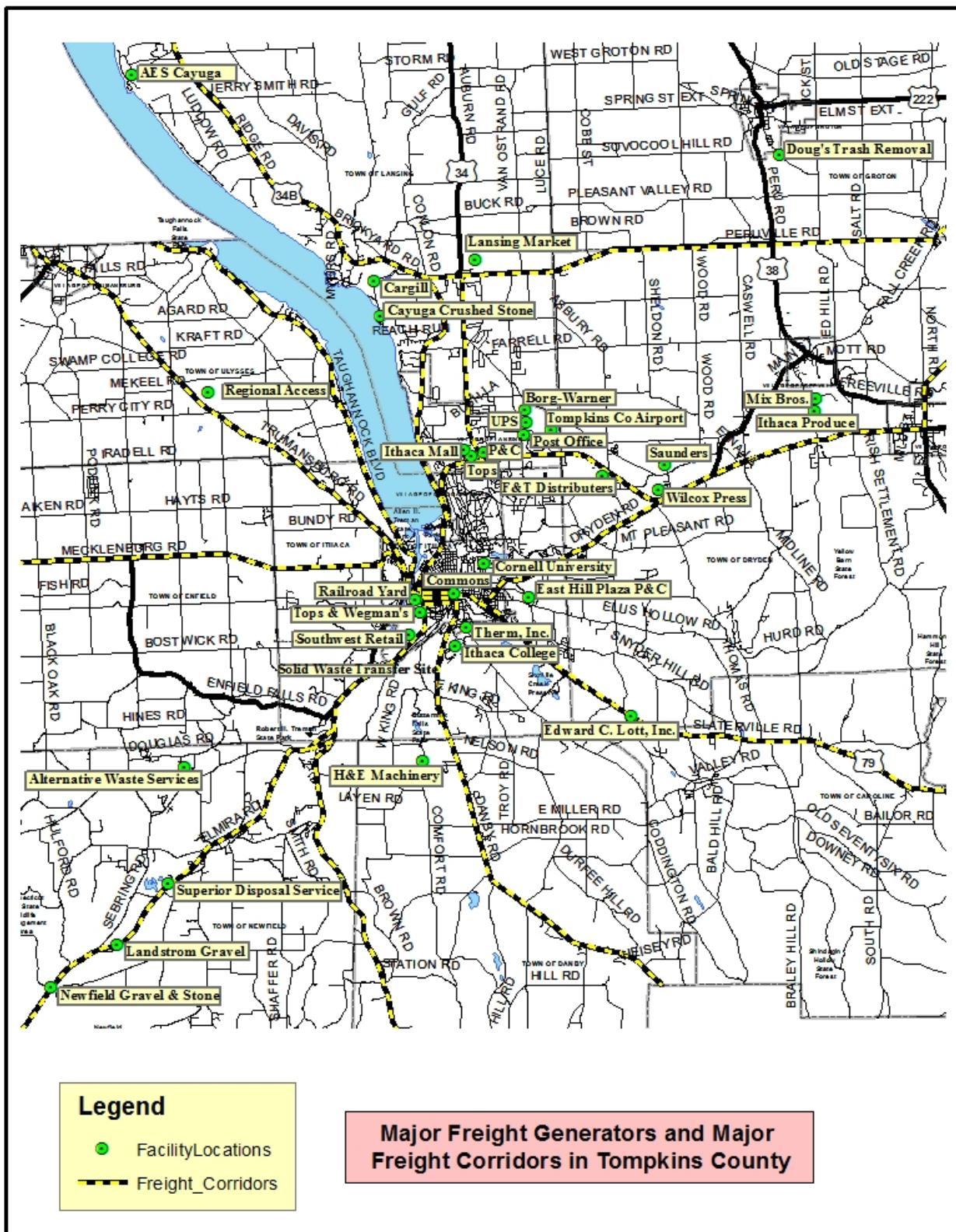


FIGURE 4.21

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areas that impact the environment, these will be addressed in the following sections: *Air Quality, Land Use Planning, Energy Efficiency, and Minimizing Impacts and Disruptions to the Natural, Scenic, or Cultural Environment*. Any discussion of environmental issues related to transportation will necessarily result in considerable overlap between multiple planning disciplines, i.e. land use, economic development, neighborhood planning, natural areas planning, etc.

The Tompkins County Comprehensive Plan was amended in 2008 to include an ‘Energy and Greenhouse Gas Emissions Element’. ITCTC staff worked with the Tompkins County Planning Department to ensure that their new plan element and the ITCTC’s Long Range Transportation Plan were mutually supportive.

The Tompkins County Comprehensive Plan presents alternative future land development scenarios, which were used as the basis for an analysis of future air quality impacts, energy consumption and greenhouse gas emissions from the transportation sector. The ITCTC travel demand model, TransCAD, was used to model future year air quality and energy impacts of the transportation system based on a variety of factors: land use development patterns, vehicle fleet composition/fleet fuel efficiency and trip patterns. The methodology and full results of this analysis are found in the appendix: Future Scenario Analysis.

There are several key conclusions surfaced from the future scenario analysis relating to the strategic approach needed to reduce energy use and emissions from transportation:

*-First, there is no single fix to the challenge of reducing energy use and emissions from transportation. This is a system wide challenge that will require multifaceted, system wide solutions. The analysis showed that combining strategies (i.e. more efficient vehicles + trip reduction) is essential to achieve the goal reductions in energy and emissions.*

*-Reducing vehicle miles traveled in general, and particularly by drive-alone or single occupancy vehicles (SOV), will be a key component of any successful strategy. It is recognized that shifting the prominent transportation role currently played by private automobiles will be a significant challenge. The goal is to make the car one of many options for most people to get around, instead of the only option. Reaching established goals for energy and emissions reductions in transportation will not be likely without a reduction in countywide vehicle miles traveled*

*-In order to achieve a modal shift away from car dependency land use development patterns must take a more efficient form, as described in the Tompkins County Comprehensive Plan. This will facilitate the use of transit, walking, bicycling, car pools, vanpools, car sharing and ride sharing. All of these currently available alternatives*

*work best when land uses are integrated and in close proximity.*

*-Vehicle fleet efficiency and fuel mix is another key component of any successful strategy to reduce energy consumption and emissions. Cars and trucks will continue to be important components of all future transportation scenarios. The analysis in this chapter showed that just having energy efficient, clean cars is not enough to meet established goals for energy use and vehicular emissions. However, without a clean, efficient vehicle fleet it is difficult to envision achieving them.*

*-Transit in all its forms will need to play a much-expanded role in transportation. Transit needs to evolve into a ‘first option’ for all different trips – recreational, work commute, social, services, shopping, etc.*

*-Non-motorized modes, bicycling and walking, already account for significant number of trips in Tompkins County. These modes need to be accommodated and enhanced to encourage additional use. They offer a clear opportunity for urbanized areas in the County to capture the inherent efficiency of their urban forms. Together with transit improvements, they offer the most cost effective way to encourage a mode shift in the short term.*

*-Information and computer technologies can make telecommuting, travel demand management, ridesharing, vanpools, car sharing, public transportation, and mobility support programs more efficient to implement and accessible to the community. New efforts are needed to make facilitate integration of service delivery through technology that will benefit service providers and consumers alike. These programs encourage the use of multiple modes of transportation and are needed to increase the mode share of alternatives to driving-alone.*

*-Vehicle technology and type of fuel used will play a huge role in achieving energy and emission reduction goals. There is little opportunity to affect these factors at the local level. State, national and international policies, along with market forces, will be of greatest influence in advancing and promoting new technologies and alternative fuels. The market is unpredictable, but public response during the 2008 gasoline price spike and other fuel shortage events are indicative of the immense power of pricing to affect change at all levels of society and particularly in the transportation sector.*

*-Federal and State policies and programs that promote and fund transit and other alternative modes and encourage a mode shift away from SOVs will help drive local action. National and State leadership and support will be essential to allow those at the local level to accomplish the significant transformation of the transportation system that will be required to meet the challenges of climate change and the required move away from fossil fuels.*

## Smart Urbanization - Urban efficiencies in transportation



FIGURE 4.22

## Facilitating Alternative Transportation Options

### Individualized Marketing

Easy Access to:  
Apps, Maps, Info

Individual  
Profiles



Smart Phone

Access to Technology



Promotion  
Encouragement



Marketing/Social Media

Incentives  
Education



Flextime/ Benefits/Policy

Networks  
Connections



Telework/ Ride -Matching

Real-Time  
Updates



Transit / Multimode

Memberships  
Reservations  
Payments



Share Systems/Rentals

Real Time Technology supports the use of alternative options

FIGURE 4.22

**FIGURE 4.22** helps illustrate some of the design and technologies that work together to influence modern transportation and the critical interface with users, the customers.

### **1. Air Quality**

Currently, Tompkins County is in attainment of National Ambient Air Quality Standards. However, it is understood that failure to consider emission issues in an integrated and comprehensive manner could lead to continued and unacceptable degradations in air quality.

Nationwide the transportation sector accounts for approximately 27% of greenhouse gas emissions, the second largest sector after electricity generation (Source: U.S. Environmental Protection Agency (EPA), *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010*, Table ES-7, 2012.). Trucks and cars account for 83% of the transportation related emissions. **TABLE 4.6** shows the U.S. transportation emissions by mode.

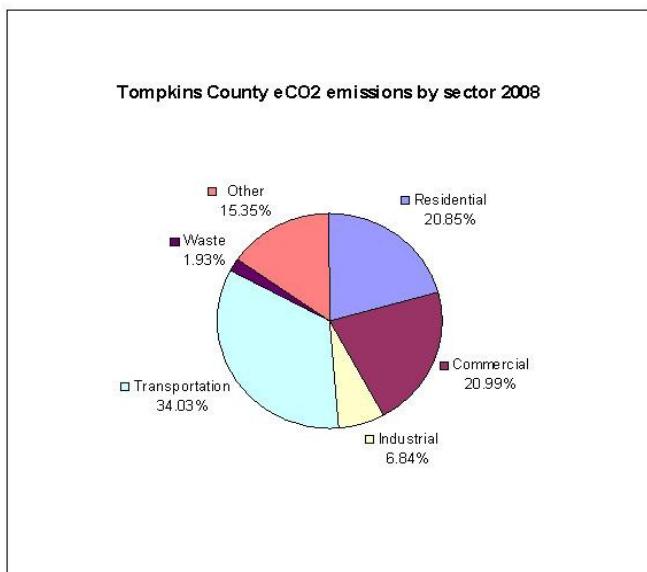
Locally, the “Cities for Climate Protection – Local Action Plan, Tompkins County, NY” calculated the greenhouse gas emissions for Tompkins County in units of ‘equivalent carbon dioxide’ - eCO2 for the base year 2008. The results of that inventory indicated that in 2008 Tompkins County produced a total of 1,319,955 tons of eCO2. The inventory showed that emissions from transportation (more specifically the combustion of gasoline and diesel) produced the majority of community emissions at 34%.” **FIGURE 4.23** and **TABLE 4.7** show the distribution of greenhouse gas emission sources for Tompkins County. **TABLES 4.8** and **4.9** give data pertaining to transportation mileage and emissions.

The policies, projects and initiatives in the LRTP support the development of a transportation system that reduces its dependence on automobiles by promoting and enhancing the use of alternative modes of transportation. This is proposed through the provisions of improved service and facilities, and by encouraging land use development practices that support alternative modes of transportation. Concurrent with the above, the LRTP recommends fleet efficiency improvements that reduce fossil fuel use and its associated emissions, and improvements in transportation system operations that result in enhanced system efficiency, reducing congestion and idle time, also resulting in reduced emissions.

**TABLE 4.6**

U.S. Transportation Carbon Emissions (% by mode) – 2011	
Passenger Cars	43%
Light Duty Trucks	18%
All Other Trucks	22%
Other (buses, rail, motorcycle, etc.)	6%
Aircraft	8%
Ships & Boats	3%
	100%

Source: USEPA Fast Facts: US Transportation Sector Greenhouse Gas Emissions 1990-2011  
(<http://www.epa.gov/otaq/climate/documents/420f13033a.pdf>)



**FIGURE 4.23**

**TABLE 4.7**  
**Overall Emissions by Sector**

Year 2008	Tons of eCO2
Residential	275,275
Commercial	277,065
Industrial	90,304
Transportation	449,158
Waste	25,516
Other	202,637
	1,319,955

**TABLE 4.8**  
**Tompkins County Mileage by Mode**

	% total miles	
	Gasoline (miles)	Diesel (miles)
Passenger Cars	60.2%	0.3%
Heavy Truck	0.0%	5.2%
Light Truck/SUV	32.4%	1.3%
Motorcycle	0.4%	0.0%
Transit Bus	0.0%	0.2%

**TABLE4.9**  
**Tompkins County Emissions by Mode**

Emissions by Source	Tons eCO2
Diesel	69,644
Gasoline	371,848
Motorcycle Gasoline	585
Transit Bus Diesel	7,080

Tables 4.7, 4.8 & 4.9:  
Source: "Cities for Climate Protection – Local Action Plan,  
Tompkins County, NY"

## **2. Land Use Planning**

In New York, land use and transportation planning have occurred in relative isolation from each other. In the July 1994 edition of the Land Use Law Reporter (Pace University School of Law, Albany, New York) it was stated that,

*"...failure to coordinate land use and transportation planning has:*

- *made it very difficult if not impossible, to predict transportation demand and plan effective regional transportation systems;*
- *created land use patterns that are automobile dependent, energy inefficient, environmentally damaging and that cannot be serviced properly by public transportation systems;*
- *generated traffic congestion that increases air pollution...".*

These statements are still valid twenty years later as communities across the New York continue to struggle with containing sprawl development, and managing congestion, energy and air pollution issues.

Land use patterns are fundamental determinants of the number of trips that people make. Zoning was originally used to separate land uses for health and safety reasons. Automobiles allowed this separation to be intensified and expanded. As a result much of the development in the last sixty years has been auto oriented, often at the expense of other modes of transportation.

In order to meet the mobility needs of the community, local municipalities should review zoning and other land use regulations in order to allow and support development patterns that allow for mixed uses. Zones that offer a mix of complementary land uses (e.g., commercial, residential, recreational) together with supporting design guidelines, would enable persons to combine trips, encourage more pedestrian and bicycle trips, facilitate the provision of transit, reduce the number and length of automobile trips, and result in reductions in congestion, and consequently, energy consumption and vehicular emissions.

Municipalities in New York State are not required to adopt comprehensive plans, nor must these plans contain a transportation section. However, in Tompkins County, there is a Tompkins County Comprehensive Plan and most jurisdictions have existing comprehensive plans or ongoing initiatives to develop or update plans. This is a favorable trend that will have a significant impact on the ability of the ITCTC to conduct more effective transportation planning by improving coordination with planned future land uses. The ITCTC will support local efforts to develop comprehensive plans including making available use of the travel demand model for analysis.

Local governments are also encouraged to consider the balance of jobs and housing in their planning decisions. The "jobs-housing balance" is the ratio of suitable employment opportunities available to the working age population of a region or sub-region. A balanced jobs/housing ratio in an area can result in shorter trip lengths and encourage the shift from the single occupant automobile to other modes, thus allowing for reductions in automobile trips. This balance is best accomplished through the coordination of economic development and housing development via the local planning and development review function. The issue of housing in Tompkins County has received much attention locally. The Tompkins County Comprehensive Plan covers this topic in great detail and provides guidance for local municipalities. The ITCTC will continue support land use, housing and economic development activities that lead to more efficient use of our existing transportation resources as stated in the LRTP goals and objectives.

Neighborhood preservation has repeatedly been one of the premier issues when addressing transportation planning. In Tompkins County many neighborhoods are crossed by roads that have grown in their traffic volumes as land was developed further out from the Ithaca urban core. Commuter, commercial and other trips use these roads to move across the area, impacting the neighborhoods.

There seems to be general agreement that traffic and traffic speed should be reduced in residential neighborhoods. This may be accomplished by implementing appropriate traffic-calming techniques and/or increasing law enforcement efforts. On rare occasions there is an opportunity to re-route traffic around neighborhoods by favoring access to alternative routes that make "cut-through" trips less attractive. In all cases traffic must be managed based on the particular conditions of each neighborhood and considering the need and desires of the residents. There is no single strategy or recommendation that will serve all locations.

There are many design elements that can be incorporated into site plans and the existing infrastructure to ensure "human-scale" developments and spatial relations. Sample ordinances and development regulations can be found by investigating applicable design standards and models from other areas that address both new large-scale and smaller in-

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fill development projects. Residential areas should have bicycle and pedestrian friendly street networks that are visually pleasing and safe. Building mass, setbacks, signage, street lighting, landscaping, pedestrian and bicycle access, transit access, etc. can be included in guidelines to ensure consideration of these issues during project planning and review.

Also important is the subject of equity. Proposed transportation projects must be evaluated to ensure both positive and negative environmental (including social, cultural, and economic) impacts are distributed equitably across neighborhoods and communities so as not to unfairly burden or advantage any socioeconomic group or community. Transportation related technical project evaluations are important, but it is also crucial to analyze the transportation system to ensure that the principles of social and environmental justice and ecological sustainability are achieved. As described in Chapter 2 not all population groups have similar demands from our transportation system. Census data shows that minority and low income populations use a greater variety of modes than white non-Hispanics for the important trip to work. This type of differences must be recognized in order to best serve the needs of all communities.

### **3. Energy**

*Approximately 27% of all energy consumption in the United States is attributable to the transportation sector. Cars and light duty vehicles (59%) and heavy-duty trucks (22%) together consume 81% of all transportation related energy, which is almost totally dependent (92%) on petroleum fuels.-*

*[Source: US Department of Energy, Transportation Energy Data Book: Edition 33-2014.*

The quote above shows the important role the transportation sector plays in the nation's balance of petroleum fuel use. The international political relations and economic policies dependent on oil supply and demand cycles are intricately associated with transportation. Even after the oil production boom of years leading to 2014 the U.S. produces 54% of the oil it consumes and must import 46%. To reduce oil dependency in the U.S. you have to address transportation in the U.S.

The issue of climate change is also closely involved with the energy and greenhouse gas discussion in transportation. In short, to address the climate change challenge there is a need to move away from fossil fuel use. From a climate perspective the highest and best use for oil and natural gas is to remain in the ground and continue to serve as carbon sinks, as they have for eons. This of course collides directly with the demands of a transportation sector that is 92% dependent on petroleum fuels. It's a daunting challenge.

There are many ways to reduce energy consumption in transportation including: reducing the number of automobile

trips, reducing distances traveled, increasing the use of alternative fuels, and increasing the fuel efficiency of vehicles. The LRTP includes goals, objectives and project recommendations that seek to promote reductions in transportation energy use through mobility planning, operational enhancements and growth management strategies.

The fuel efficiency of vehicles and the utilization of alternative fuels are important energy concerns that are primarily acted on at the State or national level. Nevertheless, this plan encourages the study of the utilization of alternative fuel sources, understanding that the desirability of an alternative fuel source, preferably non-fossil fuel, should be evaluated on an embodied energy basis and its ability to meet the following goals: reduce dependency on oil for sustainability and national security/economic reasons, reduce air pollution, and reduce global warming impacts. The use of alternative fuels should be considered for the vehicle fleets of major employers, where economies of scale may make a shift in fuel type economically feasible.

There are different ways of addressing fuel efficiency locally. Through individual actions of choice, Tompkins County residents can shift to more fuel-efficient cars, such as the hybrid models that are now widespread in the market. Also through individual choice, people can greatly improve the efficiency of their vehicles by keeping them well tuned, tires properly inflated, and by applying eco-driving practices such as reducing idling time, determining the lowest mileage route for trips, using cruise control were appropriate, etc. (More on Eco-driving practices can be found at [www.dot.ny.gov/ecodriving](http://www.dot.ny.gov/ecodriving) or [www.ecodrive.org](http://www.ecodrive.org).

The policies and recommendations in this plan will be most influential on the number of trips and trip length factors. The initiatives, policies and programs mentioned in other sections of the Systems Integration section, including transportation system management and transportation demand management strategies, changes in land use regulations, and promoting transit, bicycle and pedestrian modes of transportation are aimed at improving the operational efficiency of the transportation system and reducing the number of automobile based trips. These outcomes will result in reductions in energy consumption in the transportation sector, with corresponding reductions in emissions.

Gasoline prices will have a marked effect on consumer decisions on everything from what car to buy to where to live, and are likely to be a major determinant on future transportation policy and funding decisions at the national level. The oil price swings of 2008 demonstrated the volatility of the fossil fuel market and how powerful a tool energy pricing can be to achieve reductions in energy consumption. Under these circumstances there is increased opportunity for new technologies, programs and concepts to

come online. Electric cars, fuel cell vehicles, automated transportation networks, transit priority systems, shared transportation systems and other intelligent transportation system ideas are all ripe for implementation. Other concepts are sure to arise. The ITCTC will remain alert to technological advances and, through the metropolitan planning process, offer a venue to consider their potential local benefits and opportunities for implementation.

The info graphic in **FIGURE 4.24** illustrates the strategy and challenge identified in the scenario analysis. To achieve significant reductions in energy use and greenhouse gas emissions there is a need to reduce drive alone trips from 60% to 40% of trips through modal shifts to transit, bicycling and walking, in addition to the implementation of more efficient land use development that reduces sprawl, and the implementation and promotion of programs such as travel demand management, ride share, car share, Way2Go, etc.

#### **4. Minimizing Negative Impacts on the Natural and Scenic Environments**

Although transportation projects can leave undesirable effects on the natural environment, measures can be taken to reduce and minimize these effects. While the intent of national and state legislation is to ensure this process occurs, there are other non-regulatory measures that can be considered.

Local municipalities are encouraged to protect native flora and fauna, giving particular attention to unique natural areas, and threatened or endangered species when reviewing transportation system maintenance practices. Adequate planning and implementation of mitigation strategies should help minimize negative impacts when designing and maintaining transportation facilities.

Potential recommended actions that reduce environmental impacts include: diverting storm-water runoff to retention basins to reduce salt, silt, and thermal contamination; collecting paint chips from bridge maintenance projects to protect streams from lead contamination; minimize the use of salt in winter; ensure sedimentation and herbicidal pollution are minimized during maintenance practices; minimize the use of defoliants and herbicides by planning for maintenance free plantings through State or National wildflower programs; and maintaining the health and effectiveness of roadside trees, shrubs and groundcover. The goal should be for highway departments to eliminate the use of herbicides. Cleaning roadside drainage systems has been identified as a major source of sedimentation in creeks feeding Cayuga Lake. Effective mitigation measures such as immediate reseeding of ditch sides after cleaning should always be implemented.

In addition, it is recommended that Tompkins County's Unique Natural Areas be protected to preserve their important ecological functions. These areas have been

identified as having outstanding environmental qualities and deserve special attention ([www.tompkinscountyny.gov/planning/nri](http://www.tompkinscountyny.gov/planning/nri)).

Scenic resources contribute significantly to the quality of life of Tompkins County residents. A variety of planning and regulatory tools exist to enable local governments to protect locally significant scenic areas. For example, they could adopt view shed zoning that considers obstructions and hence attempts to maintain public access to the view; promote acquisition of land for pull-offs, overlooks and other uses that preserve the scenic nature of the area and provide access to views; and local agencies can consider urban forestry projects, volunteer maintenance, and other community based activities to keep the roadway environment beautified. As mentioned earlier in this chapter, an important tool available to local governments is the *Tompkins County Scenic Resource Inventory* prepared by the Tompkins County Planning Department in January 2007. This document can be a useful starting point for any effort to help protect scenic resources in Tompkins County ([www.tompkinscountyny.gov/planning/nri](http://www.tompkinscountyny.gov/planning/nri)).

Another resource is the Cayuga Lake Scenic Byway (CLSB), which includes State Routes 34b, 34, 34/13, 96/89 and 89 in Tompkins County ([www.cayugalake.com](http://www.cayugalake.com)). This system of roads circles the southern end of Cayuga Lake and comprises part of the tri-county scenic byway around Cayuga Lake. The Cayuga Lake Scenic Byway, Inc. non-profit organization is coordinating development of the CLSB in cooperation with Cayuga, Seneca and Tompkins County. The ITCTC participated in the process leading to the byway designation and will continue to be an active participant in the development of this important regional transportation resource. The ITCTC encourages residents and municipalities along the byway to take action in protecting the scenic resources that make the CLSB a unique and special route and a destination for visitors to the area.

#### **5. Locating Environmental Impacts and Areas of Mitigation**

In implementing transportation improvements, project sponsors need to be aware of possible negative impacts on natural and historic resources in the County. Mitigation of these impacts is facilitated by clear delineation of areas of high environmental importance. **FIGURES 4.25** through **4.30** show the locations of *Natural Features Focus Areas*; *Unique Natural Areas*, *Federal and State Wetlands*; and *Historic Bridges and Structures* in the ITCTC region.

Projects included in the ITCTC's Transportation Improvement Program primarily consist of maintenance and improvements to existing facilities. Projects with severe environmental impact, such as construction of new roadways, are rare within the ITCTC planning area. Nevertheless, Tompkins County features a high concentration of natural and historic resources that may be

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subject to the adverse impacts of transportation projects. These resources include gorges, forests, and wetlands, as well as significant architectural sites.

The resource location information will enable the ITCTC and project sponsors to more readily anticipate concerns in areas of environmental impact. In developing each Transportation Improvement Program, projects will be overlaid on the base-maps included in this Plan and areas of potential mitigation will be identified. Environmental mitigation efforts can then be pursued as appropriate and necessary. The ITCTC will play an advisory role in analyzing the potential for environmental impacts and the location of those impacts during TIP development. Project sponsors will be responsible for meeting all applicable regulations and requirements during project implementation.

The ITCTC worked closely with the Tompkins County Planning Department as it developed the County's Comprehensive Plan. The Planning Department's *Natural Features Focus Areas* maps (**FIGURES 4.25** and **4.26**) provide general categorization of natural resource zones in the County, including watersheds and habitat areas. The *Unique Natural Areas, Federal and State Wetlands in Tompkins County, NY* map (**FIGURES 4.27** and **4.28**) shows the County's wetland resources, plus the nearly 200 Unique Natural Areas sites identified by the Tompkins County Planning Department which are determined to contain significant ecological, biological, geological, or aesthetic characteristics. These areas are administered by various agencies at the local, state, and federal level. The Tompkins County Comprehensive Plan includes goals and policies for the protection and management of forest, agricultural, natural and recreational resources countywide. The Tompkins County Conservation Plan identifies the issues and strategies needed to address the priorities established in the Comprehensive Plan. More information on the Conservation Plan, the Natural Resources Inventory and the Unique Natural Areas can be found at [www.tompkinscountyny.gov/planning/nri](http://www.tompkinscountyny.gov/planning/nri).

Landmarks of historical interest are abundant in the ITCTC region. The *Historic Bridges and Structures* maps (**FIGURES 4.29** and **4.30**) show the location of these features as determined by the New York State Historic Preservation Office (NYSHPD) and the Historic Preservation Field Services Bureau. The historic features are particularly clustered in the downtown Ithaca area and on the Cornell University campus.

## Reduce Drive Alone Trips and Car Dependency

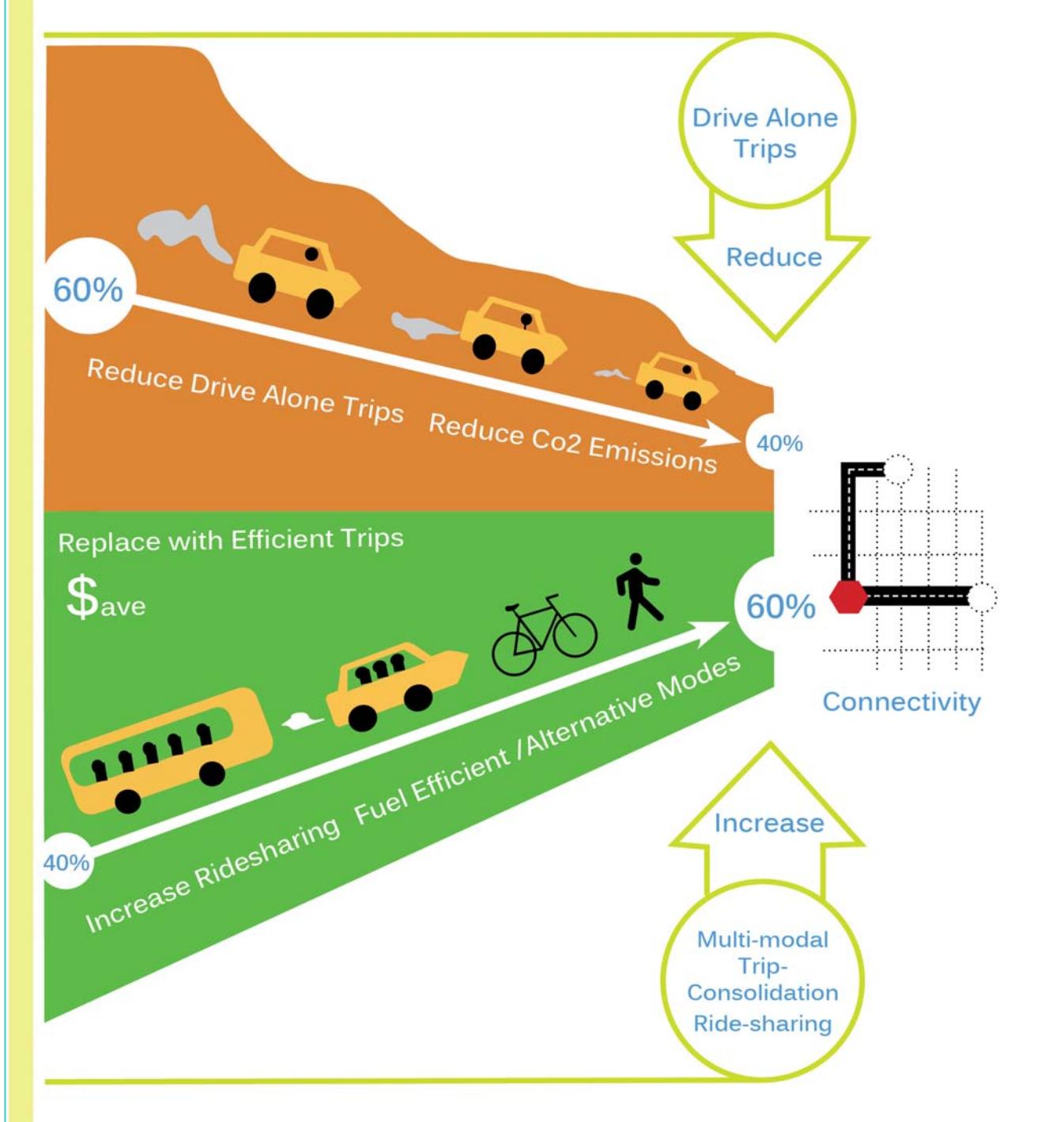


FIGURE 4.24



## Natural Features Focus Areas in Tompkins County, NY



### Legend

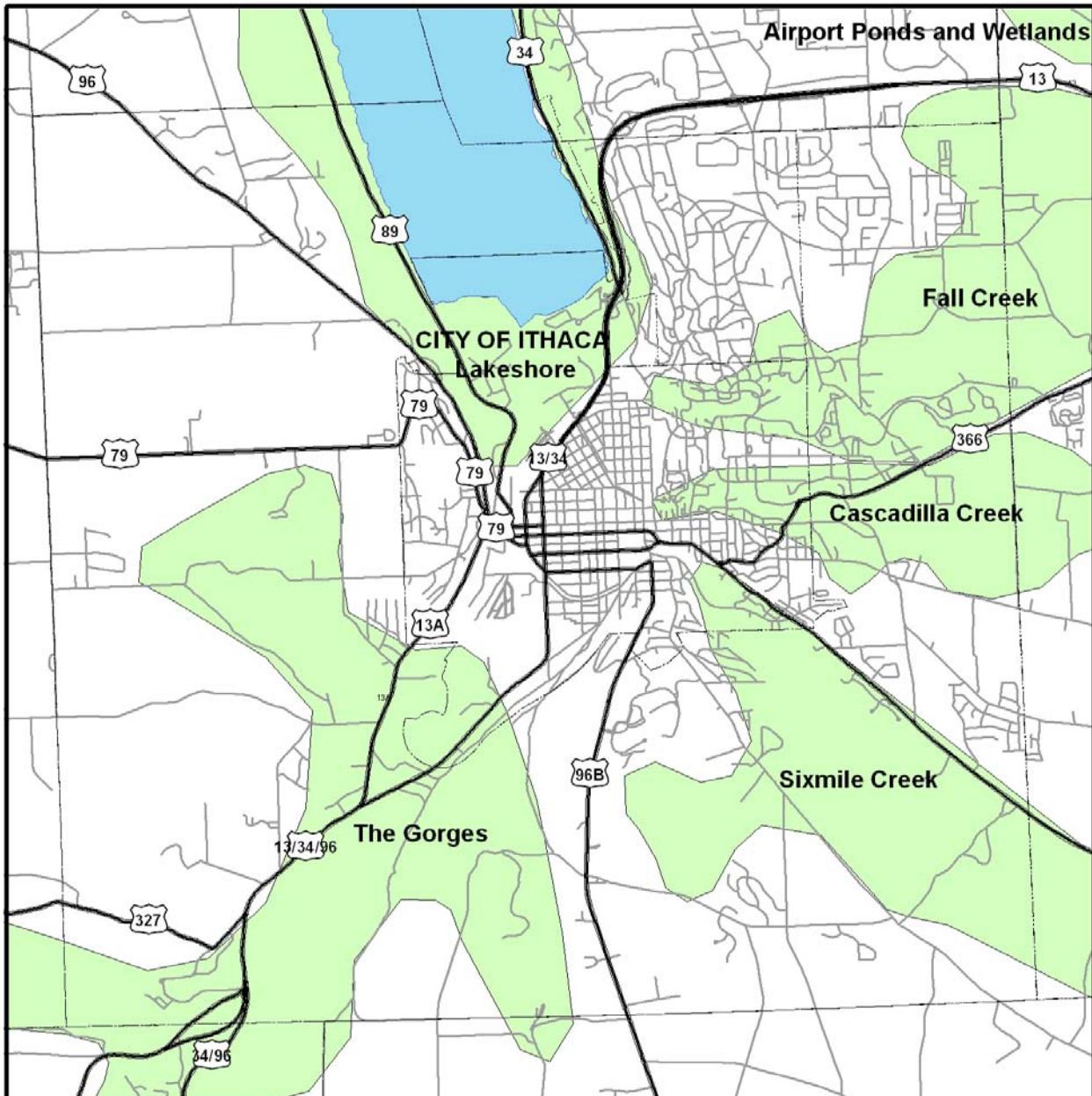
Natural Features Focus Areas

NOTES:  
Delineation of Natural Features Focus Areas is from  
the Tompkins County Planning Department - 2000.

**FIGURE 4.25**



## Natural Features Focus Areas in Ithaca, NY



### Legend

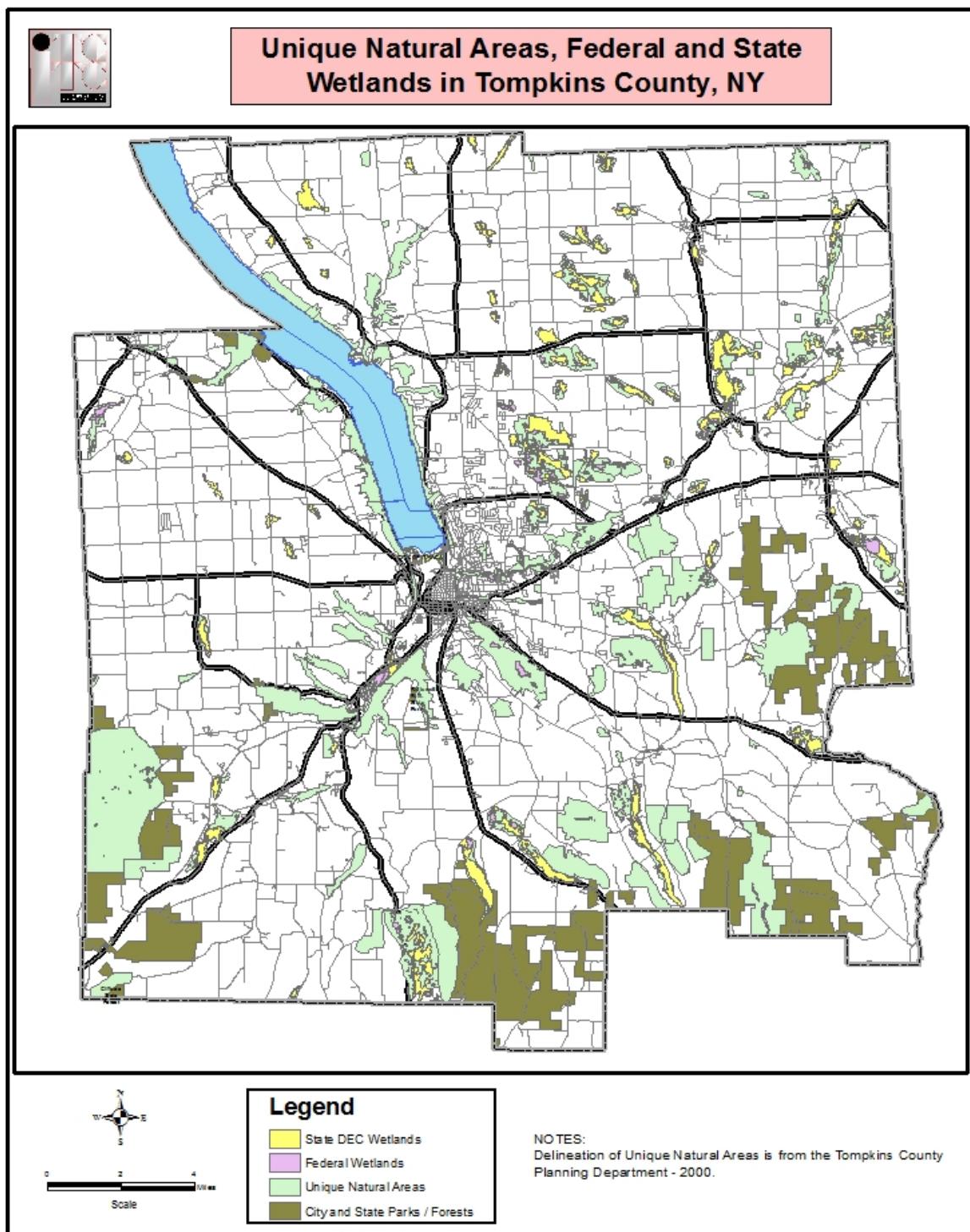
Natural Features Focus Areas

0 0.5 1 Miles

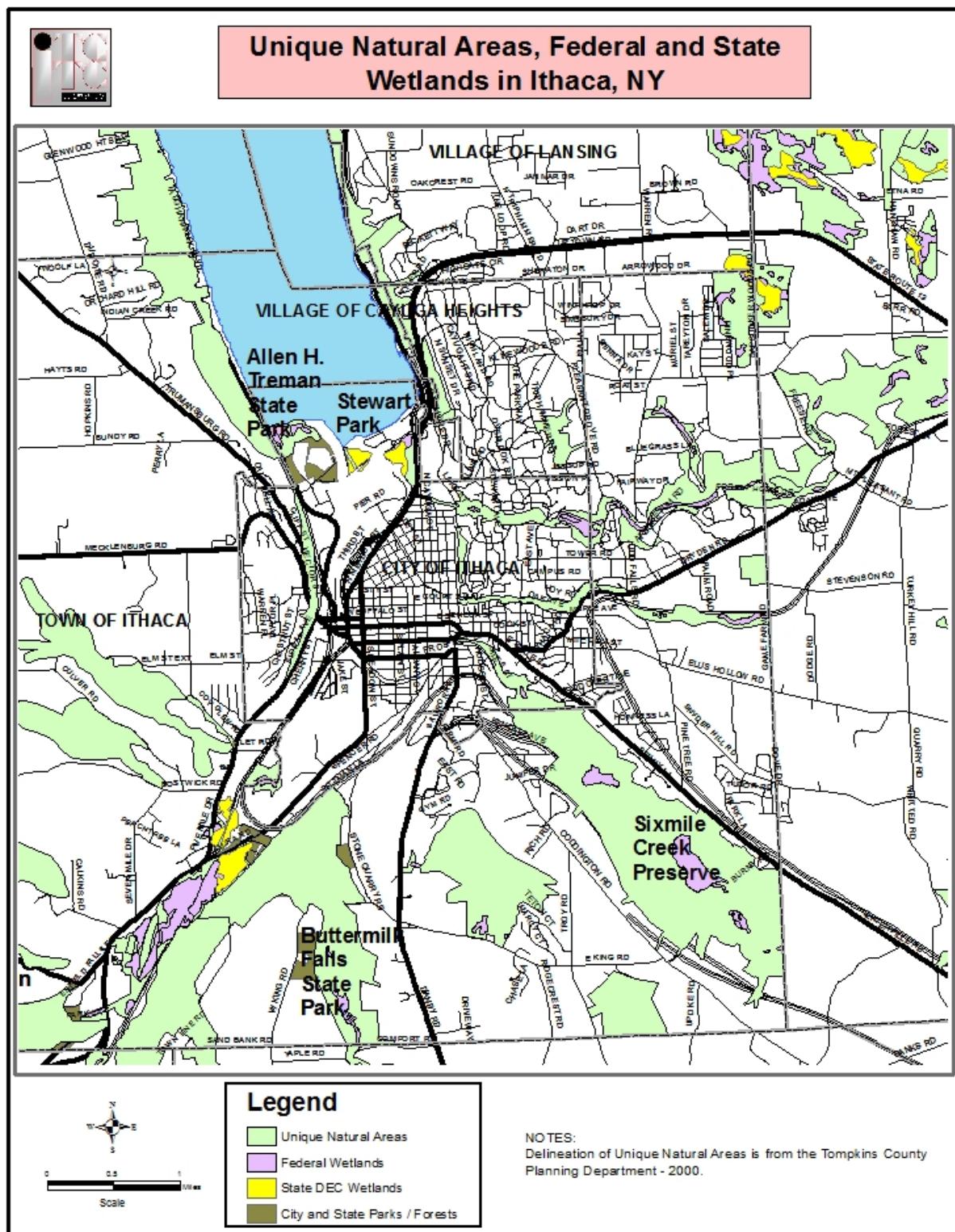
Scale

NOTES:  
Delineation of Natural Features Focus Areas is from  
the Tompkins County Planning Department - 2000.

**FIGURE 4.26**



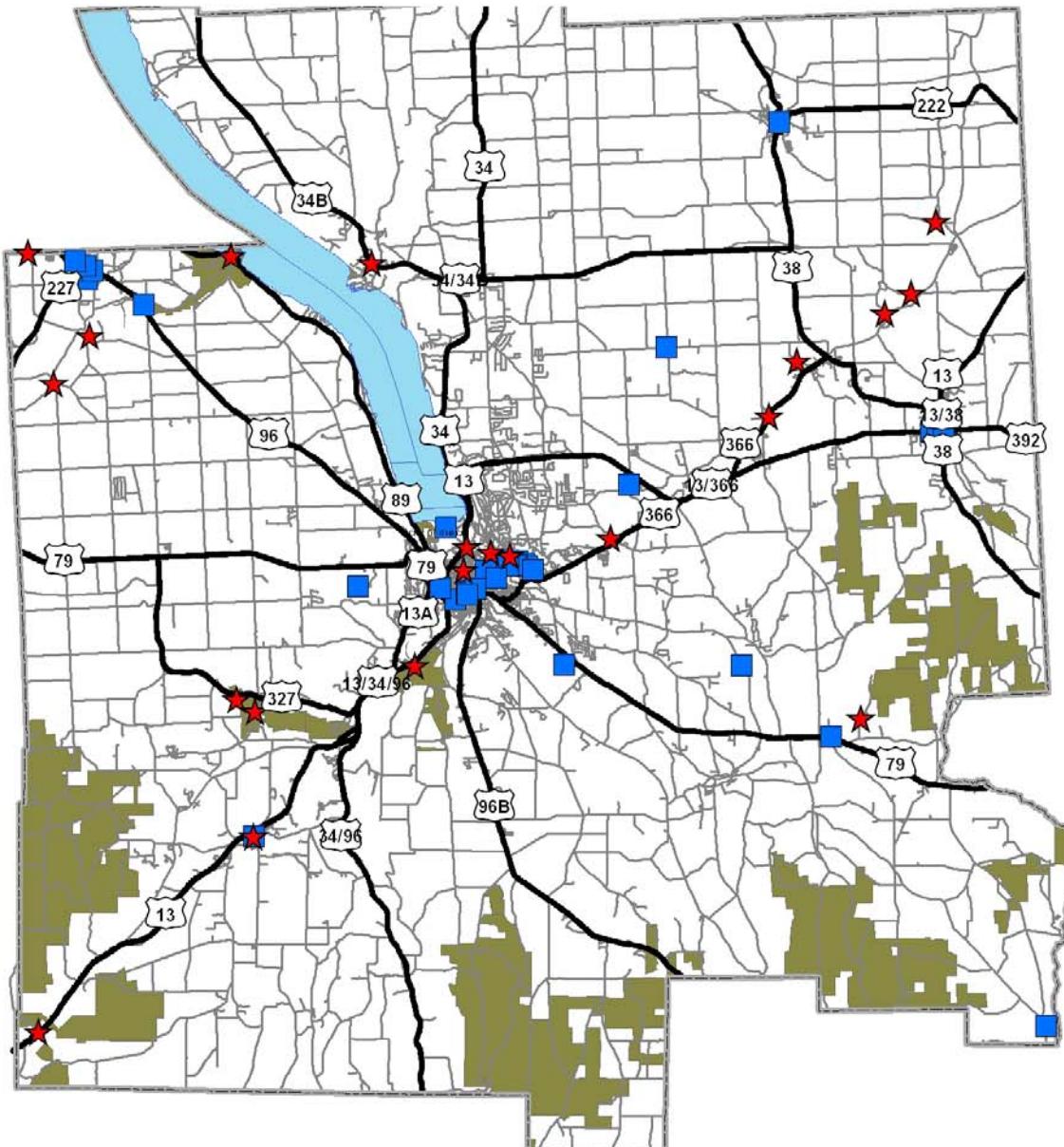
**FIGURE 4.27**



**FIGURE 4.28**



## Historic Bridges and Structures in Tompkins County, NY



0 2 4  
Scale Miles

### Legend

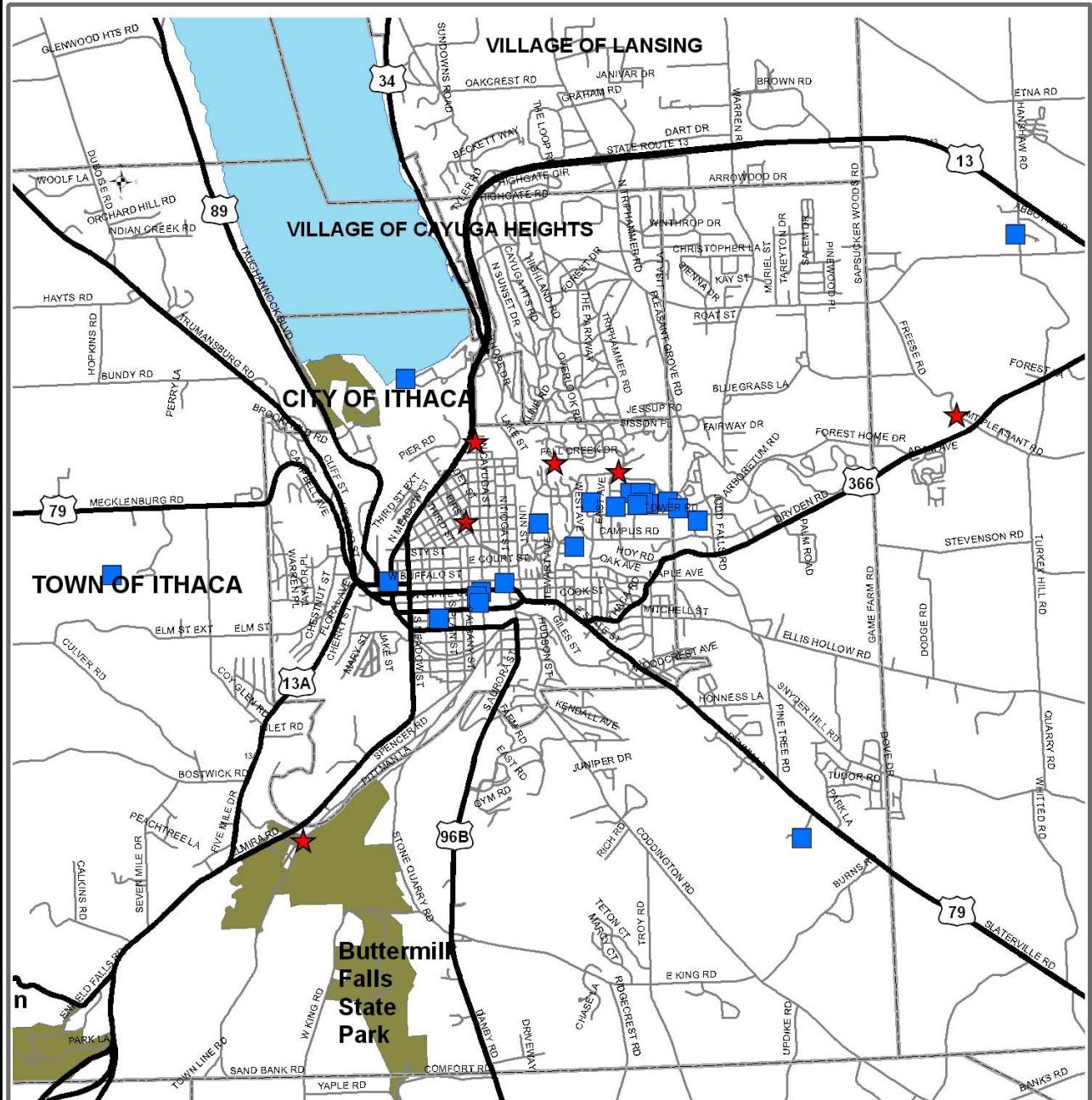
- ★ Historic\_bridges
- Historic Structures

NOTES:  
Location of historic bridges and structures is from NYSHPD/  
Historic Preservation Field Services Bureau

FIGURE 4.29



## Historic Bridges and Structures in Ithaca, NY



NOTES:  
Location of historic bridges and structures is from NYSHPO/  
Historic Preservation Field Services Bureau

FIGURE 4.30

## **SAFETY ELEMENT**

### **Traffic Safety Issues**

Traffic safety is the paramount concern of all ITCTC actions. The areas of *traffic distribution, facility design, education, and enforcement* emerge as the primary issues.

A recurring theme in public comments was the need to reduce the impact of traffic through residential areas. Pedestrian, bicycle and motor vehicle safety, noise, vibrations and emissions all contribute to make this more than a continuing annoyance, but a legitimate health and safety concern. The use of a variety of traffic calming techniques to "tame" the traffic moving through residential and other built-up areas is accepted practice with many local examples of implementation. The transportation planning profession including NYSDOT, and organizations such as the Transportation Research Board, the Institute of Transportation Engineers and the American Association of State Highway and Transportation Officials have all developed guidelines and positions that allow for the implementation of traffic calming techniques. The ITCTC will continue to support the appropriate application of traffic calming to encourage the development of a transportation system that minimizes the negative impacts of motor vehicles without affecting overall mobility.

Education is a major component of any effort to address traffic safety. A tremendous amount of data has become available thanks to advances in electronic communications, which could support educational initiatives. The idea of promoting multi-modal transportation, offering skills training, and raising public consciousness levels regarding the presence of different modes, principally pedestrians and bicyclists, are all-important. The Ithaca-Tompkins area must continue and enhance existing efforts to reach more of the population. Small programs, such as safety programs in our schools need to be renewed and pursued with vigor.

Another area of constant concern regarding traffic safety is traffic law enforcement. Speeding traffic is an issue of overwhelming concern. While providing additional traffic control officers sounds like an easy solution, it is generally recognized that the costs of doing so are prohibitive. Technological solutions, such as remote radar "smart signs" and traffic light enforcement systems, might play a role in addressing this issue. Prioritized enforcement actions, based on data collected from traffic counters and vehicular crash and other incident information, offer another potential strategy for implementation. The LRTP Projects for Implementation include a projects for the study of remote enforcement options and development of a priority enforcement plan. Traffic calming techniques, mentioned earlier in this chapter, also offer a variety of options to help deal with speeding traffic through roadway design.

Data from the statewide Accident Information Location System (ALIS) is available to New York MPOs. The ITCTC distributes this information and will work with local partners and law enforcement agencies in planning and program development efforts that will lead to increased safety on our roadways.

SAFETEA-LU funded a Safe Routes to School (SRTS) program. This program has now been folded into the Transportation Alternatives Program under MAP-21. SRTS brought to the forefront issues addressing the relationship of childhood obesity, safety and transportation. Funds from this program have been awarded in the City of Ithaca, Village of Trumansburg and towns of Ithaca and Dryden. The ITCTC will continue to provide data, technical assistance and funding opportunities to promote the safety of pedestrian and bicycle routes to schools in Tompkins County.

### **State and Regional Safety Planning**

Federal legislation requires the Metropolitan Transportation Plan to include a safety element that incorporates or summarizes the priorities, goals and countermeasures or projects for the Metropolitan Planning Area (MPA) as contained in the State Strategic Highway Safety Plan. In addition this section provides an overview of Federal, State and Local Government's participation in the development of Tompkins County's emergency response preparedness. The chapter outlines the general responsibilities of the operational departments and provides a chronology of some key legislation effecting the Tompkins County Comprehensive Emergency Management Plan and related documents. These topics are discussed below in Part I- New York State Strategic Highway Safety Plan and Part II- Tompkins County Emergency Preparedness.

### **Part I - New York State Strategic Highway Safety Plan**

The Vision Statement of the New York State Strategic Highway Safety Plan of 2010 contains key elements that provide guidance to ensure that those who live, work and travel in New York State enjoy a transportation system where:

1. safety is appropriately considered in education, enforcement, engineering and emergency medical services activities;
2. the movement of people and goods is efficient;
3. there is a balance of transportation modal options;
4. the transportation system is environmentally sound;
5. there is a reduction in fatal and injury crashes.

The Vision Statement of the Tompkins County LRTP organizes its Goals and Objectives under the concept of a Transportation System that is *Sustainable and Accessible*. Below are LRTP goals and objectives, which demonstrate how the LRTP's vision of a Sustainable Transportation

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System relates to the Vision Statement of the New York State Strategic Highway Safety Plan of 2010. A complete record of the goals and objectives can be found in the LRTP Chapter 3 *Vision Statement, Goals and Objectives*.

The Tompkins County LRTP Vision Statement divides its Goals and Objectives under the following broad categories:

- Integration
- Mobility
- Proximity
- Connectivity
- Quality Of Life
- Environment

### **LRTP Vision Statement Goals and Policies**

#### ***Overarching goals that pervade all the goals and policies:***

1. Improve the safety of the transportation system.
2. Enhance coordination between transportation providers to the benefit and convenience of users.
3. Minimize negative environmental impacts of transportation.
4. Reduce vehicle miles of travel and number of drive-alone trips.
5. Ensure equitable availability of mobility options

#### **Integration:**

*Goal: To develop an integrated transportation system for Tompkins County that is seamless, multimodal and coordinated to achieve greater operational efficiencies and increase the safety and convenience of users.*

Policy A: Promote the safe, efficient and effective movement of people and goods through the development of an integrated multimodal transportation system, including public transit, bicycle and pedestrian facilities and networks, infrastructure and operations planning, construction and maintenance practices.

Policy B: Support implementation of municipal bicycle plan and initiatives such as the Bicycle Boulevard Plan of the City of Ithaca.

Policy E: Promote the use of Travel Demand Management techniques in order to achieve objectives such as: 1. reduced traffic congestion; 2. commute cost savings; 3. increase safety; 4. improved mobility for non-drivers; 5. energy conservation and pollution emission reductions.

Policy G: Support enforcement of traffic laws by facilitating the use of advanced technologies and interagency cooperation.

Policy K: Work with responsible jurisdictions and agencies to identify and improve high-risk traffic accident areas to ensure a safe environment for users of all modes of transportation.

#### **Mobility:**

*Goal: To promote implementation of transportation services, programs and projects that enhance mobility.*

Policy B: Encourage increased bicycle use for different trip purposes, and work to increase the skill levels of bicyclists.

Policy F: Support, in coordination with freight haulers, programs and strategies that enhance the movement of freight throughout the Ithaca-Tompkins County metropolitan area by increasing safety and efficiency and minimizing the negative impacts of freight transport.

Policy J: Encourage the provision of safe and comfortable environments on vehicles and at shelters, stops and stations for public transit employees and passengers.

#### **Proximity:**

*Goal: To achieve land development patterns that enable the efficient provision of multimodal transportation services.*

Policy C: Link transportation investment with local and regional land use planning.

Policy E: Consider land use and site design as it relates to efforts to reduce relative number of vehicle trips and vehicle miles of travel.

Policy I: Promote trip minimization and increased vehicle occupancy rates.

#### **Connectivity:**

*Goal: To maintain and improve transportation networks to enhance safety, multimodal and intermodal connectivity and facilitate the movement of people and goods.*

Policy A: Consider safety as the base component of all infrastructure design decisions with an end objective of reducing fatal and injury crashes.

Policy B: Improve the existing and proposed road network to safely accommodate bicycling, pedestrian and public transportation uses.

Policy J: Encourage the development and maintenance of advanced communication networks that can facilitate the use of communication technology as a substitute to travel.

#### **Quality Of Life:**

*Goal: Develop a transportation system that sustains and enhances the quality of life for Tompkins County residents and visitors.*

Policy C: The transportation system and proposed transportation projects should ensure both positive and negative environmental impacts are equitably distributed to all areas and population groups in the community.

Policy E: Encourage the provision of programs and facilities that support populations with special transportation needs including: low-income persons and households, seniors, youth and persons with disabilities.

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Policy K: Promote infrastructure designs that are sensitive to local environmental issues and preserve or enhance scenic beauty.

Policy L: Support community-based discussions involving the relationship between transportation and affordable housing, community planning, and economic development and revitalization.

#### **Environment:**

*Goal: To work progressively towards a transportation system that will have zero-net negative impact on the environment.*

Policy A: Encourage transportation initiatives that reduce or minimize the production of ozone precursors, small particulate matter, carbon monoxide, and other greenhouse gases.

Policy B: Promote alternative fuels and clean air strategies, which can be implemented in public fleets and private vehicles.

#### **LRTP Performance Planning Objectives:**

The LRTP includes a series of measurable safety, infrastructure and system reliability objectives that directly and indirectly will help promote and measure transportation safety progress in Tompkins County. These include:

- Reduce the number of motor vehicle crash fatalities and severe injuries
- Reduce the number of bicycle and pedestrian crashes
- Reduce the number of bicycle and pedestrian fatalities and injuries
- Reduce the percentage of structurally deficient bridges
- Reduce the percentage of roads in ‘fair or poor’ condition
- Increase the provision and access to multiple transportation options

Measuring and locating motor vehicle, bicycle and pedestrian crashes, fatalities and injuries will assist in planning to make targeted safety improvements. Continuous maintenance of bridges and pavements is important in reducing infrastructure factors to crashes. Providing more and enhanced transit, bicycle and pedestrian facilities will also serve to more safely accommodate these important modes in the transportation network.

### **Part II-Tompkins County Emergency Preparedness**

#### **Organization Description**

The County’s emergency management program is a three-pronged effort implemented by the County’s Department of Emergency Response, the County’s inter-agency Emergency Management Planning Committee and its internal Emergency Management Strategic Group. The ITCTC fully supports the work of these groups and their efforts to address the emergency response needs of Tompkins County. The emergency management program is further described below.

#### **a. Department of Emergency Response**

The Department holds responsibility for managing the county’s emergency dispatch and communications system, implementation of the county’s 911 communications system, oversight of county mutual aid and disaster plans, and training and development of emergency medical and fire personnel. In addition, the Department provides Emergency Preparedness information to the public including development and maintenance of the Tompkins Ready website - [www.tompkinsready.org](http://www.tompkinsready.org).

#### **b. The Tompkins County Emergency Planning Committee (TCEPC)**

The TCEPC was established by resolution of the Tompkins County Legislature in 2000. Its mission is to facilitate the planning process for emergency management of disaster responses and to assist with operations during times of local emergencies. The committee is composed of representatives of county government, city government and other local response agencies. Its responsibilities include identifying appropriate local measures and resources to prevent disasters, developing mechanism to coordinate local resources, and delivering services to aid citizens during and after disasters. Among the Committee’s responsibilities, are to annually update the *Tompkins County’s Comprehensive Emergency Management Plan*. A diverse team of individuals and local agencies participate in support of TCEPC and the County’s emergency management programs.

#### **c. The Emergency Management Strategic Group**

The Emergency Management Strategic Group chaired by Deputy County Administrator and is an internal team of County department staff, focusing on readiness issues within county government and related to maintaining services in the event of an emergency. Responsibilities involve assessment of the county government infrastructure, internal countywide emergency planning and developing a workforce emergency management plan.

#### **Background**

Federal and State agencies and their rules provide support and mandates for Tompkins County emergency management efforts. The Federal Emergency Management Agency’s (FEMA) mission is to support citizens and first responders to ensure that the nation works together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards. The New York State Office of Emergency Management Office (OEM) Mitigation Section led the development of the State Multi-Hazard Mitigation Plan. The New York State Multi-Hazard Mitigation Plan represents the State’s approach to mitigating the adverse impacts of natural

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disasters within its borders and to fulfill its Federal obligations to mitigate the risks resulting from natural hazards.

The Robert T. Stafford Disaster Relief and Emergency Assistance Act, enacted by Section 104 of the Federal Disaster Mitigation Act of 2000 (DMA2K) provided new emphasis on mitigation planning. Operationally, Hazard Mitigation is defined as the process whereby hazards are identified, risks and vulnerabilities are quantified, risk elimination or reduction measures are identified, awareness is created, and cooperative efforts are undertaken to prevent, reduce or eliminate losses.

The DMA2K emphasizes the need for State and Local governments to closely coordinate mitigation planning and implementation efforts as well as continuing the requirement for a State Mitigation Plan as a condition of disaster assistance. This plan is also intended to serve local jurisdictions as a guide in completing and updating natural hazard mitigation plans that will meet the requirements set forth in DMA2K. To be eligible for future disaster mitigation funding, FEMA requires that all local governments have an approved Federal hazard mitigation plan. Tompkins County completed the *Tompkins County Hazard Mitigation Plan* ([www.tompkinscountyny.gov/planning/community-planning](http://www.tompkinscountyny.gov/planning/community-planning)), which was approved by FEMA in 2014. The plan covers all jurisdictions in Tompkins County.

## **FINANCIAL**

### **Introduction**

The weakest part of any planning process is in the area of financial resource estimating and forecasting, particularly when working within a long planning horizon. One of the major problems is forecasting revenues that are dependent on the political process. The federal transportation program is vulnerable to political and procedural vagaries, where a legislative body sets one level of funding ("authorized") but may appropriate a lesser amount or change funding levels with other legislation. Given the unpredictability of the funding process, inflation and other economic factors, it is difficult to make accurate annual projections, and impractical when projections are forecasted for twenty years. In addition, the multi-agency/governmental arena of an MPO makes it difficult to determine exact equivalencies of diverse funding streams.

This financial element will focus on the transit and highway federal funding resources that are managed by the ITCTC and which are eligible for use in federal-aid projects. Federal funds are available for federal-aid highways and transit. It is important to note that federal transportation expenditures are only part of the total resources assigned to transportation. Municipal, County and State governments utilize significant amounts of their resources to maintain, operate and expand non-federal aid eligible transportation networks and facilities within their jurisdictions. (Note: in previous Long Range Plans the financial analysis included estimates of all federal plus non-federal transportation fiscal resources resulting in much higher total figures.)

This financial analysis is largely based on a continuation of the priority guidance to "preserve existing facilities". The analysis is based on past revenue and expenditure levels and does not attempt to incorporate fundamental changes that may result from the implementation of this plan. For instance, implementing some measures may lead to increased governmental expenditures (e.g., computer models, computerized traffic signals, real-time transit information, new and improved bicycle/pedestrian facilities, etc.), but may also result in reduced societal costs (e.g., reduction in the costs of congestion, improved air quality, improved personal health, reduced traffic accidents, injuries and fatalities, etc.). Others may lead to decreased government expenditure (e.g., prioritized snow removal plans, local roadways built to more modest design standards, less rigorous maintenance practices, etc.), but may lead to other undetermined costs. This type of comprehensive, cumulative analysis is beyond the scope of this plan.

### **1. Resource Estimation**

Information on fiscal resources was gathered from four sources: the New York State Department of Transportation, Tompkins Consolidated Area Transit, Tompkins County and ITCTC records. In all cases resources were estimated to the 20-year planning horizon based on historical funding trends that are reflective of variations and inflationary forces.

At the time of this writing, federal funding for transportation is in a period of transition. The U.S.Congress is debating the best way to fund the federal transportation program in the long term. In the meantime, total TIP funding has gone from approximately \$53 million for 2007-2012, to \$49 million for 2011-15, to the current 2014-2018 TIP at approximately \$24.5 million. Appropriations nationwide and thus, locally, are considered to be at historically low points. By using these figures to build the plan budget we are certain to be working with fiscally conservative scenarios. Most figures in this analysis are rounded for ease of use.

The calculations for this financial element are based on highway and transit federal funds that flow through the ITCTC. The basic source is the 2014-18 TIP, which as mentioned above, will give us a fiscally conservative base for our future estimates. Annual average programmed federal funds and their local and state matches were calculated. For highway projects future year estimates were determined applying varying inflation rates. The average Consumer Price Index for the 12 year period from 2001-2012, 2.43%, was used for the first five years 2015-2019. This inflation rate was reduced to 2.00% for the following 5 year period, and by .5% every five years through 2034. The purpose of this reduction is to mitigate the compounding effect of using the same inflation rate for 20 years. This is particularly important in a region like Tompkins County which has a very moderate rate of population growth and minimal highway network expansion rates.

As a final step in the 20-year projections the analysis includes a net present value calculation that reflects 'year of expenditure' dollars for the funding resource projections. The sections below describe the estimated federal resource projections and their accompanying state and local matches.

#### **Federal Aid Resource Projections**

##### **Highway:**

Federal aid for highway programs was estimated at \$100,400,000. This figure based on the approximately \$4,240,000 per year that were programmed in the 2014-2018 ITCTC TIP. In addition, while the ITCTC does not have access to set-aside funds for the Transportation Alternatives Program, these funds were included in the total federal aid figure at the rate of \$300,000 per year to reflect their approximate actual availability.

Transit:

TCAT and Tompkins County, the designated FTA grant recipient, provided the information required to develop the transit estimates in **TABLE 4.10**. The local and State "matching" contributions to these funds were calculated based on current program requirements. The FTA Section 5307 (urban area transit service) figures for capital and operating assistance were based on actual Federal Fiscal Year 2014 figures. The State Dedicated Funds (SDF)-Capital funds were calculated based on the 2009 formula. The estimates from TCAT reflect the most recent changes in funding formulae and appropriate fund levels.

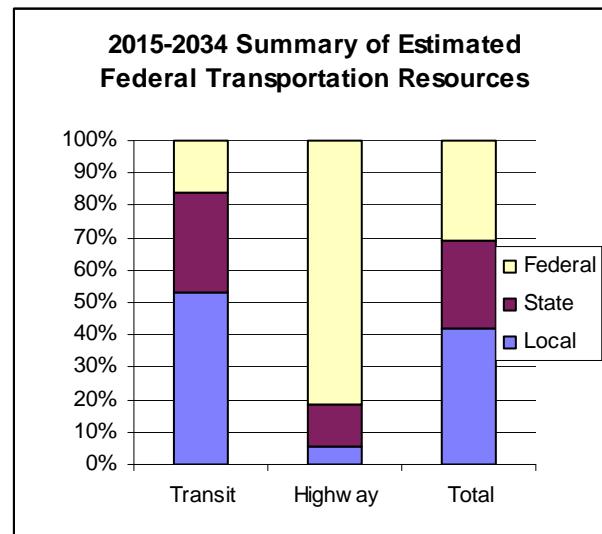
#### Local Resource Projections

A 20-year projection of local resources for federal aid highway transportation projects were also developed based on annual funding of approximately \$293,000 per year programmed in the 2014-2018 TIP. In addition, private sector contributions were estimated at \$530,000 over 20 years. Private contributions are transportation funds that originate from non-governmental sources. The estimated number was calculated by setting the private contributions to 10% of the local resources in the TIP. Private contributions are most common in the form of participation in the local share of federally funded projects and are often in-kind in nature. This component of project funding may see substantial change in future years. Crowd sourcing and other technology based strategies can be used to help expand the private sector contributions in the future, where already a variety of fundraising strategies have been used to help supplement municipal contributions to the local share of certain projects. The resulting total local resource projection is \$6,930,000.

#### NY State Resource Projections

The State TIP based contributions to federally funded projects in Tompkins County average approximately \$679,000 per year. This amounts to approximately \$16,100,000 over 20 years.

In summary, for the 2015-2034 planning horizon, local resources are estimated to provide 53% of the transit funds, 5.6% of the highway funds, and 42% of the total federal transportation program funds. State resources are calculated at 31% of the transit funds, 13% of the Highway funds, and 27% of the total federal program funds. Federal government funds are estimated to contribute 16% of the transit funds, 81% of the highway funds, and 31% of the total federal transportation program funds. **FIGURE 4.31** provides a graphic representation of the Local/State/Federal funding splits for the federal Transit, Highway, and Total program resources.



**FIGURE 4.31**

**TABLE 4.10**

Federal Highway and Transit Resource Estimate 2015-2034				
Funding Program	Local	State	Federal	TOTAL
<b>Highway Program Sub-Total<sup>1</sup></b>	<b>\$6,930,000</b>	<b>\$16,100,000</b>	<b>\$100,400,000</b>	<b>\$123,430,000</b>
<b>Transit<sup>2</sup>:</b>				
<b>Sect. 5307 – Urban Formula (capital)</b>	\$2,250,000	\$2,250,000	\$18,000,000	\$22,500,000
<b>Sect. 5309 – Discretionary Capital</b>	\$325,000	\$325,000	\$2,600,000	\$3,250,000
<b>Sect. 5310 – Paratransit (capital)</b>	\$800,000	\$0	\$3,200,000	\$4,000,000
<b>Sect. 5311 – Rural Capital</b>	\$2,500,000	\$2,500,000	\$20,000,000	\$25,000,000
<b>SDF – State Dedicated Funds (capital)</b>	\$0	\$7,500,000	\$0	\$7,500,000
<b>Tompkins County Mortgage Reporting Tax</b>	\$12,000,000	\$0	\$0	\$12,000,000
<b>Subtotal Transit Capital</b>	\$17,875,000	\$12,575,000	\$43,800,000	\$74,250,000
<b>Transit Operations*</b>	\$201,600,000	\$115,600,000	\$22,800,000	\$340,000,000
<b>Transit Sub-Total</b>	<b>\$219,475,000</b>	<b>\$128,175,000</b>	<b>\$66,600,000</b>	<b>\$414,250,000</b>
<b>Total Transportation</b>	<b>\$226,405,000</b>	<b>\$144,275,000</b>	<b>\$167,000,000</b>	<b>\$537,680,000</b>

Sources:

<sup>1</sup>Based on Transportation Improvement Program

<sup>2</sup>Tompkins Consolidated Area Transit and Tompkins County and NYSDOT

Note:

\*Funds for *Transit Operations* come from the following sources:

Local – fare revenue and local subsidy, increasing at approximately 6.5% per year after year 2010. Mortgage Reporting Tax at \$600,000 per year.

State – New York State Transit Operating Assistance, based on 2010 budget request and increasing 3% per year after year 2013

Federal – Section 5307 funds (includes transfer from 5311 to 5307), based on 2014 adopted budget and increasing 2.5% over planning period

## **2. Expenditure Estimation**

The estimation of expenditures is based on several factors. Due to the flexibility included in federal transportation legislation, it is expected that funds will be transferred between programs to best meet the expenditure demands of the area. This section does not attempt to differentiate federal from state from local fund sources, nor does it address project level details of the distribution of different federal fund categories. That information is presented in detail in the ITCTC's Transportation Improvement Program.

A clear division between "transit" and "highway" projects has been maintained since this distinction continues to be in effect in federal transportation funding. These estimates are based on "historic trends" which are subject to variables such as annual state and federal appropriations. Transit expenditure allocations were based on expenditures proportions utilized by TCAT. The Capital Facilities include projects with a high probability of implementation.

No attempt has been made in this plan to allocate costs by individual project year. The expenditures reflect 'year of expenditure dollars' based on the analysis used above under *1. Resource Estimation*. **TABLE 4.11** provides a summary of the estimated expenditure allocations.

### **Highways**

Federal and state highway funds were distributed one-third to bridges, one-third to pavement projects. The last third of federal and state highway funds were distributed to cover other project categories such as safety (approximately 10%) and active transportation and mobility projects (approximately 20%). Transportation Alternatives Program funds are included as an independently funded program. This proportion in the distribution of funds adequately reflects plan goals and continues a pattern used in previous long range plans.

The proposed expenditure allocations support LRTP goals to maintain existing transportation infrastructure, with two thirds of projected federal funds allocated to bridge and pavement maintenance projects. The aim of the bridge and pavement programs is to maintain and improve the condition of the highway infrastructure.

Increased safety has been a priority of the ITCTC since its initial LRTP. Federal funds for safety were increased under MAP-21. Even so, few projects get funded exclusively from surface transportation program "safety" funds. This, however, does not detract from the importance of the safety focus in the ITCT program. The fact is that safety features are designed and constructed as principal or incidental aspects of nearly every type of transportation project. This plan includes an allocation of highway funds for safety projects at approximately 10% of the total transportation program. While this may

underestimate the "needs" for safety improvements, they also under-represents the commitment and investment to safety that is part of every TIP project.

The LRTP analysis and vision strongly recommend the need to expand mobility options in Tompkins County (see the LRTP Vision Chapter). This emphasis will help meet multiple energy efficiency, emissions reduction and sustainable accessibility goals and policies.

Funds under active transportation & mobility are intended to be used for Transportation System Management (TSM) activities (e.g., signal synchronization, traveler information systems, traffic circles, bike lanes, "flex" to transit, etc.); for expansion of multimodal facilities and programs (principally bicycle, pedestrian and transit); and for the implementation of transportation mobility and demand management program such as ridesharing, car sharing, vanpools, guaranteed ride home, staggered work hours, etc. Implementation of these non-automobile based transportation strategies, coupled with more efficient land use development patterns provide a framework for long-term sustainable transportation in Tompkins County.

### **Transit**

The estimated expenditures generally follow the expenditures patterns found in the current TCAT transit system. Operating and maintenance expenditures make up the bulk of transit expenses.

*Capital Facilities:* This category includes funding for TCAT Facility rehabilitation, and replacement of passenger facilities and shelters.

*Operating:* The total operating budget estimate reflects an annual growth rate of 5% over the 20-year planning horizon. The Operating projections include all aspects of operations of transit service including administrative costs. This is, by far, the largest expenditure category for transit.

*Maintenance/Miscellaneous:* This category includes vehicle and facility regular maintenance plus a variety of projects that may range from short-range planning to implementation of special transit projects, from communications and data processing equipment replacements to improved signage.

*Buses:* The buses estimate includes urban, rural and paratransit buses operated by TCAT, its contractors, and GADABOUT. The resources estimate for purchasing buses includes purchases for GADABOUT under the Section 5310 program. The estimate for bus acquisition assumes TCAT will be successful in getting funding from different non-formula Federal sources (i.e. competitive grant programs, one-time programs such as ARRA, etc.). Further, the estimate assumes

regular allocations from the New York State Dedicated Transportation Fund.

TCAT's biggest long term funding problem is capital funding, especially for replacement buses. The size of TCAT's bus fleet requires capital funding at a level that far exceeds its annual urban formula allocation (Sec. 5307). Therefore, TCAT must compete for discretionary capital funding from federal and state programs. The cost of not being able to replace buses in

a timely fashion is reflected in the high maintenance costs of an aging bus fleet. As part of its strategic planning, TCAT with local partners to identify strategies for funding replacement buses, bus rehabilitation and re-manufacturing.

<b>TABLE 4.11</b>			
<b>Estimated Federal Funding Expenditure Allocations 2015-2034</b>			
<b>Project Type</b>	<b>Expense Allocation</b>	<b>Percent Of Total*</b>	<b>Percent Of Category*</b>
<b>Highway:</b> <b>Bridge</b>	\$40,750,500	7.6%	33.0%
<b>Pavement</b>	\$40,750,500	7.6%	33.0%
<b>Safety</b>	\$11,643,000	2.2%	9.4%
<b>Active Transportation &amp; Mobility</b>	\$23,286,000	4.3%	18.9%
<b>Transportation Alternatives Program</b>	\$7,000,000	1.3%	5.7%
<b>Subtotal</b>	<b>\$123,430,000</b>	<b>23.0%</b>	<b>100.0%</b>
<b>Transit:</b> <b>Capital Facilities</b>	20,712,500	3.9%	5.0%
<b>Operating</b>	289,975,000	53.9%	70.0%
<b>Maintenance/Misc.</b>	74,565,000	13.9%	18.0%
<b>Buses</b>	28,997,500	5.4%	7.0%
<b>Subtotal</b>	<b>414,250,000</b>	<b>77.0%</b>	<b>100.0%</b>
<b>Total</b>	<b>\$537,680,000</b>	<b>100%</b>	

\*Discrepancies in the figures are due to rounding errors.